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The potential of industries without smokestacks to address unemployment

An Ethiopia case study

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Abstract

The study investigates the potential of Industries without Smokestacks (IWOSS) to create jobs in Ethiopia and focuses on agro-processing (particularly food and beverage), horticulture, tourism, and transport sectors. These categories were selected due to their employment potential, productivity, and tradability.

The IWOSS sectors exhibit the highest labor productivity in Ethiopia. In 2017, the labor productivity of the IWOSS was close to three times that of overall labor productivity, close to 2.44 times that of manufacturing and 3.75 times that of non-IWOSS industries. Between the 2000 and 2017 overall labor productivity grew annually, on average, at 8.34 percent while the IWOSS industries grew by about 16 percent annually. The manufacturing and non-IWOSS industries grew at 13.4 percent and 6 percent respectively in the same period.

With close to 68 percent employment share, agriculture remains by far the major employer in Ethiopia followed by trade (IWOSS) and manufacturing (non-IWOSS) with 7 percent and 4 percent respectively. Looking at employment growth between 2000 and 2017, mining (non-IWOSS), finance (IWOSS), utility (non-IWOSS), construction (non-IWOSS), and transport (IWOSS) registered the fastest growth. In terms of productivity, finance (IWOSS) and transport (IWOSS) were the most productive sectors in 2017. Hence, the IWOSS in Ethiopia promise to be important sources of employment and a high-value contributors to the national economy.

Aggregate labor productivity by sector was mainly driven by within sector productivity with 67 percent of the aggregate labor productivity change between 2010 and 2017 coming from *within sector* productivity change while the remaining came from structural change. The IWOSS industries such as trade, agro-processing, and hotels and restaurants exhibited high within sector productivity. Financial services and horticulture gained more from labor mobility towards them. Among non-IWOSS industries the construction sector benefited from within sector and structural transformation. While the agricultural sector gained a modest productivity gain from within, a significant amount of labor moved out of it.

A number of challenges hinder the growth of the IWOSS in Ethiopia. Some of the binding constraints identified are the following:

- Inadequate skilled manpower remains one of the key challenges. Skills mismatch and inadequacy in skills in sectors such as agro-processing, horticulture, and tourism remains common.
- Lack of quantity and quality of raw material, poor infrastructure, and high cost of transportation are also binding constraints affecting productivity and competitiveness of the IWOSS.
- Lack of adequate cool chain management is a key problem facing the horticulture sector.
- Political instability poses a daunting challenge for the fledgling tourism sector. Low level of promotion and marketing is another key challenge facing the development of the tourism industry in Ethiopia.

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Acronyms

CSA	Central Statistical Agency
ETO	Ethiopian Tourism Organization
FBPIDI	Food, Beverage and Pharmaceutical Industry Development Institute
GDP	Gross Domestic Product
GTP	Growth and Transformation Plan
HEI	Higher Education Institutions
IAIP	Integrated Agro-Industrial Parks
IWSS	Industries Without Smokestacks
LMMS	Large and Medium Manufacturing Survey
MoA	Ministry of Agriculture
MoCT	Ministry of Culture and Tourism
MOI	Ministry of Industry
MOTI	Ministry of Trade and Industry
MSE	Micro and Small Enterprises
NPC	National Planning Commission
RTC	Rural Transformation Centers
STMP	Sustainable Tourism Master Plan
TVET	Technical and Vocational Education Training
UNECA	United Nations Economic Commission for Africa
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIDO	United Nations Industrial Development Organization
UNWTO	United National World Tourism Organization
WDI	World Development Indicators

1. Introduction

In the past decade and half, Ethiopia has witnessed notable economic growth with an average of 10 percent growth since 2004. This was largely driven by substantial public investment on infrastructure coupled with a solid performance of the service sector that benefitted from modest mobility of labor from the agricultural sector. For example, according to the World Bank (2016), out of the 10.9 percent average GDP growth for the period 2004-2014, the service sector contributed to close to half of it (5.4 percentage points) while the remainder came from agriculture (3.6 percentage points) and manufacturing sector (1.7 percentage points).

Extreme poverty (the percentage of the population living below the international poverty line) fell from 55 percent in 2000 to 23.5 percent in 2015/2016 (See, for example, NPC, 2017). Nevertheless, the reduction in poverty largely came from a modest growth in agriculture rather than structural transformation (See, for example, World Bank, 2015).

The impressive growth performance of the economy has not been matched with growth in gainful employment, which may point to jobless growth. Between 2003 and 2006, the unemployment rate for the urban labor force in general and the youth in particular, showed a marked decline. However, after 2006, the unemployment rate has been slightly increasing. In 2018, the unemployment rate for the general urban labor force stood at 19 percent while for the youth it was a whopping 25 percent. It should be noted that women face higher unemployment rates than men. For example, in 2018, the unemployment rate for women in urban Ethiopia was close to 27 percent while men faced an unemployment rate of 13 percent.[1] Low earning, under-employment, and vulnerable employment characterize rural Ethiopia, which is an indicator of people living in a state of working poverty (See, for example, Hino and Ranis, 2014).

