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Economic Transformation in Ghana

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Introduction

Ghana has long been regarded as one of sub-Saharan Africa's "star performers" (Coulombe and Wodon 2007). In the early 1960s it was one of the richest economies in Sub-Saharan Africa (SSA). It was also one of the earlier African economic reformers, with a series of reforms beginning in 1983. These reforms included the abolition of price controls, the opening of capital markets, reductions in import tariffs, and privatization of many state-owned enterprises (Sandefur 2010). Since then Ghana has exhibited both strong and sustained growth and poverty reduction, with average growth rates of 4.7 per cent per year (Aryeetey and McKay 2007; Sandefur 2010) and has now reached middle income status. Between the third and fourth rounds of the GLSS (Ghana Living Standards Survey) poverty rates fell from 51.7% (1991/2) to 39.5% (1998/9) and between the fourth and fifth further to 28.5% (2005/6) (Coulombe and Wodon 2007). Moreover, the absolute number of poor people has fallen. Ghana's almost halving of poverty rates over these fifteen years is reportedly the best record in SSA (World Bank 2007, V.3).

Ghana in several ways can be considered a benchmark for other African countries that are seeking transformation. In common with most countries in SSA, Ghana has seen rapid growth in its population and an increasing concentration of that population in urban areas, with up to half of the population reported to be living in urban areas.¹ There has been a shift from a predominantly agriculture-based economy, with agriculture now contributing around 35 percent of GDP to one in which services and industry play an increasingly important role. However, agriculture continues to absorb 60 percent of the labor force.

There is much talk of Ghana's economy being poised to "take off". But though Ghana has seen some movement of labor and resources out of agriculture, and despite impressive growth figures, Ghana's economy is relatively undiversified with little change in its economic structure over the past two decades (Lejarraga 2010). Ghana's growth continues to be driven by cocoa and gold, the latter accounting for 36 percent of total exports in 2006 and almost 40 percent in 2008. However, this increasing share is mainly due to rising prices (Yusuf 2010).

The government of Ghana, in its Medium Term Development Policy Framework, recognizes that the economy continues to be heavily reliant on primary commodities with insufficient linkages to other sectors; low productivity rain-fed agriculture; and low application of science, technology, and innovation throughout production and distribution channels (GoG 2010). With the discovery of oil and natural gas the economy will be further dominated by natural resources. These realities notwithstanding, the government of Ghana's medium term strategic intent is to "lay the foundation for the structural transformation of the economy within the decade ending 2020, through industrialization especially manufacturing, based on modernised agriculture and sustainable exploitation of Ghana's natural resources, particularly minerals, oil and gas" (GoG 2010, p.5).

In the context of Ghana's medium term plans, in particular the government's objective of achieving structural transformation with an emphasis on manufacturing, we explore patterns of growth, sectoral transformation, and agglomeration in Ghana this far in this chapter. We document and examine why,

¹ High income countries are typically characterized by a predominantly urban population, an economy dominated by industry and services, with agriculture providing around 2 percent of GDP compared with around 40 percent for low-income countries, where the agricultural labour forces is typically a higher share still (World Bank 2000).

despite impressive growth and poverty reduction figures, Ghana's economy has exhibited less transformation than might be expected for a country that has recently achieved middle income status. Our chapter is guided by a number of stylized facts and hypotheses that relate to economic transformation. Firstly, transformation is generally couched in terms of economic structure and location, in which there is a transition from an agricultural and rural economy to a more urban, non-agricultural and more diversified economy. We consider the extent to which Ghana's economy has followed this pattern and why. Second, economic transformation typically follows a path of agricultural productivity growth that releases resources from agriculture into more dynamic other economic sectors, typically manufacturing. We consider the role and performance of Ghana's agricultural sector and the relative importance of the service and manufacturing sectors over the past three decades. Third, urbanization is generally believed to result in agglomeration benefits that enable accelerated growth through economies of scale and clustering of economic activity. We pay particular attention to the patterns of urbanization and agglomeration in Ghana and consider to what extent Ghana's economy has benefited from location-specific economies of scale.

We organize the rest of the chapter in the following way. In Section 2 we characterize the sectoral composition of Ghana economy and examine the performance of various sectors. Then in section 3 we examine the structure of employment. It is followed by an examination of sectoral and spatial linkages and welfare indicators in section 4. In section 5, the pattern of agglomeration of population in the country and its association with economic activities are examined. Some conclusions are offered in section 6.

Characterisation of the economy

Ghana's growth record

Since the mid-1980s Ghana has had consistently good growth figures, has halved poverty in a fifteen-year period, and has outperformed many other African countries in these respects. With recent rebasing exercise, Ghana's growth figures were revised upwards to 8.4 percent in 2008 (as opposed to the pre-rebasing figure of 7.2 percent) and 6.6 percent in 2009 (rather than 5.9 percent) and current GDP per capita estimated at US\$1,289. These revised figures make Ghana a low-middle income country and a country with the highest per capita income in West Africa.²

Though Ghana has shown relatively strong growth since the mid-1980s, a longer timeframe of the past 60 years shows that a major part of this growth represents a recovery from 1983 following a declining and highly variable GDP per capita in the 1960s and 1970s and a rapid decline in the early 1980s.³ Since then, However, Ghana has for almost three decades demonstrated sustained and consistent growth.

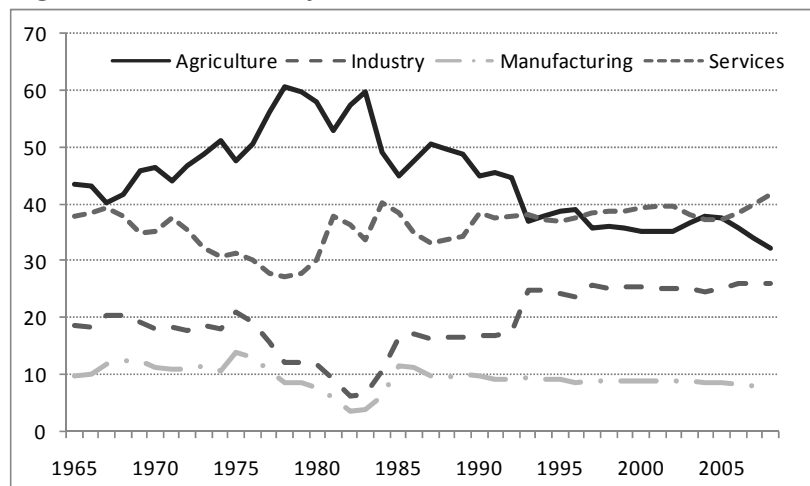
Evolution of sectoral composition in Ghana's economy

Ghana's sectoral structure after independence was typical of many post-colonial countries. A small proportion of the population was involved in the higher productivity formal sector, with the majority of the population in low-productivity agricultural and informal nonagricultural activities (Andrae 1981). Agriculture dominated the economy in terms of contributions to GDP and employment. Exports were typically primary agricultural or mining products, and consumer nonagricultural goods were imported (Andrae 1981). Agriculture's rise in importance between 1965 and 1983 reflected the decline of Ghana's industry sector over the same time period.

² Before the recent rebasing of the country, between 2001 and 2008 Ghana was estimated to have grown at an annual rate of 5.6 percent. But models were projecting that if Ghana were to continue on this growth trajectory, and if population growth were to continue at a rate of 2.2 to 2.3 percent per year, then by 2020 GDP per capita would increase from its 2007 level of \$587 to \$838 in 2020 (Breisinger et al. 2010a, scenario, using a dynamic computable general equilibrium model for Ghana). Under this "business as usual" scenario, Ghana would not be able to double per capita income – and thereby reach middle income status as defined by having a per capita income of \$1000 or more – by 2020. Indeed, taking into account population growth, Ghana's real GDP per capita growth rate was estimated to have been only around 2.3 percent over the past five years.

³ This trajectory of GDP per capita is similar Uganda and Tanzania that have also recovered their economies.

Figure 1: Sector share of GDP, 1965-2008



Source: World Bank 2009.

Ghana undertook one of Africa's most ambitious structural adjustment programs (Sandefur 2010). This included the removal of subsidies and price controls, state enterprise divestiture, improved public sector management, and banking reform. During Ghana's sustained growth period that followed, whilst the contribution of the industry sector recovered from a low of 7 percent, its contribution to GDP has never gone above 26 percent (see Figure 1). After the recent government's rebasing exercise, it has fallen from 20.8 percent in 2006 to 18.6 percent in 2010. With economic recovery in the nonagricultural sectors after 1983, the contribution of agriculture to GDP has gradually fallen. However, the service sector is the one that has replaced agriculture and its share of GDP has increased from less than 30 percent in the late 1970s to recent over 50 percent.

Agriculture

Agriculture has been the backbone of Ghana's economy throughout the post-independence period until the recent years when the service sector started to dominate the economy (McKay and Aryeetey 2004). Crops other than cocoa account for nearly two thirds of the AgGDP. While cocoa itself accounts for about 13 percent of AgGDP, export crops in total, including cocoa, oil palm, fruits, vegetables, rubber, and cotton, add less value than root crops alone, and they account for 22 percent of agricultural GDP.

