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Does the Declining Share of Agricultural Output in GDP Indicate Structural Transformation? The Case of Ethiopia

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Abstract: It is not uncommon that different government officials and practitioners infer the falling agricultural share in GDP to the underpinning of structural transformation in an economy. By using various studies result and a time series of data spanning from 1981 up to 2017, this paper investigated, whether the declining share of agricultural output in GDP is indicating structural transformation or not in Ethiopian economy. The study showed that the service is the fastest-growing sector in Ethiopia, and it covers more than 40% of GDP. The share of agriculture sector was 45% of GDP until 2011, while the industry sector has been stagnating. Thus, it shows how the falling share of the agriculture sector in GDP is being superseded by the service sector. Empirical works also reveal that even though the share of the agricultural sector in GDP is falling, it is the primary source for the overall economic growth of Ethiopia. The share of the rural population has decreased from 89 percent in 1981 to 80% in the year 2017. So the vast population of the country is living in rural areas where agricultural-based activities are common. Lack of labor shift from the agricultural sector to the industrial sector can also be attributed to the insufficient expansion of the modern industrial sector to absorb the growing force labor. Furth more, the demographic transition also showed a relative decline. Since structural transformation involves several interrelated processes, the declining share of agriculture output to GDP alone cannot explain the prevalence of structural change; the other processes like; industrialization, urbanization, and demographic transition need to be scrutinized.

Keywords: *Agricultural output, structural transformation, industrialization, urbanization, demographic transition.*

1. Introduction

Background of the Study: The process of economic development in an economy results in distinct structural changes. As the country progresses, a shift in the economic activities and policy focus occur away from the agricultural to the industrial and service sectors (Naval, 2016). The path of economic development also leads to structural transformation, and shrinking of the significance of the agricultural activities, and the growing domination of industry and service activities. Under this pattern, the structure of the economy is dominated by agricultural production at the beginning of the development process. At the next stage, the industrial sector becomes the dominant, and finally, the service sector leads, in terms of the percentage share of employment and GDP. All the while, the aggregate productivity level measured by per capita income increases. According to Tadele, (2003), the economies of developing countries (including Ethiopia), are characterized by the dominance of the agricultural sector, while the modern industrial and service sectors are almost underdeveloped. Hence, the economic growth and development of these countries are closely linked with the development of the agrarian industry. The agricultural sector in the Ethiopian economy covers about 35.8 percent of GDP, whereas the industrial and service sectors take 42 and 22.2 % of GDP, respectively.

However, about 70% of the total population of the country is still engaged in agricultural and related activities, but services have surpassed agriculture as the principal source of GDP (trading economics, 2018). Consequently, most emerging economies, as well as Ethiopia, have adopted an over-all development strategy, known as agricultural development, led industrialization (ADLI) (Tadele, 2003). The Strategy uses agriculture as a catalyst for the development of the industrial sector in particular and, the overall economic growth in general (Rahel, 2003). As countries advance, labor shifts from agriculture to other sectors, such as manufacturing and services—structural transformation (ADR, 2015). As such structural transformation is a critical precondition for economic growth and social development. Structural change through its impact on labor productivity plays a significant role in encouraging economic growth, generating employment opportunities, and raising the standard of living (Pedro, 2014). The underpinning force behind structural change is the improvement of productivity in the modern sector, and characterized by the shift of the workers

from low productive and labor-intensive activities to high productive and capital intensive ones (Seid, 2015; UN, 2018; Zerihun, 2014).

In the early stages of development, agriculture is often the main focus. There are customary characteristics of structural transformation in an economy. According to Timmer et al. (2012), the four persistent and interrelated processes that describe the structural transformation are; a declining share of agricultural output to GDP and employment, the rapid process of urbanization (rural-urban migration of peoples), the expansion of modern industrial and service sectors in the economy and a demographic transition from high birth-rate death-rate, to low birth rate death rate. It is not uncommon that in Ethiopia, different officials and scholars associate the declining agricultural share in GDP with the presence of structural transformation in the economy. Therefore, studying and understanding of the nature of structural change provides a clear perspective for policy-making processes. Hence, this study tries to evaluate the common indicators of structural transformation with the performance of the Ethiopian economy using a time series data. The paper has three sections. The first section comprises the background of the study, objective of the study, data & methodology, and conceptual framework of the study. The second section includes definitions, concepts & processes of structural transformation and Structural transformation in Ethiopia. And the last section is the conclusion and recommendation part.

Objectives of the Study

The objectives of the study are to:

- ✓ See whether the declining agriculture to GDP share indicate structural transformation or not
- ✓ Evaluate the agricultural, industrial and service sectors performance in the last 37 years
- ✓ Assess the status of demographic transition in Ethiopia

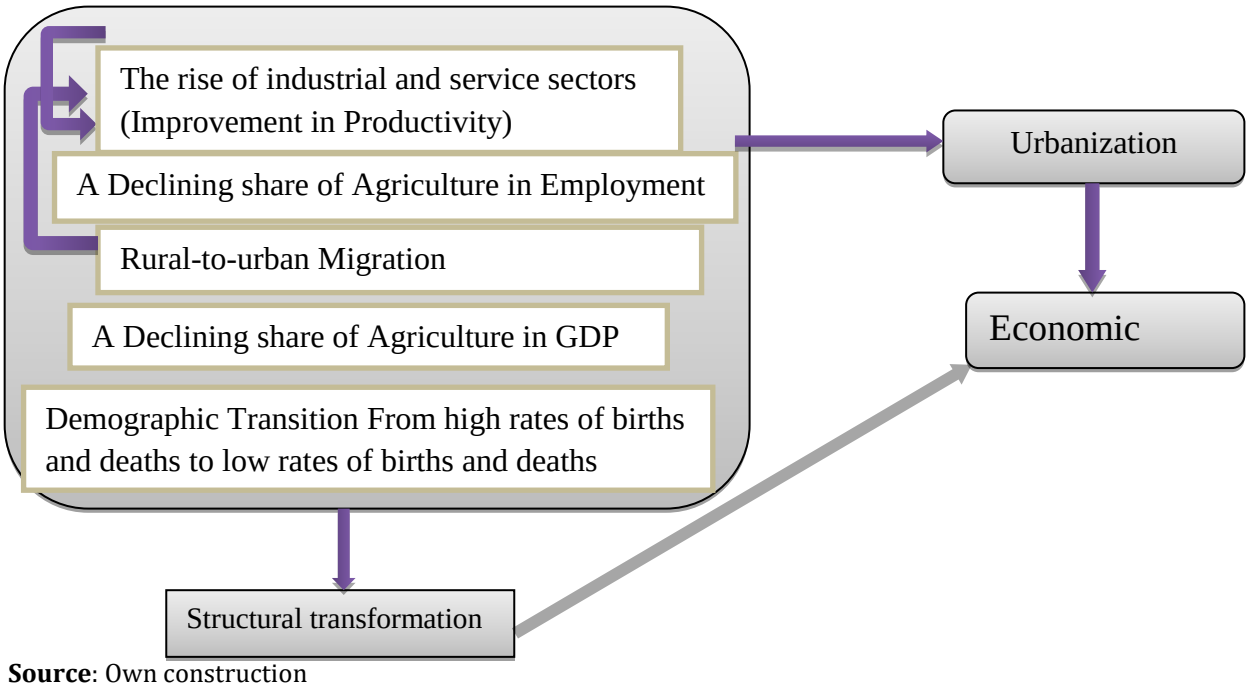
2. Data Type, Data Source, and Methodology of the Study

The data employed in this paper are secondary and collected from the World Bank and the Ministry of finance and economic cooperation (MoFEC) of Ethiopia, ranging from 1981-2017. The study period is selected based on the availability of the relevant data—most of the time series data for Ethiopia starts from 1981 onward. The data for sectoral GDP's are based on the 2011 year constant price. The study also used different studies result related to economic growth, structural transformation, employment, and population. Besides, this paper has used different analytical methods such as; trend analysis, charts, and graphs.