This is despite a policy focus on labor-intensive light manufacturing. Performance in terms of value-added, export, and employment generation in the strategic sectors such as textile and garment, leather, cement, pharmaceutical, construction, agro-processing (food and beverages, honey, meat, and diary) have been below par. The Planning and Development Commission ascertained this in the mid-term assessment of the GTP-II plan. Some sectors such as textile and garment have gained special attention by the government as shown by the construction of industrial parks focusing on these industries. While there are some industrial parks constructed and owned by the private sector, the majority of industrial parks are public. The sheds in the public industrial parks are rented out to enterprises at highly subsidized rates. Currently, thirteen industrial parks are in operation in different parts of the country. The agro-processing industry has also been among the priority sectors while concrete interventions to support it will likely surface after the implementation of the four integrated agro-processing industrial parks (IAIPS), which are under construction. The integrated agro-industrial parks are also public but financed mainly by the regional states. Some of the key issues the establishment of the IAIPs can help address include improved provision infrastructure such as electricity, access to land, and enhanced services such as customs.

The three-year homegrown economic reform agenda prepared in September 2019 has added sectors such as tourism, logistics, and mining to its priority sectors in addition to manufacturing and agriculture. Hence, revisiting the actual and potential contribution of industries particularly the industries without smokestacks (IWOSS) can inform policy to better target and implement sectoral support.

[1] Figures for labor market outcomes computed by the author Urban Employment Unemployment surveys of Ethiopia CSA.

The main objective of the current study is to investigate the potential of IWOSS to create decent and sustainable jobs, particularly for the youth. The focus will be on agro-processing (particularly food and beverage), horticulture, tourism, and transport sectors.

2. Country context and background

Since the preparation of the 2002 industrial development strategy of Ethiopia (FDRE/MoInfo, 2002) the country has promoted labor-intensive industries that aimed at creating decent jobs, enhancing linkage with the agricultural sector, and bolstering export competitiveness. An active industrial policy that aimed at transforming the structure of the economy particularly from agriculture to industry and higher value services sector, however, came with the Growth and Transformation Plan (GTP)–I (2010-2015) and the ongoing Growth and Transformation Plan (GTP)–II (2015-2020).

The Government of Ethiopia developed various policies and strategies to pave the way for the private sector to play a leading role in creating jobs. Support has been particularly directed towards selected export-oriented and import-substituting sectors such as textile, leather, cement, and pharmaceuticals. Such interventions included direct capacity building support and fiscal incentives such as tax holidays, reduction of indirect taxes on capital goods, and preferential credit to selected sectors. The heavy government investment on infrastructure is also envisaged to enhance the competitiveness of the private sector (see, for example, Gebreyesus, 2013).

The construction of industrial parks since 2015 constitutes the apex of active industrial policy in Ethiopia. A key objective of the effort is to increase the share of the manufacturing sector in GDP. In so doing, the government aims to stimulate exports and foreign direct investments (FDI), alleviate foreign exchange shortages, and reduce government borrowing and investment by state-owned enterprises (SOE) (Zhang et al, 2018). Hence the big push to develop industrial parks aims to pave the way for the private sector to be the engine of growth of the economy. Industrial parks can be built by either the federal or regional government, the private sector, or through combined efforts under public and private partnerships. Eleven industrial parks have been built to date at the federal level, all of which are operational. Some of the industrial parks are specialized (e.g., Hawassa specializes in textile and garment) while others can accommodate firms from various sectors. The industrial parks are also envisaged to boost linkage and improve services through one-stop shops such as customs clearance within the parks and the provisions of uninterrupted power supply and effluent treatment plants.

2.1 Aggregate trends

With a population of about 109 million in 2018, Ethiopia is the second-most populous country in Africa after Nigeria. While it has had one of the fastest-growing economies in the past decade and a half in the world, it remains one of the poorest.

Sectoral contribution to the remarkable economic growth Ethiopia witnessed in the last decade and a half provides a glimpse of the state of structural transformation in the country. In recent years the service sector has overtaken the agricultural sector in having the largest share of value added with close 47 percent in 2017 followed by the agricultural sector contributing 36 percent. The industrial sector has the lowest share of about 17 percent of GDP in the same period even though it has registered significant growth since 2013 after a stagnant share in the decade before 2013. However, the share of the manufacturing sector (industrial sector excluding construction) remained less than 5 percent of GDP until 2017, which is very low even by sub-Saharan Africa standards where it stands at 10 percent. In 2018/9, the share of the manufacturing sector rose to close to 6.8 percent as some of the industrial parks started to be populated by enterprises and become operational. The corresponding sectoral shares in 2000 were agriculture (55.3 percent), service (37 percent), and

industry (9.7 percent). [2] Hence, in the past decades, the service sectors and the construction sub-sector have shown the fastest growth.