Though the agricultural sector has grown at over 5 percent per year over the past decade, much of this growth has been driven by an expansion of land area rather than improved yields (World Bank 2007, vol. 2; Steedman 2003; Bogetic et al. 2007; Breisinger et al. 2008; Breisinger et al. 2010b). Within agriculture as a whole, cocoa is the main driver of land expansion with the area planted to cocoa having increased by 1.7 times over the past 12 years, accounting for 60 percent of the total increase in agricultural land (Table 1).

Table 1: Land expansion and land productivity in Ghana, 1994-2006

	1994	2000	2006	Annual growth rate		
				94-06	94-99	00-06
Land productivity (cedi per hectare)*						
Crop and cocoa	155	112	159	0.91	-4.77	5.97
Cocoa	162	87	188	1.56	-10.49	13.67
Crops other than cocoa	154	121	149	0.69	-4.97	3.62
Land allocation (in 1,000 hectares)						
Cultivated land	4,500	6,100	7,195	4.10	5.39	2.79
Cocoa land	687	1,500	1,835	7.01	13.62	3.42
Crops other than cocoa	3,813	4,600	5,360	3.31	3.59	2.58

Source: Calculated using data from FAO 2008, IMF (various issues of Ghana statistics), and Ghana Statistical Services.

Note: *Land productivity is calculated as GDP at constant 2000 prices divided by hectares of cultivated land. The value is reported in new Ghana cedi.

In contrast to the land expansion, land productivity, measured by crop GDP in constant terms, has barely changed in the last 12 years. Total land productivity actually fell between 1997 and 2002, and recovered only in recent years, primarily driven by growth in cocoa (Table 1). As an export crop and cocoa has received special attention from the government in terms of financial and policy supports. Assisted by favorable world prices in recent years, the cocoa sector has grown rapidly except for the period of 1996–2000. Cocoa’s contribution to agricultural growth is almost three times its share in the sector.

Measured by the yield, lack of productivity change becomes more obvious, as national yield levels of major food crops in Ghana have only improved modestly over the last 12 years. Not only are yields virtually stagnant, they are much lower than the achievable yields for many crops. According to the Ministry of Food and Agriculture, yields for most crops are 20–60 percent below their achievable level with available technologies that include the use of modern inputs such as fertilizers and improved seeds.

Rapid diversification of agricultural exports has helped to accelerate growth in agriculture and general economic transformation in many middle income countries (Breisinger and Diao 2008; Breisinger et al. 2010a). In Ghana, there has been some growth in non-traditional agricultural exports, particularly sugar, cashew nuts, and palm oil, but overall Ghana’s agricultural exports are dominated by cocoa products, predominantly unprocessed beans, which in 2005 accounted for 28 percent of total exports and over half of agricultural exports, despite the more rapid growth in non-traditional agricultural exports (Breisinger et al. 2008).

Increasing urbanization and a growing middle class has increased the demand for meat and processed foods but this demand has increasingly been supplied through imports, as evidenced by the surge in rice and chicken imported through the 1990s. Ghana currently imports around 60 percent of rice and 90 percent of poultry meat consumed domestically. Demand for these two commodities is highly income-elastic, suggesting continued increases in imports in the future if there are no improvements in domestic competitiveness. Ghana has also seen a surge in the import of many agro-processing goods such as tomato paste which competes with domestic processing efforts and locally grown fresh tomato.

Ghana’s agriculture is characterized by low input, high dependence on rain-fed agriculture, and predominantly smallholder farms (Asmah 2011). A lack of improvement in the productivity of food crops, missing support for innovation in small-scale agriculture, and poor transport and distribution channels have all been identified as contributors to slow agricultural growth (Aryeetey 2005; Lay and Schuler 2007).

Access to land may be a factor that has deterred investments in productivity enhancing commercial agriculture. There are over one hundred statutes on land ownership, tenure, planning and use, in addition to different customary laws as they pertain to specific localities in Ghana (Larbi 2006). Such complex land tenure systems combined with awkward and inconsistent procedural arrangements for deed and title registration appear to limit the ability to acquire large tracts of land. Though Ghana is a relatively land abundant economy, smallholder agriculture dominates crop production with the average holding size of rural households at 4.3 hectares (GLSS5).⁴ Indeed, foreign investors have identified access to land as the most significant challenge to investing in Ghana (Barthel et al. 2008).

Complex land tenure systems also appear to constrain small farmers' investments in agriculture (Goldstein and Udry 2008; Nankani, nd) with some estimates suggesting that if farmers had security of land tenure agriculture could contribute an additional 2 percent to GDP (Nankani, nd).

Industry

For the past fifteen years and more the share of the industry sector in Ghana's overall GDP has remained virtually constant at around 25 percent (and less than 20 percent using rebased data). The contribution to industrial GDP of mining, and electricity and water, have remained fairly constant at around 21 percent and 10 percent of industry GDP respectively. The share of manufacturing has gradually declined from over 36 percent to under 30 percent whilst the share of construction, the largest sub-sector, has seen its share of industrial GDP increase from around 30 percent to close to 40 percent. This growth has primarily been driven by an urban housing boom and infrastructure developments (Table 2).

Table 2: Relative contribution of industrial sub-sectors to total industrial GDP, 2000-2009 (%)

Year	Industry (% of Total GDP)	Mining & Quarrying	Manufacturing	Electricity & Water	Construction
2000	25.2	22.1	36.4	10.2	31.3
2001	24.9	21.1	36.7	10.3	31.9
2002	24.9	21.1	36.7	10.3	32.0
2003	25.0	21.0	36.6	10.2	32.3
2004	24.7	20.6	36.5	10.1	32.8
2005	25.1	20.4	35.6	10.5	33.5
2006	25.8	21.1	33.9	11.9	33.1
2007	25.7	23.7	31.0	9.5	35.7
2008	25.6	22.3	29.8	10.2	37.6
2009*	24.9	21.5	29.9	10.3	38.3

Source: Ghana Statistical Service/ MOFEP (as appeared in State of the Ghanaian Economy Reports in 2005 and 2009, pages 134 and 131 respectively); before rebasing

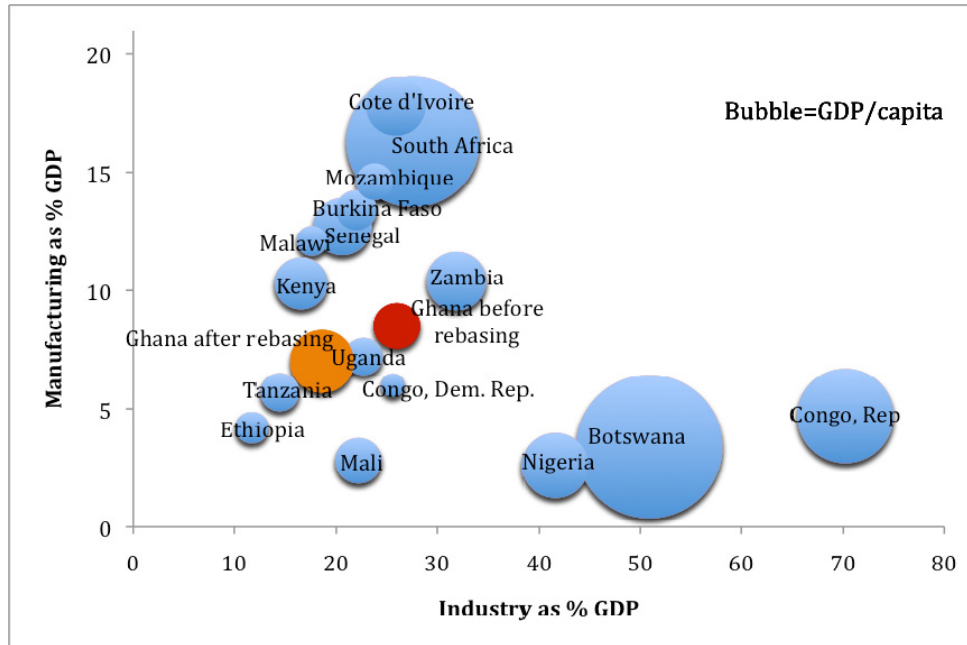
Note: *Provisional

Manufacturing

The share of Ghana's industry sector and the manufacturing sub-sector are small (after its GDP rebasing) compared with many other African countries and only two countries have shares smaller than Ghana (Figure 2). Ghana's manufacturing subsector is dominated by agriculture-related manufacturing, including food and wood processing and textiles, which accounted for 64 percent of manufacturing GDP in 2007 (Breisinger et al. 2010b). The 4.4 percent growth in manufacturing in recent years is lower than the rates observed in other industry sub-sectors, reflecting in part the constraints of a small domestic market, high labor costs, high costs of utilities and raw materials, and obsolete machinery (Yusof 2010).

⁴ Detailed discussion of findings from GLSS5 can be found in Quiñones and Diao (2011).