3. Conceptual Framework of the Study

There are four essential, integral, and interrelated processes that define structural change in any economy. These are; a declining share of agriculture in national output and employment, rural-urban migration originated by development in rural and urban areas, the growth of industrial and service sectors, and a demographic transition from high rates of births and deaths to low rates—associated with improvement of health standards (Timmer et al., 2012; Tadele, 2015; UN, 2018).

Figure 1: Conceptual Framework of the Study



Source: Own construction

These processes are interrelated and have a cumulative effect on each other in health standards and facilities moves the demographic transition from high rates of birth and death rates to low rates of births and deaths. The rise of modern industrial and service sectors results in the reduction of the relative role of the agricultural sector in terms of employment, production, and foreign exchange earnings. In addition to this, it also leads to urbanization and rural-urban migration, which will further increase the development of the modern sectors. Thus, the ultimate result is the overall economic development.

4. Results and Discussion

Definition and Concepts

Agricultural Transformation: Agricultural transformation is an essential part of the structural change, in which an increasing share of GDP and employment are generated by industrial and service sectors. The structural change within agricultural sector can be characterized by; the relative decline of primary agricultural activities, the growing importance of agri-business activities, and the increased share of agricultural commodities in international trade (Rahel, 2003).

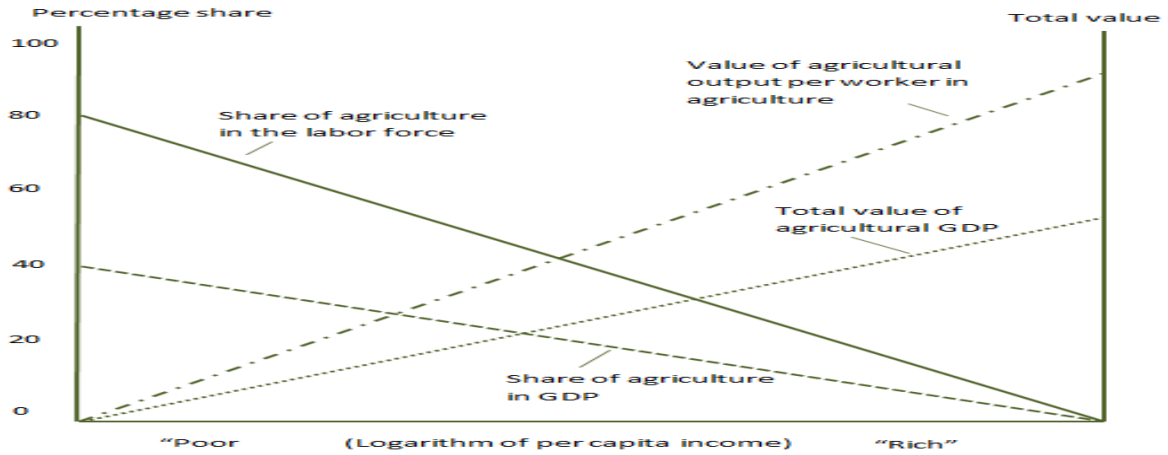
Structural Transformation: Structural transformation defined as, the reallocation of economic activities across sectors of the economy in a way that could encourage the process of economic development. It a shift of productive resources and policy attention from agricultural to industrial sectors, from the traditional activities to modern activities and from low productivity and limited technology for high productivity and advanced technology (Seid, 2015; UN, 2018). The notion behind the structural transformation is the improvement of productivity in modern sector. Structural transformation is also considered as the shift of the workers from labor-intensive to capital-intensive activities (UN, 2018). Therefore, it is the essential characteristic feature of the development process; it is both the cause and the effect of economic development (Timmer et al., 2012).

Processes of Structural Transformation: Structural transformation has four essential, integral, and interrelated processes. These are; a diminishing share of agricultural production in national output and employment, rural to urban migration following the advancement of rural and urban areas, the growth of modern industrial and service sectors, and a demographic transition from high rates of births and deaths to

low rates—related with improvement of health standards (Timmer et al. (2012); Tadele (2015); UN, 2018). Consequently, structural transformation entails both economic and social transformation (Tadele, 2015).

Schematic Illustration of the Structural Transformation: Timmer et al. (2012) developed a diagram (figure) to demonstrate the structural transformation based on agricultural sector transformation. The Figure illustrates the dynamics of structural change. Although, it shows the share of agricultural labor force in the total labor force, and the contribution of agriculture to GDP, both declining—until parity is reached when, a country is rich—the genuine interaction between the two shares determined by the speed of change outside of agriculture sector.

Figure 2: Schematic Illustration of the Structural Transformation



Source: Timmer et al. (2012)

The figure 2 also shows, a basic, but often missed element about the failure of agricultural sector to grow as fast as the rest of sectors in the economy, and thus, to decline as a share of GDP & labor force. The figure emphasizes the power, predictability, and ambiguous nature of structural change. The crucial point is, therefore, the faster the structural transformation, the faster the decline in the share of the agricultural sector (both GDP and employment). The paradox is that, when the structural change is accelerated, the rural productivity-which is proxied by rural labor productivity, rises. The above dynamics designates that any strategic efforts aiming to raise the agricultural labor productivity and reduce poverty have to certainly incorporate the sustaining structural transformation process and its requirements as the basic framework (Timmer et al. (2012). According to Raian (2016), the agricultural structural transformation has been featured by three interconnected processes. First, enhancements in the agricultural productivity, second, change in composition in agricultural production; agricultural products changed from subsistence products to cash crops, from food staples to intermediate inputs, and from low-value and low-risk to high-value and high-risk varieties. This change can be revealed by the evolution of agricultural commodities in global markets. The third one is change in the way of agricultural commercialization. Commercialization will happen, when, the agricultural market transactions become more cohesive with the rest of the economy, uses financial sources, and more concerned with international trade. Even though the decline in the share of agriculture in GDP, agri-business has expanded in most developing countries.

Measures of Structural Transformation: According to Tadele (2015), there are two types of Indicators of economic performance; at the aggregate level and the sectoral level. GDP per capita and some measure of productivity (e.g., labor productivity) are used to evaluate the aggregate level of economic performance in contrast most three most common measures of structural transformation at the sectoral level include: the shares in Employment, value-added contribution, and the share in final consumption expenditure. From the sectoral level, the two most apparent measures of structural transformation are the employment shares and value-added shares of sectors in the overall employment and GDP. Employment shares are computed by using the total number of workers (or hours worked) by industry in a specified time. The value-added shares can be expressed in either nominal shares, in constant prices, or real shares.