The pace of structural transformation is even slower when it comes to employment. Most of the workforce is concentrated in the agricultural sector with limited job opportunities outside the sector. The share of employment in agriculture has recently declined, albeit not considerably. Construction and 'other services' absorbed most of this change, although agriculture, commerce, and manufacturing remain the largest employers in the country. Employing close to 70 percent of the labor force, the agricultural sector continues to be the mainstay of people in Ethiopia. The service sector employs 22 percent of the labor force while the industrial sector employs less than 10 percent of the people. The corresponding figures in the year 2000 show agriculture employed close to 86 percent of the Ethiopian labor force followed by the service sector with about 10 percent of employment while the industrial sector employed about 4 percent of the labor force. Hence, in terms of employment in the past two decades, there was a low level of structural transformation. The slower structure change in terms of employment compared to the changes in value added shows that the modest labor mobility from agriculture to the service sector has resulted in higher output per worker.

In general, the key supply side problems such as power outage, logistics, and shortage of foreign exchange are more likely to affect the manufacturing sector than the service sector. Moreover, the manufacturing sector must compete with imports from the international market, making it difficult to sustain in the face of mounting domestic challenges. On the other hand, competition in the services sector is largely from other domestic firms only and hence less fierce. The service and construction sectors are protected from international competition through government policy (See, for example, Gebreeyesus, 2019). For example, some key services such as wholesales, finance, logistics, and real estate are allowed only for domestic firms and hence there is high incentive to engage in those sectors by domestic firms in contrast to the manufacturing sector. This has contributed to faster growth of the service and construction sectors compared to the manufacturing sector. Another key factor for the growth of the construction sector is huge pubic investment on infrastructure as a policy focus by government, which was envisaged to enhance private sector competitiveness.

In terms of export, the agriculture sectors continue to be the major export sources for the country. For example, based on the data from the National Bank of Ethiopia, in 2017, the leading export sources were coffee (31 percent), oilseeds (12.4 percent), chat (9.6 percent), and gold (7.4 percent). With shares of about 6 percent, 4 percent, and 3 percent, animals and animal products, leather and leather products, and textile and apparel trailed respectively. Hence, manufacturing exports, typically leather and textile, fare far worse than the agricultural items—in terms of export share—indicating structural transformation remain low in this area.

2.2 Labor market outcomes

The pace of urbanization in Ethiopia has been rapid in recent years. For example, between 2003 and 2018, the urban population grew annually, on average, by 5.7 percent. Similarly, the youth population (aged 15-29) grew annually, on average, by 5.3 percent in the same period. The labor force measured by the economically active population rate (for those aged ten and above) exhibited an annual growth rate of 6.2 percent in the same period. Hence, the labor force in urban areas has increased even faster than the population growth rate of urban areas. This indicates that the provision of decent jobs to an ever-growing labor force is a key challenge for the Ethiopian government.

In 2018, the unemployment rate for the general urban labor force was 19 percent while for the youth it was a staggering 25 percent. The unemployment rate for women in the same year was 27 percent.

[2] Data based on the National Bank of Ethiopia

More than a third of young women remain unemployed. Even those employed face high under-employment (50 percent), low earning, and job insecurity in both rural and urban areas.

Another crucial indicator of the outcome of the labor market is the duration of unemployment. More than a third of the unemployed people (35 percent) have been unemployed for more than 8 years. More than 60 percent of the unemployed persons were unemployed for a year or more and close to 60 percent of whom were unemployed for more than 8 years. This shows the severe lack of job opportunities. Moreover, the long duration of unemployment has an adverse psychological impact on the labor force. Moreover, the long spell of unemployment results in skills obsolescence.

Similarly, the state of underemployment is a reality among a large proportion of the working poor. Up to 50 percent of the employed workforce is willing to take additional jobs, which is a result of either low pay or too few working hours.

The rate of unemployment by education level is one of the indicators of the effectiveness of the education system. In 2018, the unemployment rate among secondary school graduates was about 28 percent followed by those with TVET and Diploma graduates at above 23 percent. In the same year, those with a university degree and above faced an unemployment rate of 16 percent while those with elementary education had an unemployment rate of about 14 percent. The group with the lowest unemployment rate is those with no formal education, which may show that this group has no choice but to take up any type of job available. The trend was similar for 2003 except those with a university degree and above had a lower unemployment rate (9 percent) than the rate in 2018 (16 percent). The rise in the unemployment rate among the highly educated group in recent years is a source of concern as it can indicate the ineffectiveness of the education system or the existence of skills mismatch (e.g., Beyene and Tekleselasise, 2018).