Figure 2: Contribution of industry sector and manufacturing subsector to GDP in selected African countries



Source:

During the 1960s, manufacturing grew at relatively high rates benefiting from a state-led development strategy that included import substitution. A series of largest industrial enterprises, including Volta Aluminium Company (Valco) smelter, saw mills and timber processing plants, cocoa processing plants, breweries, cement manufacturing, oil refining, textile manufacturing operations, and vehicle assembly plants, were created in that period. However, this period of growth was followed by over a decade of de-industrialisation and most of these enterprises did not survive in an era of restrictive trade regimes that led to scarcity of foreign exchange to import necessary intermediates combined with poorly designed industrialisation policies and high protection barriers (Steel 1972; Dinye and Nyaba 2001; Ackah and Kutsoati 2008). Ghana's efforts to develop its aluminium industry through the Volta Aluminium company (Valco), for example, failed due to a combination of factors that included the discovery of large bauxite reserves in Australia and Brazil which made it more economical to import semi-processed alumina rather than relying on local supplies (Encyclopedia of the Nations, nd).

In the 1980s Ghana once again attempted to improve the state of the country's industrial sector, setting up the Ghana Investment Centre to attract new investments. By 1990, 621 projects had been approved of which 444 were in the manufacturing sector, mostly in timber and chemicals. Few were actually launched by 1990 and 80 percent of them were in the wood industry (Encyclopedia of the Nations, nd).

There are a number of fundamental realities that affect manufacturing in Ghana in common with many other sub-Saharan African countries. First, most of Ghana's manufacturing firms are small and informal (Table 3). In parallel with the far-reaching structural adjustment program introduced in Ghana that abolished price controls, opened capital markets, and cut tariffs, there has been a rapid increase in the size of the informal sector and gradual decline in the average size of industrial firms (Sandefur 2010).⁵

⁵ Similarly, Cote D'Ivoire, Uganda, Kenya and Tanzania have also seen, in parallel with market-oriented reforms, an increase in the proportion of the non-agricultural labour force working in the small-scale or informal sector (Kingdon, Sandefur, and Teal 2006).

Table 3: Ghanaian firm size

Share	Number of firms		Employment	
	1987	2003	1987	2003
Small (<11)	75%	85%	18%	35%
Medium (11-99)	22%	14%	28%	31%
Large (>99)	3%	1%	54%	34%
Total	100% (8,349)	100% (26,088)	100% (157,084)	100% (243,516)

Source: Nsowah-Nuamah et al. 2010

Recent and detailed research undertaken by Sandefur (2010) addresses a question posed by the World Bank in the early 1990s (World Bank 1994): whether the activity of small firms in Ghana was an indicator of dynamic new enterprises that would provide employment growth, or a sign of distress. Micro-enterprises were found to have accounted for most of gross and net job creation between 1987 and 2003, but these firms have not grown into medium or large-scale enterprises over time. In Ghana small enterprises have been found to die early and die small. Large firms in Ghana are born big.

“Homegrown” manufacturing has the potential to play an increasingly important role in Ghana’s transformation (Agyeman-Duah 2008). Yet Ghanaians have missed a number of proven opportunities to take advantage of existing local opportunities and traditions. For example, entrepreneurs from Vietnam and China have used modern production methods to produce traditional Ghanaian handicrafts for exports. Vietnamese firms have successfully produced and marketed Bolga baskets and Chinese firms have revolutionized the market for Kente by imprinting at costs lower than of traditional weaving. The automobile parts sector in the Suame magazine area of Ghana represents another example of homegrown manufacturing that has yet to play an important role in Ghana’s transformation (Agyeman-Duah 2008).

In addition to being small and weak, Ghana’s manufacturing sector has failed to reach international markets. This situation is by no means unique to Ghana. Only one sub-Saharan African country, Mauritius, has been able to successfully develop the export of labour-intensive manufactured products (Teal 1999). In almost all the countries outside Africa that have achieved middle income status the export structure has changed considerably during the transformation period (Breisinger et al. 2007). Typically agricultural exports have declined and manufacturing exports have increased substantially. Although African coastal economies are believed to have the greatest potential for developing clusters of export-oriented manufacturing companies (Collier and Venables, forthcoming), Ghana’s manufacturing sector has hardly developed for many years.

Investment in product discovery determines the types of goods a country produces and exports, which in turn shape the pace of its structural change (Hausman, Hwang, and Rodrik 2006). The successfully transformed countries outside Africa, e.g., China and Malaysia, have benefited from policy changes that have improved rapidly the proximity of their product baskets to more sophisticated goods in the clusters produced by advanced economies. In contrast, Ghana’s share of new products in the world total products was almost identical between 1962 and 2000. A troubling possibility is that the country’s relatively abundant natural resources may inhibit a transformation of the type experienced by China and Malaysia for reasons discussed in the natural resource curse literature (Sachs and Warner 1995 and 2001).

Attracting FDI is an important aspect of accelerating growth in low-income countries (Marr 1997). During Ghana’s pre-reform years in the 1960s, 1970s, and early 1980s, the government made little commitment to promote private investments; instead it undertook a state-led industrialization programme. Before the mid-1980s, not surprisingly, FDI into Ghana was relatively low. However, between 1986 and 1995 FDI flows increased dramatically from around US\$5m per year in 1986 to US\$245m in 1995, mainly driven by the privatization of the Ashanti Goldfields. Indeed, Ghana was one of the top three SSA low-income recipient countries of FDI during the 1990s attracting investors

in part by the availability of natural resources (Marr 1997). By 2006 FDI in Ghana accounted for almost US\$450m.

However, most FDI has gone into the mining (around 70 percent over the past 15 years), resource-based manufacturing, and telecommunications and banking, suggesting that most FDI is resource and market seeking rather than efficiency seeking (Barthel et al. 2008). FDI in mining provides few jobs, given it is a rather capital intensive activity, while it primarily provides foreign exchange through increased exports and government revenue. Moreover, there is little technology spillovers which can be expected in efficiency-seeking FDI in manufacturing and assembly (Barthel et al. 2008). Access to land, property registration, and labour market problems (regulations, availability of skilled labour, and labour productivity) are seen as key constraints to efficiency-seeking FDI.

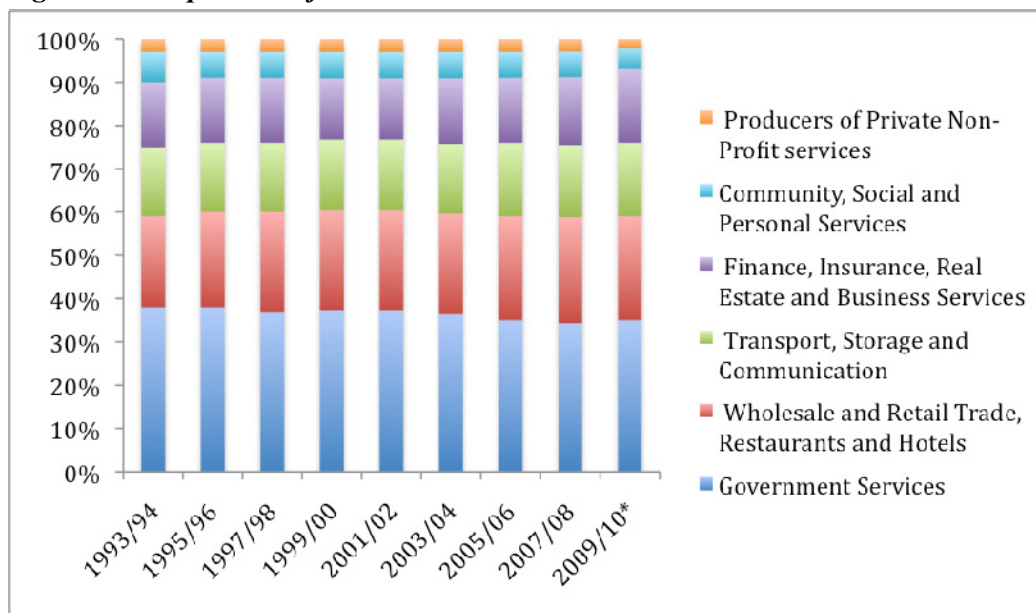
Ghana's labour policies appear to constrain the ability of small firms to expand. In particular, compared with other countries, Ghana is an outlier with regard to redundancy costs. Ghanaian firms pay an average of 178 weeks of salary when making a worker redundant (Lejarra 2010). Ghana's formal employment sector is characterized by high rates of unionization which has resulted wage rigidity. Estimates suggest that more than two-thirds of formal sector jobs are subject to collective bargaining agreements (World Bank, nd). Ghana's union wage premium is 49 percent, higher than it is in most African countries, including, for example, South (Kingdon, Sandefur, and Teal 2006).