Structural Transformations in Ethiopia: In the previous section, we have seen the processes, indicators and measurements of structural transformation. In this section, we will evaluate the performance of the Ethiopian economy, and structural transformation based on the framework that we have set.

The Performance of Ethiopian Economy under Different National Growth Plans: Ethiopia has been exerting efforts in laying foundations to transform its economy in the two decades since the mid-1990s (MoFED, 2010). Different policies such as sustainable development & poverty reduction program (SDPRP), Plan for Accelerated and Sustained Development to End Poverty (PASDEP), Growth and Transformation Plan one and two (GTPI and GTPII) have been implementing. The SDPRP, which had been implemented from 2002/3-2004/5, encouraged agricultural development and poverty reduction efforts in rural areas. The main objective of the PASDEP was to lay out the directions for sustained, accelerated, and people-centered economic development as well as to concrete the groundwork for the attainment of the MDGs by 2015 (MoFED, 2010). Ethiopia's first Growth and Transformation Plan (GTP I) was a medium-term strategic framework for the 5 years period (2010/11-2014/15). GTP I was the third national plan, next to sustainable development and poverty reduction program (SDPRP), and Plan for Accelerated and Sustained Development to End Poverty (PASDEP).

The major principles of Growth and Transformation Plan One (GTP I) were, to sustain faster and impartial economic growth, upholding agricultural sector as a significant source of economic development, creating favorable environment for the industry to play vibrant role in the economy, expanding and improving quality of infrastructure and social development, building capacity and deepen good governance, and promote women and youth empowerment (MoFED, 2010). The second growth and transformation plan (GTP II) is the fourth national plan, which is to be implemented from the year 2015/16 to 2019/20. The principal objective of GTP II is, to maintain the fast-tracked economic growth and enable economic structural change and thereby realizing the national vision of becoming a lower-middle-income country by 2025. There is no significance difference between GTP I and II in terms of the objectives, and directions of the plans (NPC, 2016). And these last two, Growth and Transformation Plans (GTP), outlined an aspiring development strategy to transform the country into a 'middle-income' status by 2025 under the guidance of a robust developmental state (Fantu, 2016) modernizing the agriculture sector, expanding of the industrial with a primary focus.

On light manufacturing, and a substantial shift in export performance are at the core of GTP II. In the GTPII period, agriculture also will remain the chief driver of rapid and inclusive economic growth, and it is also expected to be the main source of growth for the other productive sectors (NPC, 2016). In this sub-section, the study tries to compare the performance of the Ethiopian economy under different national plans since 1991. Basically, SDPRP aimed to promote agricultural development and reduce poverty incidence particularly in the rural areas through strengthening agricultural extension services. GTP I and II intended to sustain faster and equitable economic growth by maintaining agricultural development as a significant source of economic growth, creating favorable environments for the industry to play key role in the economy and thereby realizing the national vision of becoming a 'lower-middle-income country' by the year 2025. Table 1 shows the average value-added share of sectors under the three consecutive national plans. Accordingly, the performance of the economy under GTP is higher than SDPRP and PASDEP. Notably the service sector has surpassed the agricultural sector in terms of gross value added. It is nearly two times of PASDEP and three times of SDPRP performances.

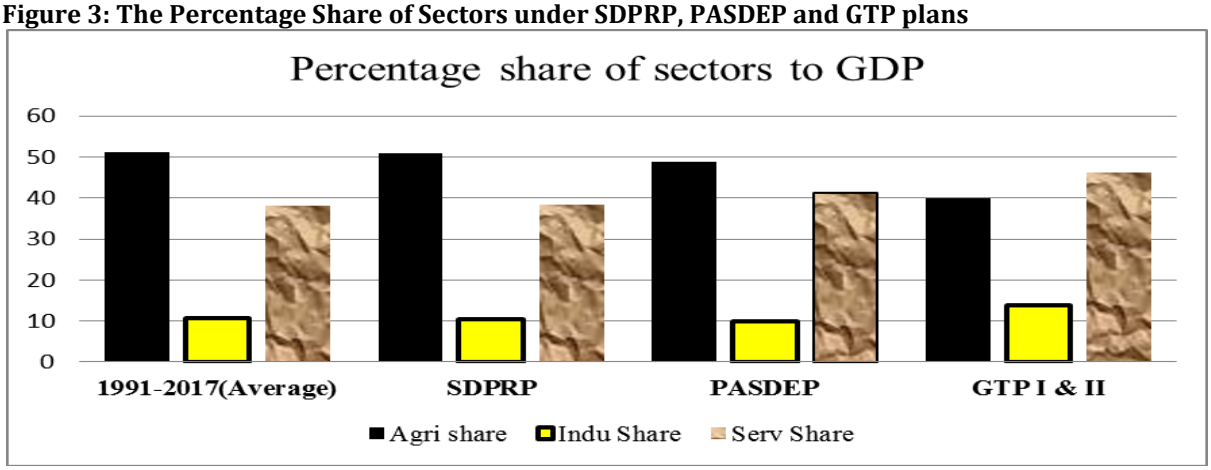
Table 1: The Average Value Added of Sectors under SDPRP, PASDEP, and GTP

Growth plans	Implementing Year	Value-added (In million birr)			
		Agriculture	Industry	Service	GDP
SDPRP	2002/3 to 2004/5	114609	23643.7	86062.5	224315
PASDEP	2005/6 to 2009/10	169940.8	34446	144968.4	349355
GTP I & II	2010/11 to 2019/20	250936.6	91349	294048.6	636334
1991-2017(Average)		152937.3	39432.7	137054	329424.9

Source: Authors computation

The industrial sector also expanded under the GTP[1] plans. Its performance is three times of PASDEP and four times of SDPRP performances. However, compared to the other two sectors, the industrial sector covers the smallest portion of the economy, as portrayed by the percentage share to GDP. The average agricultural GDP under SDPRP was 114609 million birr. The sector has shown a decent performance under SDPRP and GTPs by contributing an average value-added of 169940.8 and 250936.6 million birr, respectively. The overall economy, as measured by GDP, also has an excellent performance under GTP. It is just double of the average performance of the economy under the free market economy (1991-2017). As the economy getting expanded, the relative importance of the agricultural sector declines and the industrial, and service sectors start leading the economy. The declining share of the agricultural sector to GDP, especially in low-income countries, could be a signal of healthy performance of the economy, but not always right. Figure 3 shows the average percentage shares of sectors to GDP under each national plan periods of the current regime.