3. Patterns of growth: The role of IWOSS

Industries without Smokestacks (IWOSS) include agro-industry and horticulture, tourism, business services, including information and communications technology (ICT) based services, and transport and logistics (Newfarmer, Page and Tarp, 2018). The key characteristics of enterprises in IWOSS sectors include being tradable, having the ability to absorb large numbers of moderately skilled labor, having higher than the average value-added per worker, and exhibiting capacity for technological change and productivity growth, and displaying evidence of agglomeration economies.

3.1 Sectoral productivity levels and trends

Table 1 reports labor productivity measured as value added per worker. In 2017, labor productivity for the IWOSS sectors was Birr 91,730 which was close to three times that of overall labor productivity, close to 2.44 times that of manufacturing, and 3.75 times that of non-IWOSS industries. Between 2000 and 2017 overall labor productivity grew annually, on average, at 8.34 percent while the IWOSS industries grew by about 16 percent annually. The manufacturing and non-IWOSS industries grew at 13.4 percent and 6 percent respectively in the same period.

Table 1: Labor productivity by sector

	Labor Productivity (Thousands)		
	(Local Currency)		
	2000	2010	2017
Total	13.72	21.41	33.17
Total IWOSS	24.84	65.07	91.73
Agro-processing	23.90	22.56	60.80

Horticulture		614.96	299.93
Tourism	3.14	19.91	61.30
Transport	74.78	99.94	136.59
Financial and business services	261.74	228.13	157.03
Trade	22.98	45.38	68.26
Manufacturing	**11.44**	**20.17**	**37.53**
Other non-IWOSS	**12.12**	**15.53**	**24.48**
Agriculture	9.66	11.95	16.25
Mining	75.55	29.95	15.68
Utilities	77.77	47.00	44.73
Construction	55.94	73.70	176.83
Government	54.43	72.83	80.69
Other	9.89	5.38	4.04

Source: Author's calculations based on data from PDC (2020) and 2015/16.
Notes: 2011 and 2015/6 SAM coefficients were used to estimate the ratio of horticulture in agricultural value-added for 2010 and 2017.

Following McMillan and Rodrik (2011) and McMillan, Rodrik, and Sepulveda (2016), we decompose the sources of aggregate labor productivity into *within productivity* (own sector productivity changes due to technological change and capital accumulation) and structural *transformation* due to movement of labor from low productivity to higher productivity sectors. The following specification helps to decompose theses effects.

$$\Delta P_t = \sum_{i=n} \beta_{,t-k} \Delta P_t + \sum_{i=n} p_{i,t}\, \Delta \beta_{i,t}$$

P_t and p_t are economy-wide and sector productivity respectively. $\beta_{i,t}$ is the employment in the sector i. The decomposing was done for 13 sectors composed of IWOSS and non-IWOSS industries.