Services

Before the rebasing of Ghana's economy, Ghana's service sector became the largest sector in Ghana's economy only in the recent years. The rebased data show that its share in the GDP was already 50 percent in 2006. Over the past two decades the average services GDP annual growth rate has been estimated as 6.2% as against 5.9 % and 3.5% for industry and agricultural respectively (non-rebased figures, Aryeetey and Baah-Boateng 2007). Indeed, service is a rapidly growing sector for Africa as a whole, at 2.2 percent per year between 1980 and 1999 compared with overall GDP growth of 2 percent (Yumkella et al. 1999). More than one-third of the sector relates to public and government-related services such as administration, health, and education, while private services include trade, transport, communication, hotels, restaurants, real estate, and business services.

Though in India services have played an important role in the country's recent growth, service in general is not seen as a leading force for transformation. India's experience of service-led transformation has been driven by a rapid growth in export-oriented services. In contrast, Ghana's service sector is dominated by public services and domestic-oriented private services. Only a small proportion of the service sector is export oriented – primarily luxury hotels and restaurants that provide services to foreigners (Figure 3).

Figure 3: Composition of the service sectors between 1993 and 2009



Source

Following the economic downturn in the mid-1970s and early 1980s, the Economic Recovery Program (ERP) and the Structural Adjustment Program (SAP) in the early 1980s appeared to have encouraged more growth in the various components of the service sector relative to other sectors of the economy⁶. Many of the policies and programs coming out of Ghana's SAP were aimed at rehabilitation and expansion of the service sub-sectors: Financial Sector Structural Adjustment Program (FINSAP) and the New Educational Reform Program (NERP) under the ERP and SAP. Up until the mid 1990s the wholesale, retail, restaurants and hotels sub-sectors were the major contributors to the service sector's GDP growth, after which government services became the largest services sub-sector.

The size and role of the government in the service sector

In the late 1970s, Ghana's public sector accounted for three quarters of formal wage employment. It was characterized by low wages, low skills, a low ratio of non-wage to wage expenditures, and competition between ethnic groups for resources (Collier and Gunning 1999). As in many African countries the result was high public expenditure but poor public services. Ghana's government has been heavily involved in many service activities, real estate sub-sector in particular since the late 1950s. As part of the 10 years development plan following independence, the State Housing Corporation (SHC) and the Tema Development Corporation (TDC) were established to provide residential houses for the entire nation and the Tema industrial hub respectively. Only in the late 1980s the government withdrew from direct involvement in house production and financing leading the way for private sector growth in this sub-sector. It does however continue to be involved in the provision of affordable housing in the main cities. The government was heavily involved in the communication subsector until 1994 when the five-year Accelerated Development Policy (ADP) was introduced and the market was opened to private sector participation.

The government services have for many decades been the major contributor to the service sector's GDP growth (Ghana's civil service is the country's largest single employer) although growth in the sub-sector has declined since 2009 in part due to the government's restrictive macroeconomic policy.

⁶ According to the State of the Ghanaian Economy (1993) by ISSER

Ghana performs well in infrastructure including power, the transport network, and ICT connectivity. Compared with many other SSA countries, Ghana is in a better situation with regard to household access to electricity, paved roads and road density. On the other hand, the country has lower access to fixed and mobile telephones, internet, and personal computers. In common with many African countries, there is a general consensus that improved infrastructure is essential for accelerated growth in Ghana (World Bank 2007, Vol. 2).

Information and communication technologies (ICTs) have a demonstrable and positive impact on income growth in industrialized countries (References). For less developed countries, the ICT sector carries the promise of leapfrogging stages of industrialization and entering directly into the knowledge economy of the 21st century. In Ghana, fixed broadband connectivity is the major bottleneck in terms of affordability. However, with the landings of four⁷ international connectivity undersea cables due to be operational in Accra by the close of 2011, affordability of international bandwidth is poised to improve.

Structure of employment

In many countries that have experienced relatively rapid economic growth, labor has been released from agriculture and moved into other economic activities through increased agricultural productivity. While in many SSA countries the agricultural labor exit rates tend to be rapid, it may not be due to any change in the agricultural sector's productivity (Heady et al. 2010). Compared with other SSA countries, Ghana sits somewhat in the middle in this trend, and in a group that includes Sierra Leone, and Rwanda with moderate exit rates (though high relative to those found in Asia) of between 10 and 20 percent. Those with exit rates lower than 10 percent such as Ethiopia remain more dependent on agriculture.

Despite relatively rapid agricultural exit rates, Ghana's employment is still dominated by the agricultural and rural sector (World Bank nd). It is true that most employment data in SSA countries are questionable, given that agricultural production is often not a full time job and small-scale self-employment in nonagricultural activities are unlikely to be covered by employment statistics. Nevertheless, there has been a gradual but steady decline in agricultural employment and a corresponding increase in employment in services from 22 percent in the 1960s to just over 30 percent between 2000 and 2006. Employment in industry has been fairly constant, fluctuating between a low of 10 percent in the period between 1994 and 2000, a high of 17 percent between 1973 and 1983, and is currently around 14 percent (Table 4), reflecting the relatively small and fluctuating role of industry in GDP.

Table 4: Employment by sector (percent of total)

	1965–1972	1973–1983	1984–1993	1994–2000	2001–2006
Agriculture	64.0	58.0	61.1	62.0	55.0
Industry	14.0	17.0	12.8	10.1	14.0
Services	22.0	25.0	26.1	27.9	31.1

Source: World Development Indicators 2008.

Note: Employment by sector data 1960–80 from Boateng 1997, in Aryeetey and Fosu 2002.

Nonagricultural self-employment is difficult to estimate. According to the GLSS4 and GLSS5, more than 29 and 35 percent of rural households had income from nonagricultural self-employment in 1998/99 and 2005/06, respectively.⁸ Except for in large cities such as Accra and Kumasi where 28 and 35 percent of households have wage income from employment in the formal sector (private and public), the opportunities of participating in formal sector economic activities are small. Overall in the

⁷ SAT-3 (120 gigabytes), Glo One (640 gigabytes), Main One (640 gigabytes), West Africa Cable System (WACS) (5,120 gigabytes).

⁸ Authors' calculation using GLSS4 and GLSS5.

country the share of the informal sector in total employment is estimated to be around 80 percent and is characterized by relatively high labour market flexibility and high employment insecurity (World Bank, nd). This is a pattern common to much of sub-Saharan Africa (Kingdon, Sandefur, and Teal 2006).

Between the 1980s and 1990s, Ghana experienced a sharp decline in public sector employment and an increase in informal sector employment. The declines in public sector employment can be explained by the structural adjustment program that resulted in public sector retrenchment and withdrawal of subsidies to loss-making public enterprises, while increases in informal sector employment seem to relate to lack of job creation by formal industrial sectors. Indeed, Ghana appears to be in a phase of “informalisation” which includes “a shift within wage employment to lower paid jobs so average wage earnings may be falling even if wage rates for given types of jobs are not” (Kingdon et al. 2005, p. 20). More recent evidence however suggests that between 1992 and 2000 public sector employment increased by 39 percent and the share of the private sector in formal employment increased by 85 percent due in part to the improved performance of divested SOEs; free zone projects, GIPC investment program; and higher private sector earnings (World Bank nd).

In common with other sub-Saharan African countries, employment has lagged behind growth in working population: between 1984 and 2000, the labour force grew by 5.8 percent per year, economic growth averaged 4.5 percent per year, and employment in the formal sector grew at 3.1 percent (World Bank, nd). Ghana’s informal sector has absorbed much of the increase in labour supply such that recorded rates of unemployment are low (Kingdon, Sandefur, and Teal 2006). The unemployment rate has however increased from a low in 1988/89 of 0.8 percent to 10.4 percent in 2000. Unemployment rates were highest in Accra at 16.6 percent. In contrast, unemployment in rural areas is much lower at 5.5%. Ghana’s relatively high levels of unemployment among its most skilled labour force supports other evidence that Ghana does not have a relative skills shortage (Lejarra 2010).

Between 1984 and 2000, there was also a drop in the total labour force participation rate from 82.5 percent to 74.7 percent, reflecting a growth in the share of economically inactive population. In part, this change may be due to people continuing into higher education, as educational institutions offer free board and lodging in addition to free education (suggesting that individuals are being “pushed” into education because of a lack of economic opportunities, Aryeetey and Baah-Boateng 2007).

Linkages

Economic transformation typically involves increasing linkages between agriculture, manufacturing, and services, and between rural and urban economies. In this section we first explore the linkages between agriculture, manufacturing, and services in Ghana. We then address rural-urban linkages through migration and welfare differences across space.

Linkages between the sectors

Both production and consumption linkages between sectors are important for growth which can be enhanced by promoting sectors with larger intersectoral linkages (Andrae 1981). Consumption linkages are particularly important in the early stages of transformation when a majority of the population depends on agriculture for livelihood (Mellor 1976).