Figure 3: The Percentage Share of Sectors under SDPRP, PASDEP and GTP plans

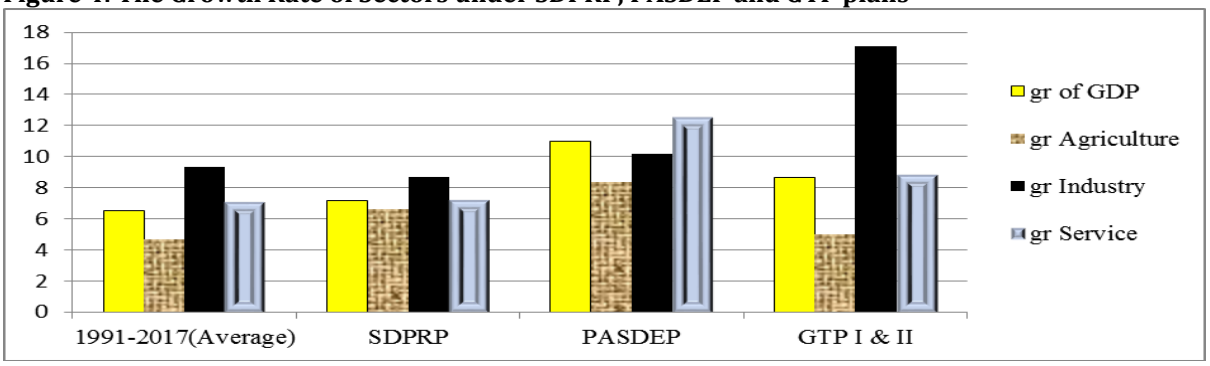


Source: Authors' computation

At the time of SDPRP, the percentage share of the agricultural sector to the national GDP was high; it was covering more than 50 percent of the GDP on average. According to Naval (2016), the experience of most industrialized countries of economic development followed a sequence of sectors; through, agriculture to industry and from industry to service sectors. But the industrial sector was only covering 10.5 percent of GDP on the average. During the PASDEP period, the average percentage share of the industrial sector also was low while the agricultural and the industrial sector covers 49 and 41 percent of total GDP, respectively. The percentage share of service sector to GDP also was higher in the PASDEP era than its contribution under SDPRP. Under GTP, the percentage share of the service sector surpassed the share of the agricultural sector in GDP. The average percentage share of the service sector to GDP under GTP is 46, whereas the agricultural and the service sectors' is 39 and 14 percent, respectively. Compared to the average (1991-2017), the average percentage share of service and industrial sectors to GDP is higher, while the percentage share of the agricultural sector is lower. Therefore, under the GTP plans the economy undergoes some signals of structural transformation, at least the share of the agriculture sector to GDP is falling.

[1] Here the author computed GTP I (2011-15) and GTP II (2016-20) as one National plan, since GTPI and GTP II are more or less the same in principle.

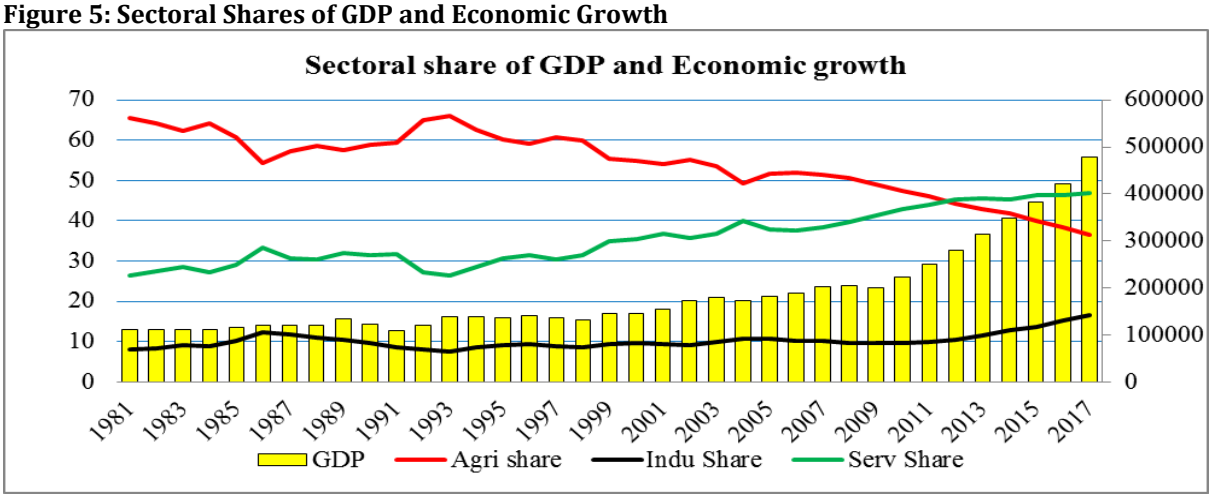
Figure 4: The Growth Rate of Sectors under SDPRP, PASDEP and GTP plans



Source: Authors computation

Figure 4 shows the average growth rate of GDP, agricultural, industrial, and service sectors' under SDPRP, PASDEP, and GTP plan periods (the vertical axis shows the growth of sectors in percentage). Accordingly, the average growth rate of GDP, agriculture, and service sectors under PASDEP plan was the higher compared to any of the other growth plans, including the average (1991-2017). The average growth rate GDP under PASDEP was 11 percent per annum, which is a significant enhancement for the economy. However, during this period, the contribution of the agricultural sector was lower than its share during the SDPRP period. In the same Growth plan period, the average growth rate of the service sector was 12.6 percent per annum. The underlying intention behind GTP I and GTP II is nurturing industrialization through close linkage of industrial and agricultural sectors in the way the agricultural sector provides some encouraging backing to the industry sector. Under this national growth plan period, the industrial sector registered the highest average growth rate, which was 17.1 percent annually. If this flourishing of the sector continues, the country would have to join the middle-income countries by 2025.

Figure 5: Sectoral Shares of GDP and Economic Growth



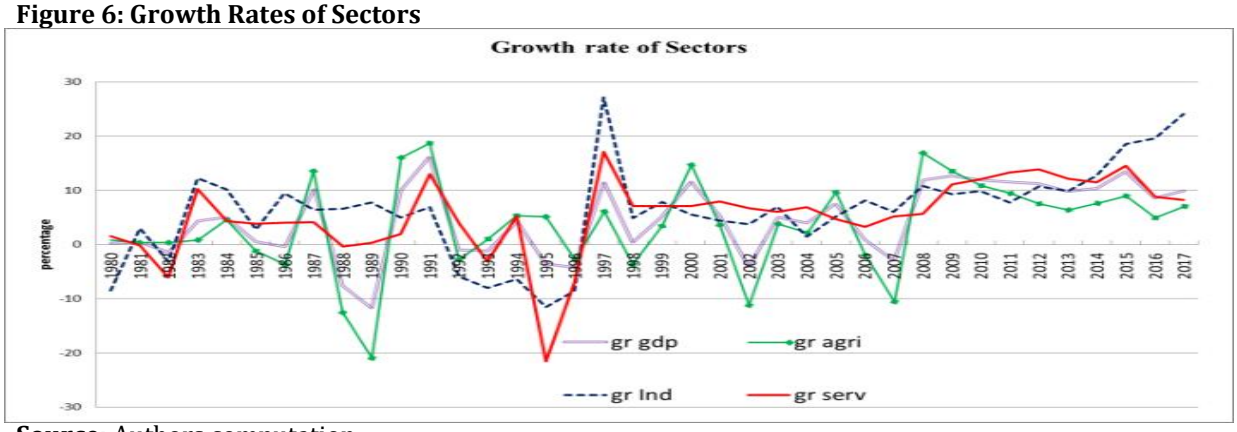
Source: Authors computation

Economic Growth and Sectoral Value-Added Share: as per the ministry of finance and economic cooperation MoFEC, (2010), the Ethiopian economy is classified into agricultural, industrial, and service sectors. Figure 5 depicts the percentage share of sectors to the national GDP and economic growth rate over the study period. In the figure, the left-hand vertical axis denotes the percentage, and the right side vertical axis shows the level GDP (In a millions of Birr). The percentage share of the agricultural sector in GDP was the highest until the year 2011—it was covering more than 45%. However, starting from the year 2011, the service sector became the prime, while the industrial sector in somehow has been fluctuating between 7 and 14 %. As the figure depicts, the economy (GDP) has been increasing over time, especially starting from the year 2003 onwards. Along with, the percentage share of the agriculture in GDP has declined, while the share of the service sector has increased. It is because different service sub-sectors, such as; trade, hotel, banking