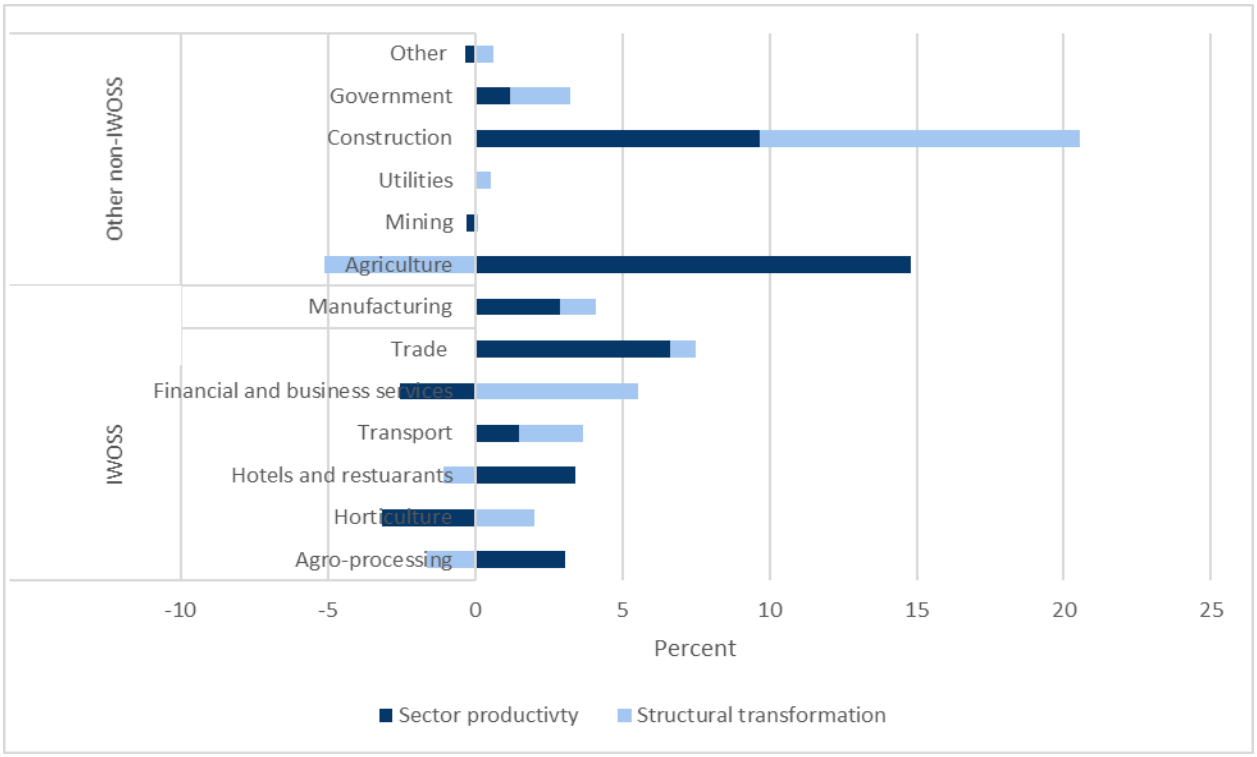
The results show that 67 percent of the aggregate labor productivity change between 2010 and 2017 came from *within sector* productivity change while the remaining came from structural change. The disaggregated result by sector is provided in Figure 1. IWOSS industries such as trade, agro-processing, hotels, and restaurants exhibited high within sector productivity. Financial services and horticulture gained more from labor mobility towards them. Among non-IWOSS industries the construction sector benefited from within sector and structural transformation. Even while the agricultural sector gained a modest productivity gain from within, a significant amount of labor moved out of the sector.

This dominance of within productivity is not surprising at an early stage of industrialization as most sectors start from low productivity and hence have potential for within productivity before structural transformation can take off. Substantial public investment on social infrastructure such as education and investment on agriculture such as agricultural extension programs may have contributed to the within sector productivity gain in the country (See, for example, Ferede and Kebede, 2015).

Alternatively, Figure 2 provides a bubble chart of sectoral productivity, sectoral employment share, and growth in employment. With close to 68 percent employment share, agriculture remains by far the major employer in Ethiopia followed by trade (IWOSS) and manufacturing (non-IWOSS) with 7 percent and 4 percent respectively. Looking at employment growth between 2000 and 2017, mining (non-IWOSS), finance (IWOSS), utility (non-IWOSS), construction (non-IWOSS), and transport (IWOSS)

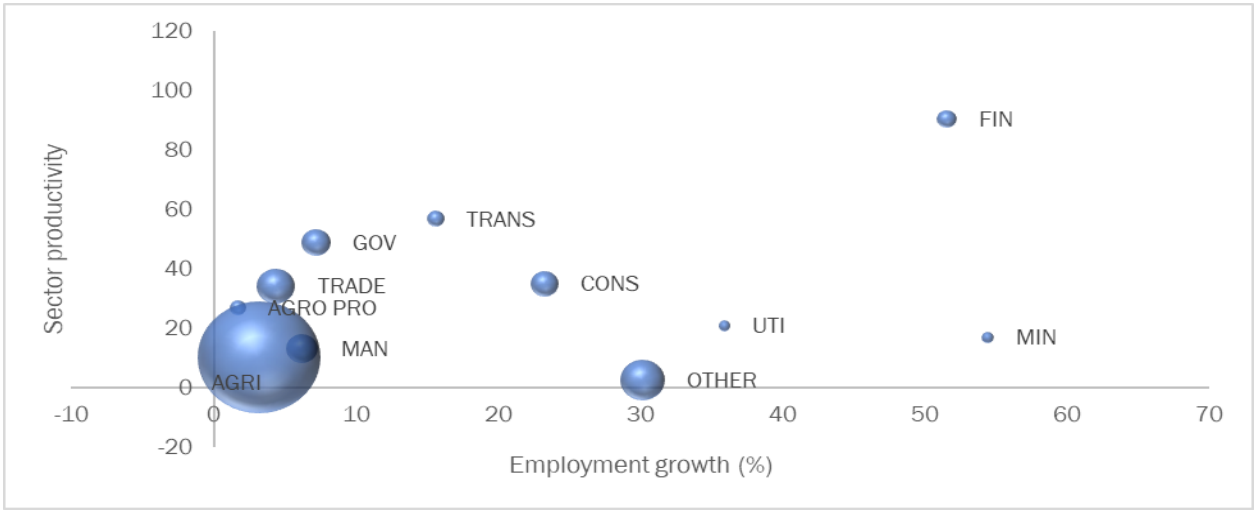
registered the fastest growth. In terms of productivity, finance (IWOSS) and transport (IWOSS) were the most productive sectors in 2017.