Here we present a quantitative analysis of the production linkages between Ghana’s agricultural, agro processing, other manufacturing, other industrial, and service sectors using the Ghana 2007 SAM (Table 5). Our analysis demonstrates that manufacturing and its subcomponent agro-processing, has the strongest backward linkages as each unit of production comprises 0.64 or 0.75 units of intermediate inputs respectively. Ghana’s agricultural sector, on the other hand, has the weakest backward linkages to the rest of economy, particularly to the industrial sector. This is not uncommon among the African countries (Stryker and Dumenu 1986; Jebuni, Asuming-Brempong and Fosu 1990; Ramatu and Egyir 2002), as agricultural production uses little intermediate input, which neither

stimulates demand for industrial goods nor new investments in downstream activities (Delgado et al. 1998).

Table 5: Input-output relationship in 2007 (value of sector's output = 1.00)

Input	Production:					Total inputs used by other sectors/sector output
	Agriculture	Agro-processing	Other manufacturing	Other Industry	Services	
Agriculture	0.09	0.35	0.08		0.01	0.13
Agro-processing		0.12	0.00	0.00	0.01	0.08
Other manufacturing	0.08	0.03	0.38	0.32	0.18	1.38
Other Industry	0.00	0.01	0.13	0.06	0.01	0.11
Services	0.19	0.13	0.17	0.04	0.27	0.25
Total input	0.36	0.64	0.75	0.42	0.50	

Notes: The table can be interpreted as follows. Each number in the table represents a sector's use of intermediate inputs from the various sectors required to produce a unit of this sector's output (the unit can be all normalized to a value term such as Cedi). The last row of the table displays the total use of inputs per unit of output across sectors. For example, for each unit of agricultural product produced by Ghanaian farmers, the intermediate inputs account for 0.36 of that unit, including the inputs produced by the agricultural sector such as seeds, those produced by the manufacturing sector such as chemical inputs, and services. The final column shows how much of a sector's output becomes intermediate inputs in the other sectors.

Source: Authors' aggregation using Ghana SAM 2007.

Agriculture in Ghana not only has weak backward linkages but also relatively weak forward linkages to provide inputs for other economic activities. Our analysis shows that only 13 percent of agricultural products (not necessarily produced domestically) are intermediate inputs in other sectors' production.⁹ The input-output relationship is further weakened in Ghana by both exports of agricultural raw material and globalization. We give two examples to illustrate this: cocoa and tomato. While the country has developed cocoa processing facilities – particularly under the Presidential Cocoa Processing Initiative –the capacity is significantly underused. Currently less than 10 percent of cocoa bean is processed locally, although the value of processed cocoa-based exports increased from US\$83.6 million in 2004 to US\$152.9 million in 2006 (Breisinger et al. 2008). The low utilization of local capacity is because of inadequate supply of cocoa as the country prefers to export beans of high quality that fetch a premium in global markets.

The linkage effect between agriculture and agro-processing can be undermined by international competition and tomato is one of such cases. Processed tomato in the form of tomato paste is an important food item for Ghanaian households both in rural and urban areas. Fresh tomato is an important cash crop for many farmers in the country. Since the 1960s the government has made intermittent efforts to promote tomato processing by setting up three plants soon after independence (Ablorh-Odjidia 2003; Robinson and Kolavalli 2010); and refurbishing two of these processors through public-private partnerships in the recent years. Processing converts an autarkic crop such as tomato into a tradable commodity subjected to international competition. Domestic processing has failed because productivity of fresh tomato is too low to ensure the processors a regular supply of tomatoes at a competitive price.

We turn our attention to consumption linkages in which farmers with increased income from agricultural growth actually increase their spending on non-agricultural goods and services. During the 1990s when the economy grew steadily, there were large increases in rural household expenditure that reflected a large reduction in rural poverty, particularly for female-headed households. Some argue that this was due to rapid growth in the rural non-farm sector that may not have been linked to

⁹ That the ratio is greater than 1 (in the case of other manufacturing) indicates the demand for other manufacturing products as intermediates is more than the production capacity of the country, and such demand has met by imports.

the agricultural sector (Anriquez and Daidone 2008; Canagarajah et al. 2001). [5] Between 1991/92 and 1989/89 non-farm self-employment increased its contribution to household income from 11.9 percent to 23.6 percent (Canagarajah et al. 2001). Overall, few linkages have been found between non-cocoa farm and non-farm activities in rural Ghana, reflecting in part non-farm activities as risk reducing strategies (Canagarajah et al. 2001).

However, cocoa does appear to have had a larger impact on economic transformation in Ghana through consumption linkages. Ghana's cocoa farmers have fared better than the rest of the agriculture-dependent population as a whole Household surveys indicate that poverty among cocoa producing households has dropped to 23.9 percent in 2005, down from 60.1 percent at the beginning of the 1990s (World Bank 2007, Vol. 3). Jedwab (2011) [6] finds evidence that cocoa's consumption linkages have driven urbanization in the cocoa belt, resulting in a rise of "consumption" cities driven by farmers, traders, and providers of other services, and based on agriculture and non-tradable services. These cities have less manufacturing and are less economically diversified than "production" cities and may not hold as much potential for sustained accelerated growth. The consumption linkage of cocoa also provides part of the explanation for why Ghana has experienced relatively high levels of urbanization within the cocoa belt but without economic agglomeration.

Rural urban linkages

An important element of economic transformation is the movement of people and resources out of agriculture and rural areas into services and industry in urban areas. In the initial stages, households may not move of rural areas but rather have some members transition into non-farm activities in rural areas. By the metrics of diversification and migration, Ghana's rural areas have experienced transformation. Ghana's rural households have diversified their livelihoods through rural to urban migration and through their increasing participation in the rural non-farm economy. But rural Ghana's diversification and migration appear to be more in response to distress rather than in response to new and improved non-farm opportunities (Ellis and Freeman 2004). Indeed, only asset-rich households appear to have successfully diversified in Ghana whilst asset-poor households tend to be pushed into non-farm activities to meet subsistence needs (Lay and Schuler 2007).

Internal migration

In Ghana, migration is due to both push and pull factors. Internal migrants are younger, less educated, and more likely to be male than the general adult population (Ackah and Medvedev 2010). Most migration has been from the rural south to the urban south with more than two-thirds of internal migrants coming from the southern regions and just 10 percent of the total internal migrants coming from the poorer three northern regions –they account for only 3 percent of the population in two of the three northern regions and 8 percent in the third. 75 percent of migrants come from rural areas and of these around 67 percent migrate to an urban area (World Bank 2010).¹⁰ In the Ashanti and Western regions, on the other hand, migrants account for more than 10 percent of the population (and a quarter of the adult population over 15) and in Accra more than 18 percent of the total population and 26 percent of the adult population (Ackah and Medvedev 2010).

The migration that does occur from the poorer rural north to the richer urban south is driven primarily by "push" factors, with migrants from the north being found to do not as well economically as those migrating from the south (World Bank 2010). These data suggest that north-south migration has not played a key role in poverty alleviation: the numbers of migrants are small; those that do migrate are driven by "push" factors rather than economic opportunities; and migrants from the north do not do as well economically as those migrating from the south (World Bank 2010).

¹⁰ Of the 25 percent of migrants that come from urban areas, 83 percent go to a different urban area

Differences in access to services and patterns of poverty

The government of Ghana has made significant efforts to support Ghana's rural areas, with investment in basic infrastructure (roads, water, and electricity) partly with the aim of encouraging people to stay in rural areas rather than migrate to the cities (Asmah 2011). Sustained rural electrification program has seen access to electricity in rural areas increase from 8.7 percent of households to 27 percent between 1991/92 and 2005/06. Similarly rural households have seen their access to potable water increase to 65 percent of households, compared with 88 percent for urban areas.

Fundamental differences in geography and ethnic diversity have been found to have important effects on local public service provision in Ghana (Akramov and Asante 2009). Districts in the coastal and forest zones have better access to local public services, and the more ethnically diverse a district the lower the level of access to public services, including drinking water. Explanations for the role of ethnic diversity include differences in tastes and preferences over the types of public goods, weak social capital, and local institutions that manage interethnic relations.

Many of Ghana's poor are found in cities although the poverty rates are low simply because of large urban population. Moreover, poverty has been increasing in Accra in recent years driven mainly by poor migrating to the city (Coulombe and Wodon 2007). But most of Ghana's poor live in the less-economically developed northern part of the country (Table 6).

In Ghana, the overall growth in inequality at the country level has been less pronounced than in many other African countries (Breisinger and Diao 2008). But within the country, poverty reduction has been spatially uneven: poverty is consistently lower in urban areas, and consistently lower in the south. The most rapid reduction in the proportion of poor has occurred in the rural south. This poverty reduction has been attributed to a combination of rural development and urbanization, including income creation outside of agriculture, predominantly in informal employment (World Bank 2010; World Bank 2007 and 2009).

Recently there has been increasing poverty in Accra, the latter thought to be driven mainly by push migration from other regions and an inability of the city's economy to accommodate all the migrants (Coulombe and Wodon 2007).