and insurance, health institutions, education and training centers, transport services, tellecomunication, infrastractures, and tourism services are in the course of expansion, following the economc growth and increased oppeness. The percentage share the agricultural sector in GDP, has thus been declining, especially starting from the year 1992.

Generally, economic growth is supplemented by a declining share of agricultural output in GDP and the workforce, with equalization in agricultural factor incomes and productivity to those of other sectors at a relatively late stage of development. Despite a declining share of agricultural output in GDP, agricultural output would retain rising through the process in absolute terms. This result is consistent with Timmer et al. (2012)0 study-the average share of agriculture in GDP and the labor force have been declined in Africa. However, whether this sectoral change is as a result of structural changes of the economy or not, is uncertain. Besides, in most African countries, the additional agricultural product expansion is primarily realized through the extension of agricultural lands and increased workforce supply, not through advancement in technology or intensive use of land and labor (IMF, 2013; Timmer et al., 2012)0. Thus, it further guarantees that, the share of sectors alone does not describe the real structural transformation. According Diao (2010), to over the last two centuries, increases in income have been related to decreases in the share of output and employment in the agriculture, and increases in share of employment and output in the service sector.

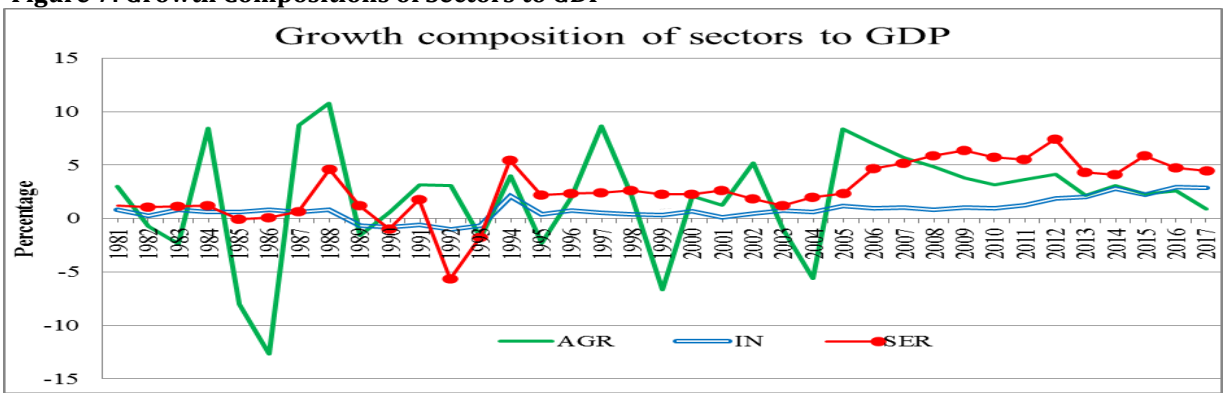
Figure 6: Growth Rates of Sectors



Source: Authors computation

Figure 6 portrays the GDP growth rate and its components starting from the year 1981 up to 2017. The industrial and service sectors have registered a slight negative growth rates as compared to the agricultural sector. The rate of growth of agricultural sector is fluctuating over the study years this is, because the sector is traditional and rain-dependent—this paves the way to recurrent drought and famine. The growth rate of the agricultural sector in 1985, 1989, 1998, 2002, and 2007 was negative; this is due to the occurrence of severe drought. The growth rate of GDP is contributed by the agricultural, industrial and service sectors. As figure 7 displays, the agriculture sector has been provided most growth rate of GDP up to the year 1999. Starting from 1999, the service sector has started to provide the most growth rate to GDP. This is because the role sectors have shifted from agricultural to the service sector. In 1985, the growth rate of GDP contributed by the agricultural sector, though it was negative, was higher. In this year, one of the greatest famines in Ethiopia history, which has retarded the economy, has occurred. However, since much of the employment opportunities and foreign exchange earnings come from the agricultural sector, the declining share of agriculture in GDP doesn't mean, the role of the sector is diminishing (the relative importance of the sector is still crucial).

Figure 7: Growth Compositions of Sectors to GDP

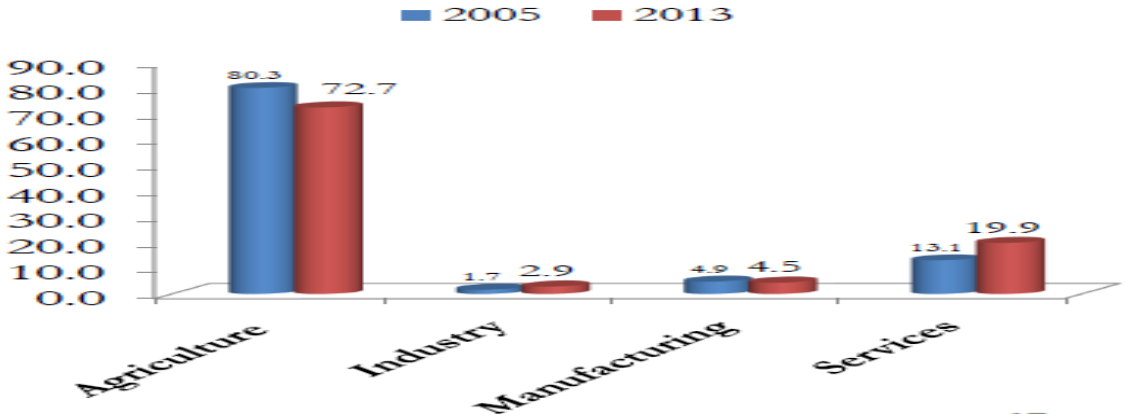


Source: Authors computation

In the period of 1990 and 1992, the rate of growth in GDP contributed by industrial and service sectors was negative; this is probably due to, the civil war in Ethiopia had reached the pick, and secession of Eritrea—which undersized the industrial and the service sectors of the economy.