Figure 1: Sector productivity and structural transformation



Source: Author's calculations based on data from PDC and 2015/6 Ethiopia SAM by Mengistu et al. (2019).

Figure 2: Employment share, employment growth, and productivity (value added per worker)



Note: AGRI= Agriculture; AGRO PRO = Agro-processing; CONS= Construction; GOV=Government; FIN=Finance; MAN=Manufacturing; MIN=Mining; TRANS= Transport; UTI=Utility
Source: Author's calculations based on data from PDC.

3.2 The growth of selected IWOSS industries

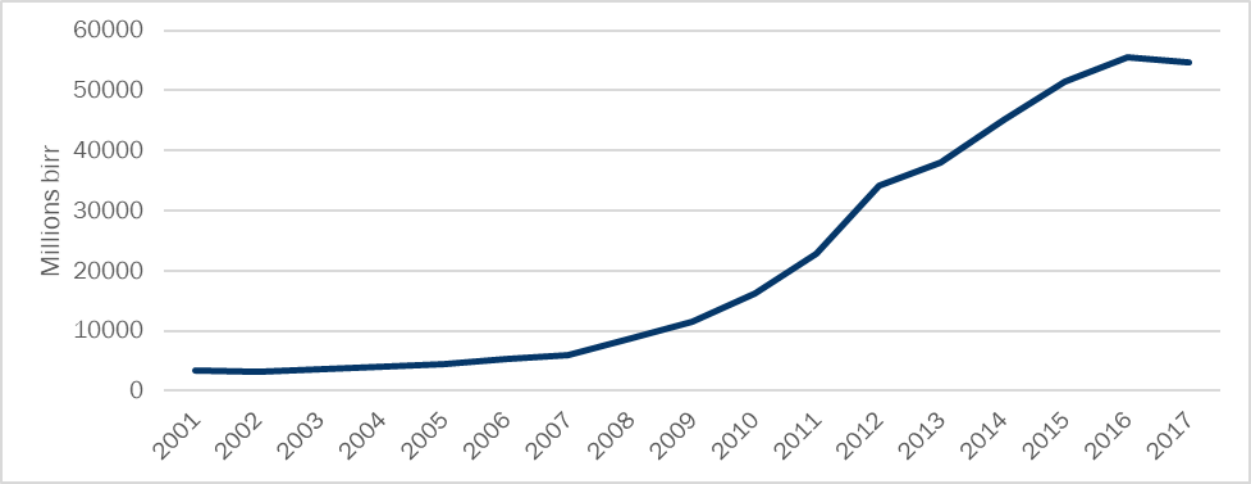
3.2.1 Agro processing (food and beverages industry)

The agro-industry comprises several categories including food and beverages, paper and wood products, textile and apparel, leather and leather products, rubber products, and tobacco products. In this study in regards to agro-industry, we focus on the food and beverage industry.

The agro-processing industry has been one of the key priority sectors for the government of Ethiopia in its five-year development plans such as PASDEP (2005-2010), GTP-I (2010-2015), and the ongoing GTP-II (2015-2020). The abundance of arable cropland and suitable climate conditions deem the sector a great area for growth. The agro-processing products will potentially help the country to upgrade its export from low valued primary commodities that face volatility in international prices to higher-value exports and thereby create not only more jobs but also decent ones.

As shown in Figure 3, the gross value of production of the food and beverage industry of the medium and large enterprises rose from Birr 3.3 billion in 2001 to 54.6 billion in 2017. This is equivalent to an average compounded growth rate of 18 percent.

Figure 3: Trend of gross value of production of the food and beverage industries



Source: Author's calculations based on the Large and Medium Manufacturing survey by CSA.

The food and beverage industry is the leading sector in terms of value creation and employment within the manufacturing sector. The manufacturing sector mainly comprises the food and beverage, textile and garment, leather and leather produces, rubber and plastic, paper and paper products, metallic and engineering products, non-metallic mineral products, tobacco products, and chemicals. Among this, the food and beverage sectors accounted for a third of the value added of the manufacturing sector in 2017 making it the largest contributor even though it is down from 47 percent in 2003 (Computed from the CSA Large and Medium Manufacturing Survey). This is mainly due to a simultaneous increase in the share of other sectors such as non-metallic mineral products, metallic and engineering products, textile and garment, and paper and paper products.