Table 6: Percentage of population classified as poor by location

	1992	1999	2006
Urban north	45.4	50.3	31.3
Rural north	74.2	82.4	68.5
Overall north	68.8	76.6	62.7
Urban south	25.7	16.1	8.9
Rural south	60.6	40.2	28.2
Overall south	47.9	31.3	19.8

Source: adapted from World Bank (2010) from GLSS data

In Ghana there is a strong correlation between regional poverty and poverty of access to infrastructure. Districts that have poor access to infrastructure also have lower welfare levels. Ghana's northern regions stand out along a number of dimensions, being poorer, less well educated, and less well connected to markets. There has been little urbanization – indeed between 1992 and 2006 the urbanization rate in the north actually fell from 19 percent to 16 percent. But per capita public expenditures in Ghana are not statistically different between districts in the north and south, due possibly to the national government's fiscal equalization policy (Akramov and Asante 2009).¹¹

¹¹ This is different from what is found, for example, in Cote D'Ivoire where the spatial pattern of poverty differs – in particular, there is not such a strong north-south poverty divide and has been attributed to more effective public service provision throughout the country and a surge in cashew nut exports (World Bank, 2010). Overall however there has been considerably less overall poverty reduction in Cote D'Ivoire (between 1993 and 2002) than in Ghana.

Barriers to integration between Ghana's north and south include weak infrastructure connectivity (roads, communication), regulatory barriers to trade and entry, lack of human and physical capital portability, and ethnic and linguistic divisions (World Bank 2010). This north-south divide can also be found in firm size and productivity, again reflecting poor connectivity, with northern-based firms more likely to have evolved from the informal sector and with north and south firms often using different production technologies.

Location of population and economic activities

Location of population

Rural and urban definition is often based on political status and administrative boundary and concentration of economic activities is not necessarily consistent with the defined urban areas. In this analysis, we apply the agglomeration index (AI) developed by Uchida and Nelson (2010) to provide an alternative to the United Nation's measure of urban concentration. This index is based on three factors: population density, population size of contiguous urban areas, and travel time to that urban center. While we consider different sizes of urban agglomerations with different thresholds for the total number of population in contiguous urban areas, we choose uniform measures for the other two factors. The threshold of population density to distinguish urban from rural is a population per km² of at least 150 persons, while the threshold for the travel time is less than or equal to one hour.

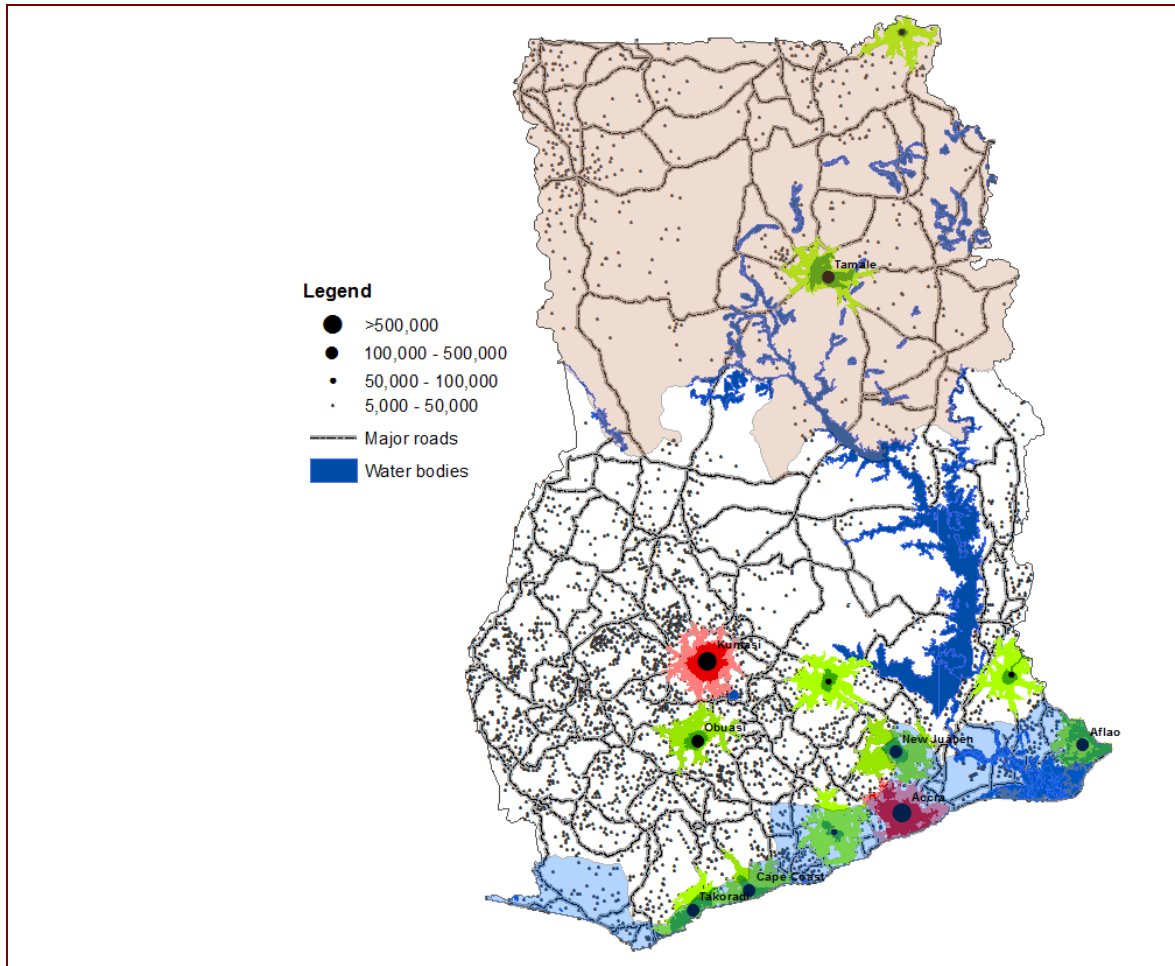
We consider two sizes of urban agglomerations: the large urban is defined as having a population of more than 500,000, the medium between 50,000 and 500,000. There are about 100 small towns in Ghana, each with urban population of 5,000-50,000 that we do not consider as agglomerations. With this definition, 37.2 percent of population was living in urban areas in 2001 including 8.3 percent living in small towns (see Appendix Table A.1). This share of urban population is significantly lower than the UN defined urban population, which was 45 percent of total population in 2001 (WDI 2009).¹²

In distinguishing rural from urban it is useful to understand the linkages between the two. On the basis of physical connectivity to the urban agglomeration centers, – reflected by travel time or condition of roads – we break down rural areas into urban peripheries and rural. Urban-peripheries are rural areas with similar traveling time to the closest urban agglomeration centers as those within the urban agglomerations. What makes them different from urban agglomeration is the population density, that is, their density is below the threshold of 150/km². Urban peripheries also include areas close to the urban agglomeration with population density as high as in the urban agglomeration, but without physical connection with the closest urban agglomerations. All other rural areas that do not meet the above two conditions – with travel time to the agglomeration centers longer than an hour and population density lower than 150/km² – are defined as rural.

Figure 4 shows Ghana's key urban agglomerations and peripheries (Appendix Tables A.1, A.2, A.3 provide summaries of population and population density). The largest urban category has only two mega urban agglomerations, Accra and Kumasi, each with population more than 1.5 million. The majority of urban population (about 56 percent) lives in these two large agglomerations with extremely high population density (2,500/km²). The medium urban category comprises 10 smaller urban centers with population of 50,000-500,000, where 22 percent of the urban population lives with an average population density of 626/km². The small towns in total have 8.3 percent of national urban population.

¹² We compare with 2001 in WDI because the population data we used in the analysis is from Landsat 2002.

Figure 4: Urban agglomerations and their periphery areas



Note: 1. In the figure, the areas with light blue color is the Coast, white is for rest of South, and light brown in for the North. 2. The areas with dark red color correspond to the two large urban agglomerations with population more than 500,000, and the areas with light red surrounding these two urban agglomerations are their periphery areas. The areas with dark green color correspond to the medium urban agglomerations with population between 50,000 and 500,000. The areas with light green colors are their periphery areas.

Source: Authors' calculation using agglomeration index method. The population data is from 2002 Landsat and the road data is provided by a research partner in Ghana.

Around the two types of agglomerations are vast areas that are well connected but have low population density, which are defined as the urban-peripheries. About 10 percent of the national population lives in the urban-periphery areas with a geographic area three times of the size of the urban agglomerations, indicating the potential for urban expansion. While population density is still low, at an average of 147/km² in such areas, it is much higher than that in rest of the rural areas (52/km²). Relatively high population density and better connection with urban-centers in the urban-periphery areas offer these areas more opportunities to develop economic activities both in the agricultural and nonagricultural sectors that can better take advantage of urban agglomerations. For example, they have the potential to develop intensive farming systems in high-value agriculture and the agro-processing to link agriculture with urban demand. In the rest of the rural areas, different agricultural development pathways will have to be taken. We will further assess whether such

potential is being realized using the recent two runs of Ghana living standard surveys, GLSS4 and GLSS5 in the following subsection.