A Declining Share of Agriculture in Employment: The basic premise of structural transformation is that the role of the agricultural sector is being substituted by the modern sector (industry and service sector) (Badiane, 2012; James, 2016). However, sometimes economies have caught by premature-industrialization (deindustrialization). This means the role of agriculture replaced by the service sector (which is considered as no value addition). Figure 8 shows the comparisons of the employment share of sectors in 2005 and 2015. The figure is taken from Tadele's (2015) study that used national survey data. Accordingly, the total employment increased by 11.6 million between 2005 and 2013. In 2013 the agricultural sector absorbed 72 percent of the total employment, followed by the services sector (20) percent), manufacturing sector (4.5 percent) and other industrial sectors (3 percent). The total employment grew on average by about 3.8% per year between 2005 and 2013.

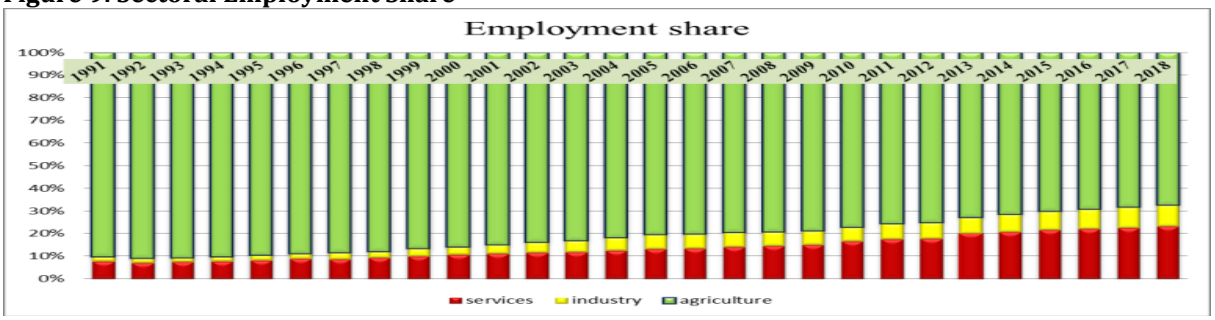
Figure 8: Employment Shares of Sectors



Source: (18)

However, due to the constraint of frequent national survey data on employment (hence labor force); the author used the projected data from the World Bank data. Figure 9 shows the share of employment across sectors of the economy.

Figure 9: Sectoral Employment Share

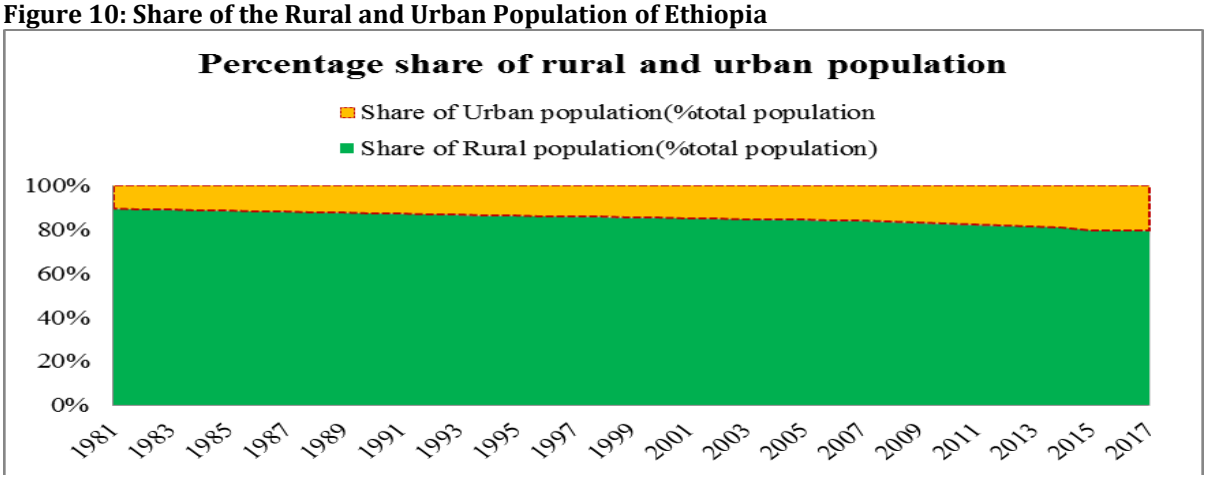


Source: Authors' computation based on the World Bank Data

The figure explores that, the Agricultural sector covers 90 percent of employment in 1991, which declines to 68 percent in 2017. While the industrial and the service sectors together constitute about 32 percent of the total employment as of 2017.

Rural-To-Urban Migration: Rural-urban migration initiated by the rural and urban development is considered as one feature of economic development and structural transformation. According to Lewis, rural-urban migration is instigated by rural-urban wage differentials. Therefore, it can be considered as an indicator of industrial and service sector development. Rural-urban migration has been historically low in Ethiopia, but seen a surge in all parts in recent years. However, due to the lack of a valid registration system, the quantitative levels of migration in Ethiopia are still uncertain.

Figure 10: Share of the Rural and Urban Population of Ethiopia

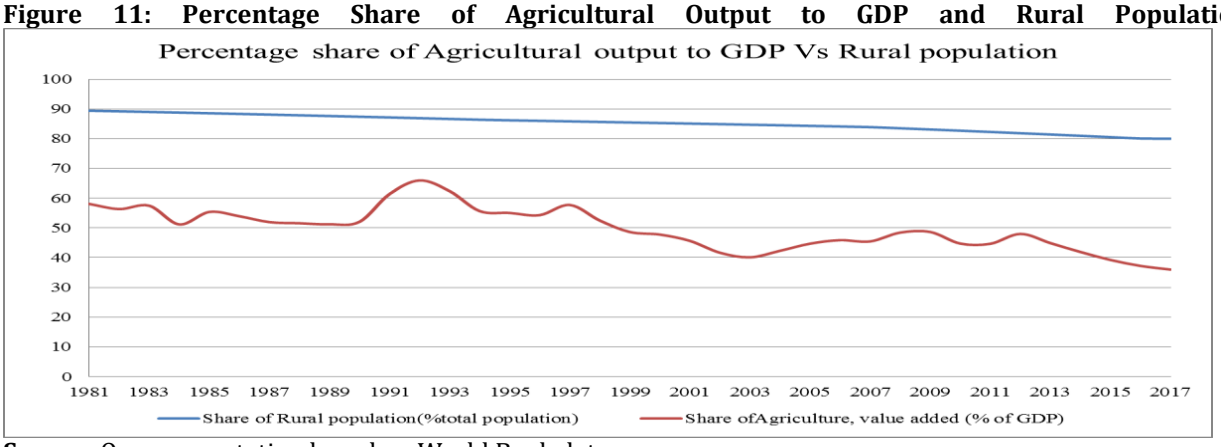


Source: Own computation based on World Bank data

Due to the reason mentioned above, this study relied on using the rural-urban migration—as if it is explained by the rural-urban population share. In 1981 the percentage share of rural and urban populations was 89 and 11 percent, respectively (figure 10). In 2017 however, the share had shown a slight change. However, high population growth, a moderate level agricultural development, and massive rural-urban migration have been contradicting factors for this (Fantu, 2016). According to Badiane, (2012), the drift of most African countries out of the conventional path is influenced by stagnation of the agricultural sector that led to migration of workforce to the urban informal service sector, which appears to have lower productivity levels. This labor shift to the informal service sector has been intensified by the insufficient expansion of the modern sector to grip the growing labor force, and decline in the agricultural sector faster than usual under effective structural change path. Although the above justification may or may not hold for the Ethiopian case, it seems very realistic; more than 70 percent of the labor force is engaged in agricultural sector. Apart from the labor force, within 35 years or so, the share of the rural population has declined by only 9 percent (80 percent in 2017). So there is a little urbanization, and the vast population of the country is living in rural areas where agricultural-based activities are common.