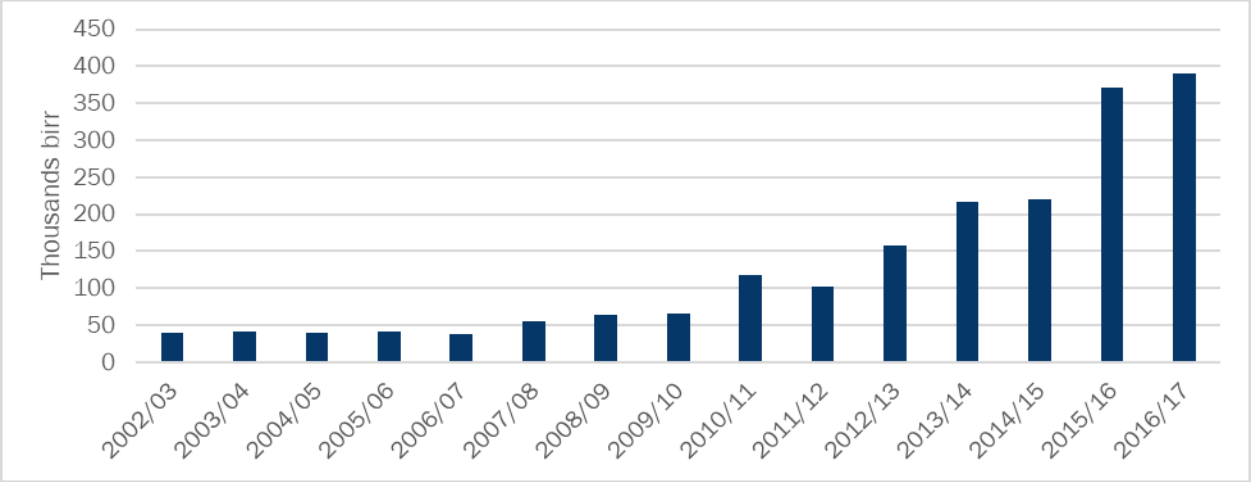
According to the medium and large manufacturing firms survey of the CSA, among the large and medium food and beverages enterprises, the beverage industry accounts for more than half of the value addition in this sector. Specifically, malt liquors and soft drinks are leading in the beverage sub-sector in terms of value addition. Among sub-sectors within the food category, sugar, grain mill products, and oil are the leaders in terms of contribution to value addition.

Labor productivity in the food and beverage industry has also shown an upward trajectory as shown in Figure 4. In the period 2002/03 – 2016/7, labor productivity (computed by dividing the gross value

of production at a constant price by the number of employees) grew, on average by 16.5 percent annually.

In terms of employment, the food and beverage industry remains the largest employer within the manufacturing sector. As shown in Figure 4, among the large and medium manufacturing industries in the country, the food and beverage sector created the highest number of jobs relative to other manufacturing industries. For example, in 2016/17 the food and beverage industry accounted for about 21 percent of the total employed persons in medium and large-scale manufacturing sectors.