Location of economic activities

In this subsection we examine whether economic activities are related to urban agglomeration. We focus on nonfarm incomes. As it is not possible to locate the households surveyed in each GLSS, we place the districts into the three agglomeration categories identified above. We investigate the role of nonagricultural income among different household groups by adopting the definition of non-agricultural income developed by Carletto et al. (2007), in which wage income and self-employment income are identified separately. We consider all households (both rural and urban) in the analysis.

Studies conducted at the firm level have shown that agglomeration can create economies of scale (see, for example, Melo et al. 2009, for a literature review). However, in the case of Ghana, nonfarm self-employment income is far more important than wage earnings in the agglomeration areas. Nonfarm self-employment activities which are often small in scale are dominant everywhere regardless the size of agglomerations. In terms of dynamics, share of nonfarm self-employment income increased most rapidly for the households in small towns, followed by medium urban area, but share remained the same for households in large urban areas (Figure 5). The share of wage employment however increased more in large agglomerations compared to the smaller ones.

Figure 5: Shares of non-agricultural wage and non-farm self employment income in total income by household groups



Notes: In the figure, the total income, including income from agriculture, non-agriculture, and transfers, is 100 for each individual group.

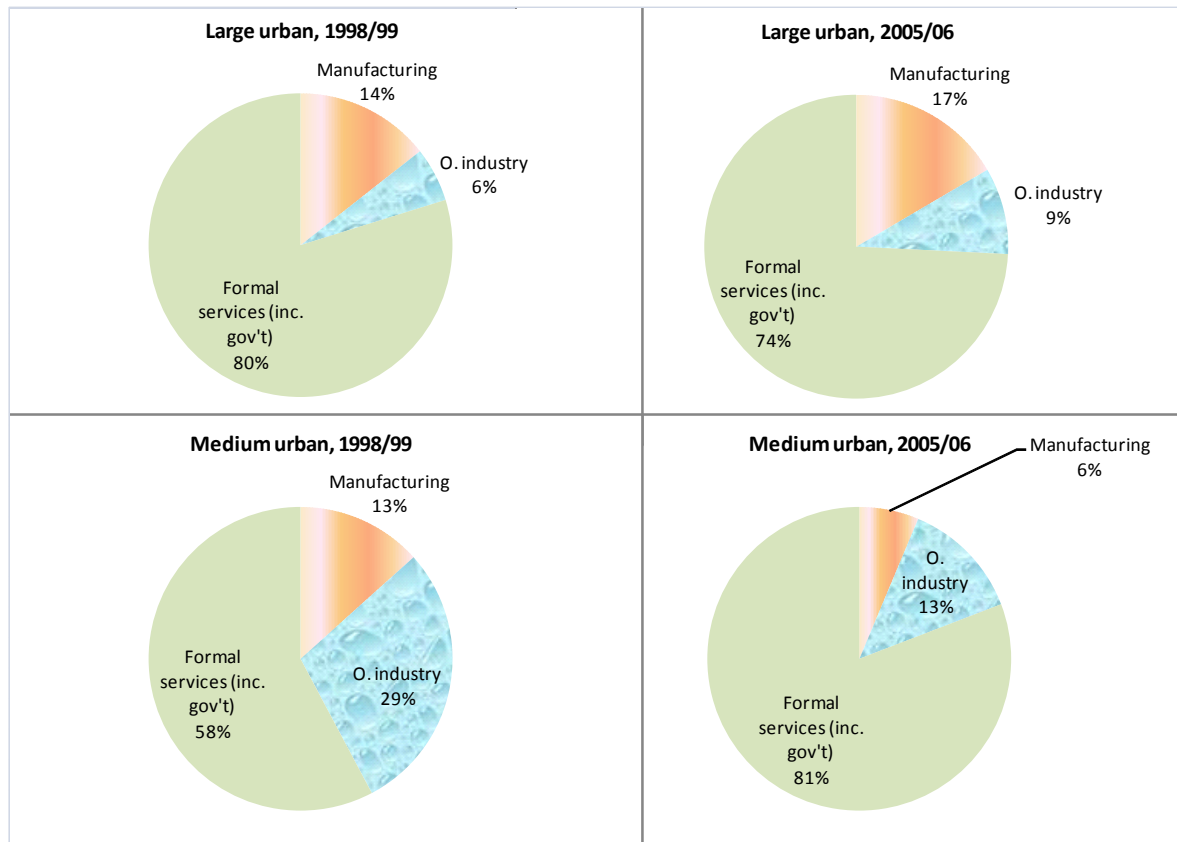
Source: Authors' calculation using GLSS4 and GLSS5

The investigation of the structure of wage income shows that services, including public services, dominate the formal economic activities in both large and medium agglomerations. In the large urban agglomeration, at least 75 percent of wage income is from formal services and government salaries, and manufacturing activities account for less than 17 percent in both survey periods. In the medium urban agglomerations, income share from formal services was below 60 percent of total wage income

in the first period, primarily due to the large share (30 percent) for the other industrial activities, in which more than two-thirds was from mining.

Comparing the two survey periods, dynamics in the sectoral structure of wage income are mainly driven by the changes in the shares for the other industry incomes including earnings from mining, urban utility and construction, rather than from the manufacturing sector. Only in the large urban has the share for the manufacturing wage income increased but modestly from 14.4 percent in 1998/99 to 16.6 percent in 2005/06. In the medium urban the share for the manufacturing wage income fell by more than half from 13.3 percent in 1998/99 to 6.3 percent in 2005/06 (Figure 6 and Appendix Table A.4). Thus, it seems that agglomeration has yet to create more jobs in the manufacturing sector, and has only provided job opportunities in the consumption-related services and industries (i.e. urban utility and construction).

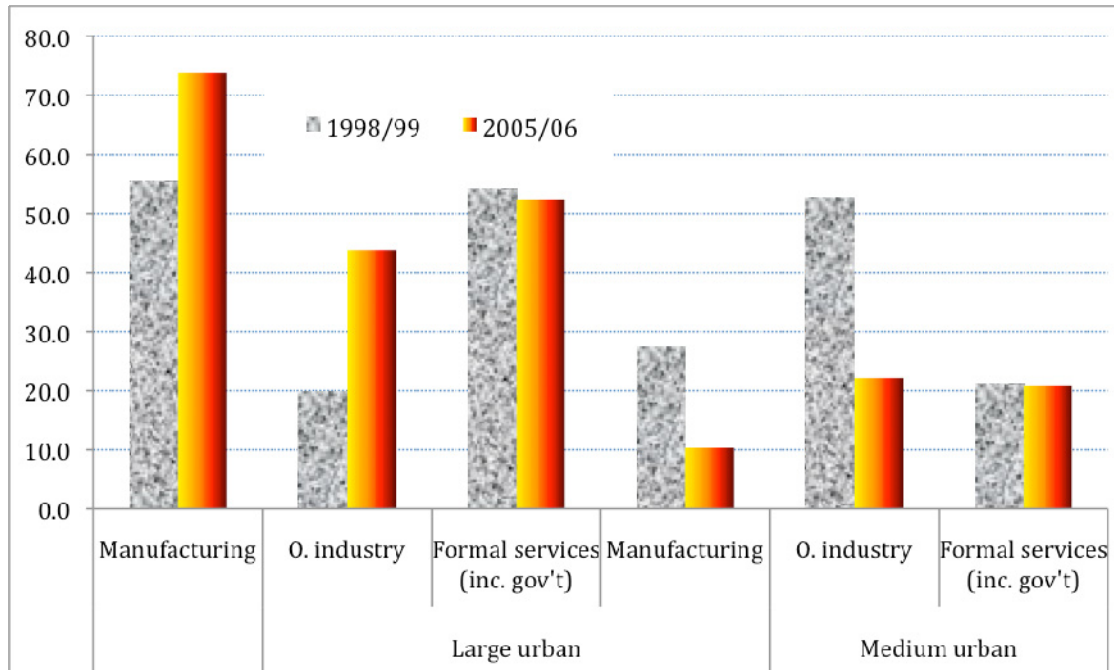
Figure 6: Structure of wage income in the large and medium agglomerations



Notes: In the figure, the wage income is 100 for the large urban and medium urban, respectively.
 Source: Authors' calculation using GLSS4 and GLSS5

Manufacturing is not necessarily clustered around large cities and location effect is often industry specific. Being close to the raw material producing areas can reduce transportation cost for the firms using domestically produced raw materials as inputs (e.g., agro-processing industry). We further investigate whether this is the case in Ghana and focus on the comparison between the large and medium agglomerations in Figure 7. It is not surprising to see that the formal services are mainly located in the large urban agglomerations, given that the central government and financial centers are located in the two large cities. However, the large urban is also far more important than the medium urban agglomerations for the manufacturing sector, in which the agro-processing is a very important sub-sector in Ghana. More than 50 percent of national manufacturing wage income was earned by households living in the large agglomerations in 1998/99 and this share further increased to almost 75 percent in 2005/06 (Figure 7).