Agriculture Output Share and Rural Population Share: From the figure (11) below, the percentage share of agriculture value-added has decreased from 56% in the year 1981 to year 37% in 2017. This shows the share of agricultural value-added has reduced almost by 19 percent within thirty-six years. The share of the rural population (out of total population) has decreased from 89% in the year 1981 to 80% in 2017, which means within 36 years or so, the share of the rural population has decreased only by 9 percent. The rural population share has decreased to 80 percent while the share of urban population covers 20 percent. This indicates that in the last 36 years and so there is a little urbanization and the vast population of the country is living in rural areas where agricultural-based activities are common. However, the agricultural sector is a significant source for employment, foreign exchange earnings, and raw material for manufacturing. Whereas, the percentage share of the agricultural sector in GDP was dominant until the year 2011—it was covering more than 45%. Actually, if the declining share of agriculture to GDP is associating with the performance of the economy, the percentage share of the rural population should decline at least at the comparable rate with what the share of agricultural output to GDP is falling.

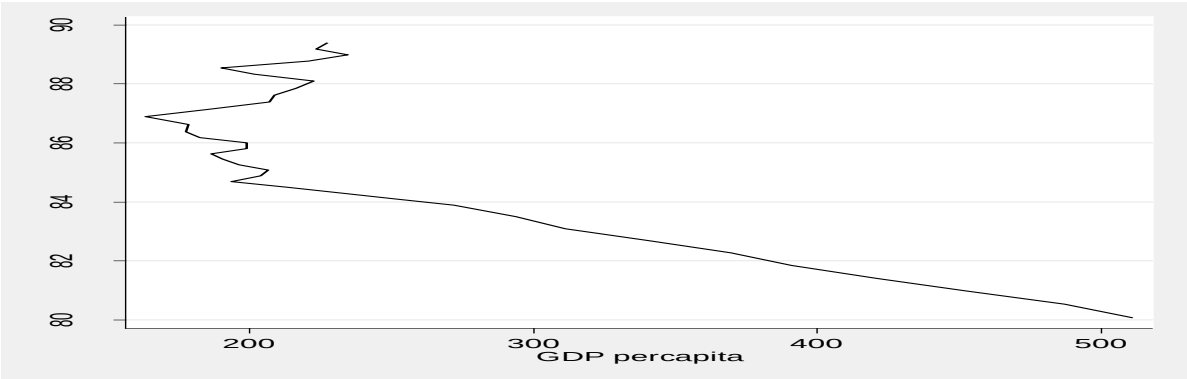
Figure 11: Percentage Share of Agricultural Output to GDP and Rural Population



Source: Own computation based on World Bank data

The structural transformation processes are consistent with each other. Therefore, the declining share of agricultural output in GDP alone cannot explain the existence of transformation, other structural transformation indicators such as; rapid urbanization (fast rural-urban migration), and demographic transition from high birth rate-death rate to low birth- death rates has not occurred altogether. Structural transformation is that while the share of the rural population declines overtime for the country, rural population increases in absolute terms before itself decreasing. As depicted in figure 11 above, the rural population share has been declining in relative terms, but, the number already has been increasing in absolute terms. This is because according to Fantu (2016), agriculture is the major and the vital component of employment and gross domestic product of Ethiopian country. The growth rate of the rural population *(as a proxy of agricultural employment)* has been growing nearly at a constant rate around zero and five. This shows how still the rural population is not decreasing for the failure of the modern sector (service and industry sector) to attract workers from the low productive agricultural sector. Figure 12 shows the combination of share of rural population to the total population (vertical axis) and per capita GDP (horizontal axis).

Figure 12: Share of Rural Population and GDP per Capita Income

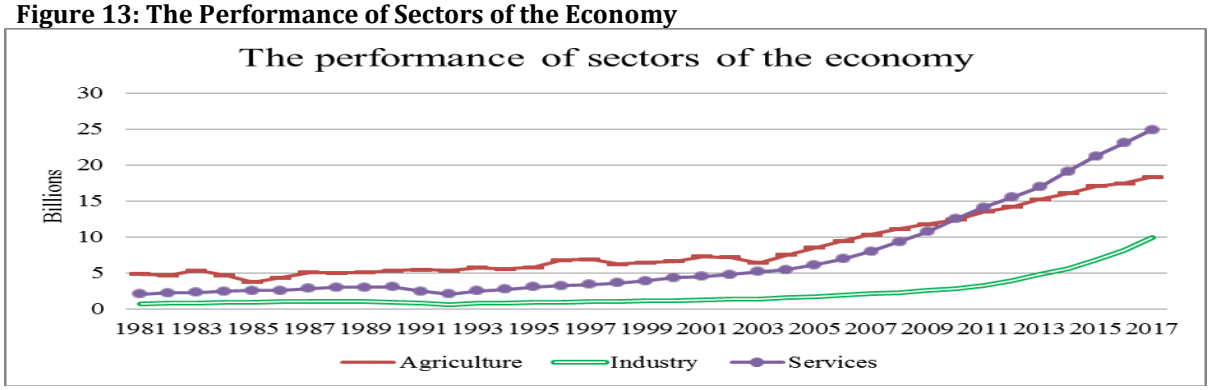


Source: Own computation based on World Bank data

Figure 12 demonstrates that, the share of rural population and GDP per capita income seems to have not any relationship; whenever the percentage share of rural population is higher than 85 percent. In principle, the share of the rural population is expected to have some relationship with the per capita income (per capita GDP). This is because; structural transformation is not merely depends on the share of sectors and change of per capita income, but also on demographic composition (population growth).

The Performance Modern Industrial and Service Economy: The current government of Ethiopia has given special attention for the industrial sector. The past and the current national economic plans such as GTPI and GTPII incorporated considerable targets, even though their success is questionable. However, the percentage share of the GDP of the sector is meager; rather, the share of the services sector is becoming more significant. However, such sectoral dynamics is not upright for emergent economies like Ethiopia.

Figure 13: The Performance of Sectors of the Economy



Source: Own computation based on MoFEC data

According to the MOFEC classification, the Ethiopian industrial sector comprises; large and medium scale manufacturing, small scale industry and handicrafts, mining and quarrying, electricity and water, and construction sub-sectors. The construction sub-sector is largest among industry sub-sectors. In recent years it covers more than 40 percent, followed by large and medium scale manufacturing sub-sectors. In the eve of the EPDRF regime, the industry sector has declined, especially the large and medium scale manufacturing, and construction sub-sectors declined significantly. The possible justification for this could be the incidence of civil war, which consumed different valuable resources.