Figure 7: Share of wage income by large and medium agglomeration (total sectoral wage incomes are 100)



Source: Authors' calculation using GLSS4 and GLSS5

In summary, the findings of this section indicate that urban agglomerations have indeed created more nonfarm income opportunities, as share of nonfarm income in total income is significantly higher for the households living in the urban agglomerations and their peripheries than in the other locations. The second finding is that the structure of households' nonagricultural income and its change are irrelevant to the economics of scale effect of agglomerations. Rather, the nonfarm self-employment activities, which are small in nature, are the dominant sources of nonagricultural income regardless the size of agglomerations. The third finding is that agglomerations have primarily created consumption-related nonfarm activities, and the service sector, regardless formal or informal, has been far more important than the other nonagricultural activities. In the case of Ghana the agglomeration and its economic implication are more related to the clustering of people – creating potential consumption market for goods and services -- rather than the clustering of manufacturing that offers agglomeration benefits in production. This conclusion is consistent with the stylized facts discussed in Section 2 at the sector level that the manufacturing sector's role in the economy has been stagnant over time and the declining agricultural share of GDP has been replaced by services.

Summary and conclusions

To conclude this chapter, we return to the three key issues that we highlighted at the start of this chapter: economic structure and location; the role of agriculture economic transformation; and patterns of urbanization and agglomeration. Economic transformation typically involves a falling share of agriculture in economic output and employment, a rising share of the population in urban areas, and an increase in the contribution of industry and services to economic growth. Under these metrics Ghana has experienced an economic transformation whilst reaching or close to reaching middle income status.

By the criteria of reduced share of agriculture in the economy and increasing share of the population in urban areas, Ghana appears to be a rapidly transforming country in Africa. Ghana is also one of a few African countries that will achieve MDG1 goals before the target year of 2015.

However, Ghana's transformation has not taken a path taken by most successfully transformed countries in Asia and Latin America. Reduced share of agriculture in the economy has been filled by services while manufacturing has stagnated and even declined to some extent. This may be because of weak backward and forward linkages of the agriculture sector. Technology adoption in agriculture that implies greater use of intermediate outputs and increase in land productivity might strengthen both backward and forward linkages, particularly through agro processing.

Ghana is one of the most urbanized countries in Africa, but the urban economic activities are dominated by those that may not benefit from economies of scale or agglomeration. Consumption-linkages -- emerging from production of cash crops such as cocoa and remittances from migrants -- explain the structure of urban employment opportunities. Production linkages continue to be weak and seem to be further weakened by competition from imports of raw material inputs. Lack of competitiveness of manufacturing emerging from labor markets, difficulties in obtaining land, and access to technologies or the costs of doing business may be preventing the emergence and growth of firms to benefit from agglomeration benefits.

With movement of people out of agriculture and into non-agricultural activities in urban areas, the value-added per worker in agriculture may increase in Ghana's transformation, reducing poverty among those in agriculture, thus strengthening the role of agriculture in reducing poverty -- although this would happen by pushing people out of agriculture. However, what the implications are of labor withdrawal on agriculture remains to be seen. Given the shortage of labor and the demand for mechanization, for land preparation in particular, the sector may require an infusion of capital to maintain and increase land productivity.

Measured by land productivity and the structure of agricultural economy, agricultural transformation appears to be limited. Cocoa is a success story in Ghana's agriculture and it continues to be the most important agricultural export product. While it has contributed to government revenue and foreign exchange earnings, its role in economic transformation seems rather limited. Its expansion has not created strong production linkages or has resulted in technological spillover into the rest of the agricultural sector.

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Appendix

Table A.1: Population and population density by different agglomeration categories

	Population (000)			Population share (%)			Area (km2)			Population density (person/km2)		
	Urban	Periphery	Rural	Urban	Periphery	Rural	Urban	Periphery	Rural	Urban	Periphery	Rural
Large urban (urban population >500k)	3,961	564		20.7	2.9		1,561	2,035		2,537	277	
Medium urban (urban population 50k- 500k)	1,560	1,279		8.2	6.7		2,491	10,505		626	122	
Small towns and rest of the country	1,594		10,167	8.3		61.5	1,923		196,979	829		52
Total	7,116	1,843	10,167	37.2	9.6	61.5	5,976	12,540	196,979	1,191	147	52

Source: Authors calculation using agglomeration index and Landscan data (2000)

Table A.2: Number of households classified in different locations and agglomeration categories

	Coast			Other South			North			National			National total
	Urban	Periphery	Rural	Urban	Periphery	Rural	Urban	Periphery	Rural	Urban	Periphery	Rural	
1998/99													
Large urban	839	20	0	380	320	0				1,219	340	0	1,559
Medium urban	440	539	0	140	440	0	80	120	0	660	1,099	0	1,759
Small urban/ rest of country	20	0	220	460	0	1,440	60	0	480	540	0	2,140	2,680
Total	1,299	559	220	980	760	1,440	140	120	480	2,419	1,439	2,140	5,998
2005/06													
Large urban	1,272	30	0	643	390	0				1,915	420	0	2,335
Medium urban	449	450	0	225	480	0	180	345	0	854	1,275	0	2,129
Small urban/ rest of country	90	0	285	714	0	1,755	150	0	1,229	954	0	3,269	4,223
Total	1,811	480	285	1,582	870	1,755	330	345	1,229	3,723	1,695	3,269	8,687

Source: Authors' aggregation using GLSS4 and GLSS5

Table A.3: Share of population in different locations and agglomeration categories

	Coast			Other South			North			National			National total
	Urban	Periphery	Rural	Urban	Periphery	Rural	Urban	Periphery	Rural	Urban	Periphery	Rural	
1998/99	12.2	0.2	0.0	6.7	3.5	0.0				18.8	3.7	0.0	22.5
Large urban	5.8	9.2	0.0	1.9	6.5	0.0	1.9	2.8	0.0	9.6	18.5	0.0	28.0
Medium urban	0.2	0.0	3.7	6.9	0.0	25.4	1.4	0.0	11.9	8.4	0.0	41.0	49.4
Small urban/ rest of country	18.2	9.4	3.7	15.4	10.0	25.4	3.3	2.8	11.9	36.8	22.2	41.0	100.0
Total													
2005/06	14.2	0.4	0.0	5.6	4.6	0.0				19.8	5.0	0.0	24.8
Large urban	4.1	5.8	0.0	2.6	6.1	0.0	2.1	4.8	0.0	8.7	16.7	0.0	25.4
Medium urban	1.0	0.0	3.1	8.8	0.0	23.4	1.1	0.0	12.4	10.9	0.0	38.9	49.8
Small urban/ rest of country	19.2	6.1	3.1	17.0	10.8	23.4	3.2	4.8	12.4	39.4	21.8	38.9	100.0
Total	12.2	0.2	0.0	6.7	3.5	0.0				18.8	3.7	0.0	22.5

Source: Authors' aggregation using GLSS4 and GLSS5

Table A.4: Share of self-employment income by location

	1998/99 (GLSS 4)			2005/06 (GLSS 5)		
	Manufacturing	O. industry	Services	Manufacturing	O. industry	Services
Large urban	21.9	3.7	74.4	17.9	2.3	79.8
Coast	22.0	5.8	72.2	19.2	1.9	78.9
Other south	21.8	0.9	77.3	16.4	2.7	80.8
Medium urban	23.4	4.6	72.0	32.6	2.8	64.6
Coast	28.9	4.4	66.7	36.0	1.2	62.7
Other south	12.4	6.2	81.4	37.6	6.3	56.1
North	11.2	0.0	88.8	17.2	1.1	81.8
Small urban/rest of country	27.8	3.0	69.2	31.9	1.4	66.6
Coast	44.6	7.7	47.7	30.2	0.7	69.1
Other south	27.7	2.5	69.8	30.7	1.4	68.0
North	11.2	0.0	88.8	39.5	2.4	58.1
Total	23.9	3.7	72.4	26.5	2.1	71.5

Note: Total nonfarm self-employment income at different locations equals 100.

Source: Authors' aggregation using GLSS4 and GLSS5

Classification rules to define a household according to the three agglomeration categories

We place individual districts of Ghana into the three agglomerations mentioned in Section 3, as it is not possible to locate the households surveyed. The districts are classified using the following rules: (1) If a district contains certain numbers of pixels that belong to the large urban agglomeration, we define this district as part of the large urban category and group all urban and rural households in this district into 'urban' and 'periphery', respectively. (2) If a district does not contain any pixel that belong to 'large urban' but has pixels belong to 'medium urban', we define this district as part of the medium urban and group all urban and rural households in this district into 'urban' and 'periphery', respectively. That is, we do not allow a district to have rural households other than those in periphery if this district's urban households are part of 'large urban' or 'medium urban'. (3) For the rest of districts that do not have any pixel in either 'large urban' or 'medium urban', we group them in 'small town plus rest of the country'. In this case, the rural households are still called 'rural' (i.e. rural outside the periphery). For a few districts where the majority of households are urban and majority areas are part of the large agglomerations according to the agglomeration analysis, we consider all households of such districts as urban households in both surveys. See table A2 for the number of households of GLSS4 and GLSS5 assigned to the three regions and three agglomeration classifications, while table A3 reports the weighted population share for each category.