Table 2: Industry and Service Sector Value-Added, Growth Rate and Percentage Share of GDP

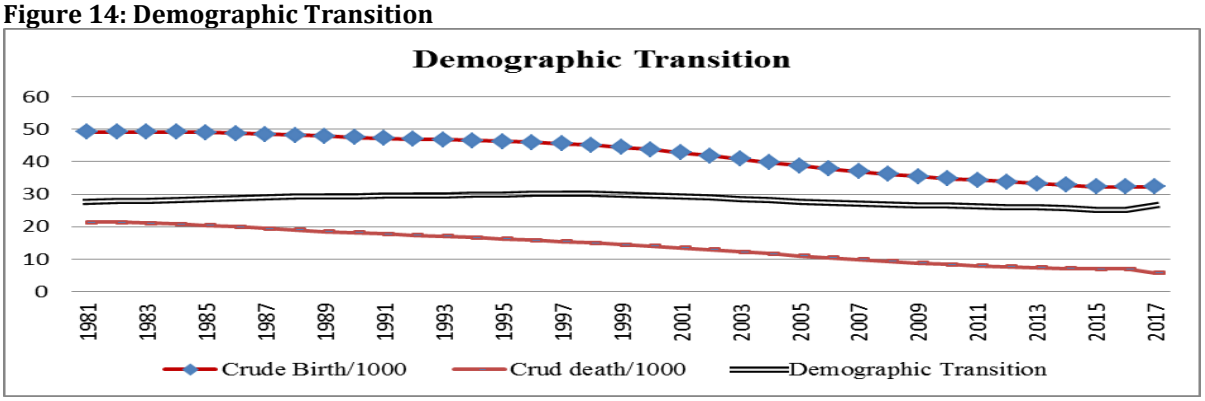
Year	Modern Sectors					
	Industry			Service		
	Value-added(million birr)	Growth rate	% of GDP	Value Added (million birr)	Growth Rate	% of GDP
1981-1986	12185.93	6.3	10.1	35533.88	2.30	29.4
1987-1992	12598.43	-5.6	9.18	41031.85	-1.58	29.9
1993-1998	14550.72	8.92	8.97	50840.57	8.83	31.3
1999-2004	19838.25	6.43	9.88	74298.35	5.27	37
2005-2010	33018.2	10.02	9.94	136573.8	12.3	40.6
2011-2017	83330.9	19.96	13.37	280148	10.33	45.9

Source: Authors' computation

The service sector on the other hand encompasses; hotels and restaurants, trade, transport and communications, banking and insurance, and real estate, public administration and defense, education, health, and domestic and other services sub-sectors. Trade, hotels, and restaurant sub-sectors cover more than 45 % of services sector value-added followed by banking, insurance, and real estate sub-sectors while, health and education sectors contributes the least share of the service sector. The sector also covers more than 40% of GDP (as of 2017), and this makes it is comparable with the agricultural sector. However, starting from 2011, the service sector came to the lead, while the industry sector has been stagnating. According to Badian, (2012), the structural transformation of most African economies is not in the conventional direction—in which countries shift from agriculture-industrialization, and end up services dominated. Therefore, this finding is consistent with the result of above study—throughout the study period, the declining share of the agriculture GDP has been accompanied by the rising share of service sector in GDP, leaving industrial sector stagnant. Different Empirical works (Adisu, 2019; Diao, 2010; Worku & Genet, 2013; Xinshen & Steven, 2007) confirmed that even though the share of agricultural sector is falling, it is the primary source for the overall economic growth of Ethiopia.

Demographic Transition: Another indicator of the structural transformation of an economy is a demographic transition from high birth rate and death rate to low birth rate and low death rate. The service is the fastest-growing sector in the Ethiopian economy. It has been growing at the average rate of 10.33% from the year 2011-2017. The prevalence of High death rate and birth rate are among the typical characteristics of a developing nation. Historically most of the African countries have experienced them. However, following the advancement in health care in these countries, the death rate has declined significantly. In Ethiopia too, as show, by the figure (14), the death rate falls considerably while the birth rate is not. This keeps the demographic transition high. In 1981, the average birth rate of the country was 49 per 1000 people. This figure declined to 31 births per 1000 people in 2017. In 1981 the death rate of the country was 21 per 1000 people, which fall about 6 per thousands of people in 2017.

Figure 14: Demographic Transition



Source: Own construction based on WB data

Demographic transition occurs at or about the same time with the occurrence of economic transformation or industrialization, so that, urban population growth is based on rural-urban migration. This indicates that, within the sample period, the migration of population from rural to urban (modern sector, according to A. Lewis) has been limited. This can be because of either the prevalence of high demographic transition in rural areas or minimal Economic activity in the modern sector that fails to attract rural people (rural-urban migration). So, can we say that the falling of the share of agriculture value-added attributes to the structural transformation in general and agricultural transformation in particular?

5. Conclusion and Recommendations

This paper investigated whether the declining share of agricultural GDP in Ethiopia is indicating structural change or not. The study used different studies results and a time series of data spanning from the year 1981 to 2017. Accordingly, the service sector is found to be the fastest-growing sector in Ethiopia; it has been growing at the rate of 10.33% from the year 2011-2017. In terms of output share, the sector covers more than 40% GDP (as of 2017). The share of the agricultural sector in GDP was dominant until the year 2011—the sector was covering more than 45% of the GDP, until the service sector came to the lead, while the industrial sector has been in somehow stagnating. This shows how the falling share of the agriculture sector is being superseded by the service sector. However, this sectoral dominance path is not in the conventional way in which economies transform from the agriculture to industry, and end up services dominated. Other Empirical works also revealed that even though the share of agricultural sector is falling, it is the primary source for the overall economic growth of Ethiopia. The share of the rural population (*as a proxy of the labor force*) has decreased from 89 percent in 1981 to 80% in the year 2017. So there is a little urbanization, and the vast population of the country is living in rural areas where agricultural-based economic activities are communal.

Lack of labor shift from the agricultural sector to the industrial sector can be attributed to the inadequate expansion of the modern sector (industrial sector) to grip the growing labor force. In addition to this, the demographic transition also showed only a relative decline. Structural transformation involves several interrelated processes. Hence, the declining share of agriculture output to GDP alone cannot explain the prevalence of structural transformation, and the other processes like; industrialization, urbanization, and demographic transition should be examined. Furthermore, in developing economies, agricultural growth is primarily accomplished by increased of farming land and increased labor supply, not through technological change and more intensive use of labor and land. This furthers guarantees that the change of shares of sectors alone does not inscribe the exact structural transformation process. By observing the decline of the share of the agricultural output in GDP alone, policymakers and officials may predispose to neglect that vital sector. In this case, inferring the falling agricultural output share in GDP with the underpinning of structural transformation might be flawed, and leads to the floppy inference. Finally, further research is recommended on the causal relationship between agricultural share in GDP, structural transformation and overall economic development.

Abbreviations

ADLI.....Agriculture Development Led Industrialization
ADR.....African Development Report
ATA.....Agricultural Transformation Agency
GTP.....Growth and Transformation Plan
IMF.....International Money Fund
MoFEC ..... Ministry of Finance and Economic cooperation
NPC ..... National plan commission of Ethiopia
PASDEP..... Plan for Accelerated & Sustained Development to End Poverty
UN.....United Nation
WB.....World Bank

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