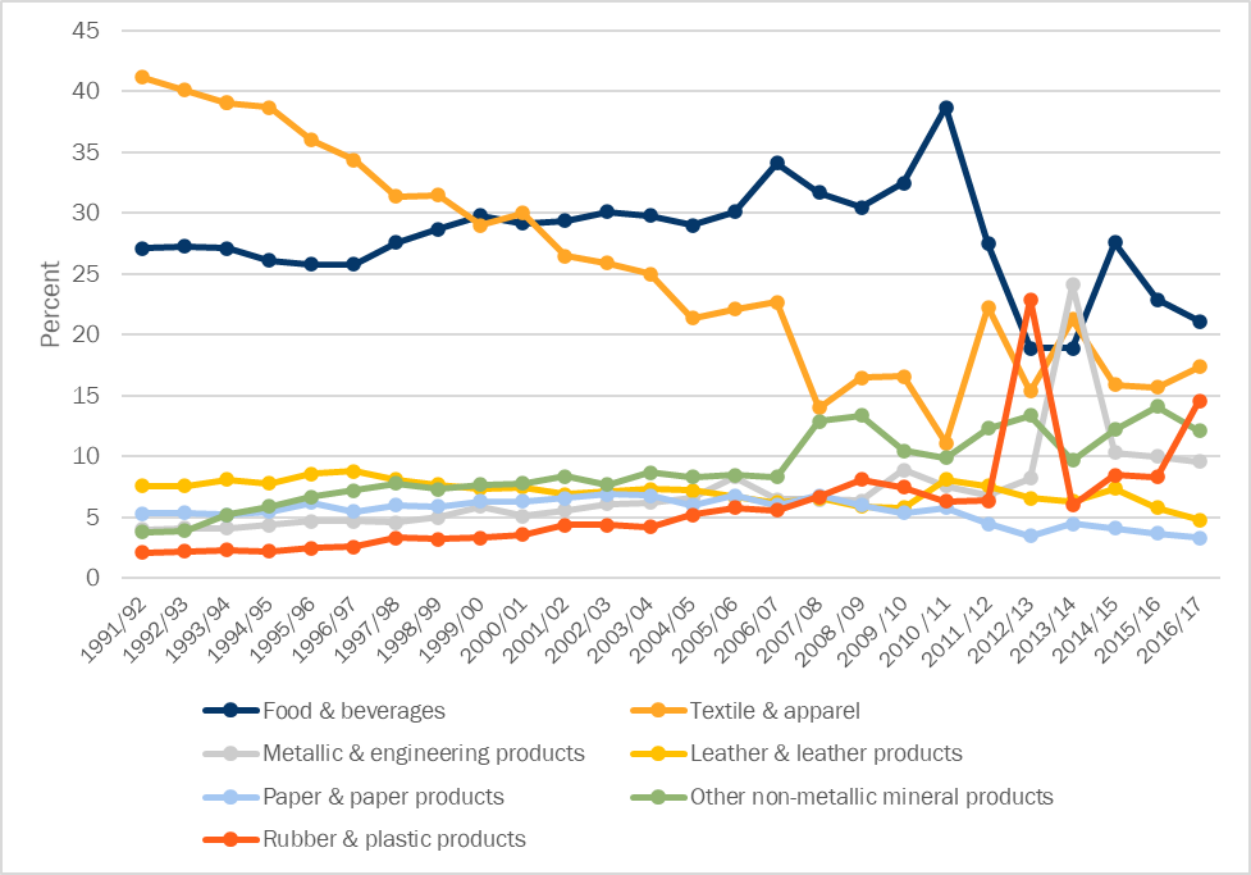
Figure 4: Labor productivity of the food and beverage industry



Source: Author's calculations based on the Large and Medium Manufacturing survey by CSA.

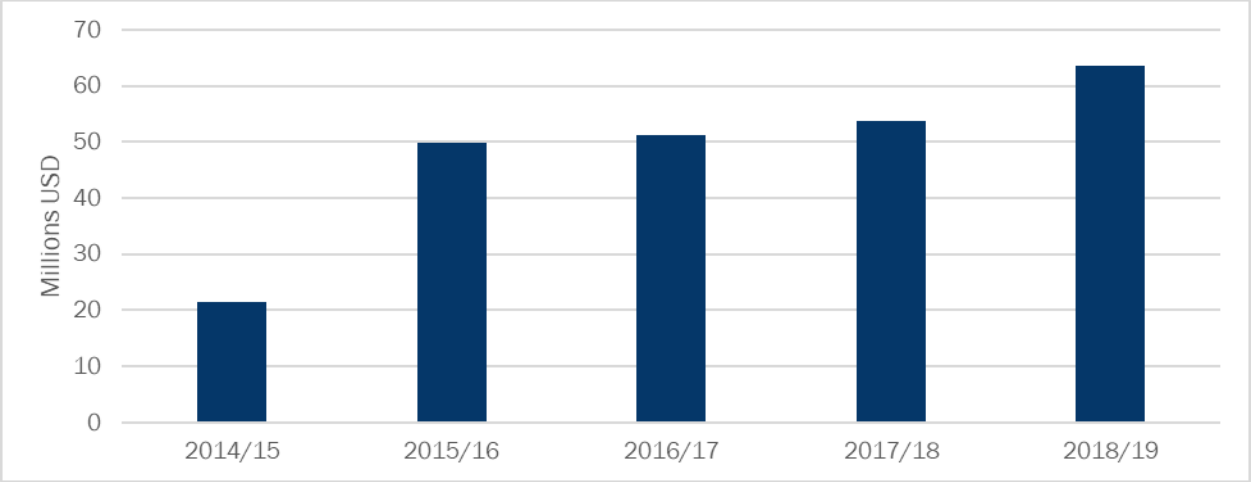
In terms of exports, Ethiopia's export sector is dominated by unprocessed agricultural products such as coffee. The role of the manufacturing sector remains limited. Export earnings from the food and beverage industry remain insignificant but have been increasing as shown in Figure 6. According to export data obtained from the Food, Beverage, and Pharmaceutical Industry Development Institute (FBPIDI), export earnings from food and beverage products increased from about $21.5 million in 2014/15 to about $63.5 million in 2018/19.

Figure 5: Employment shares of selected key manufacturing industries



Source: Author's calculations based on the Large and Medium Manufacturing survey by CSA.

Figure 6: Export revenue generated from food and beverage products



Source: Author's calculations based on data from the Food, Beverage and Pharmaceutical Industry Development Institute.

The food and beverage industry is also one of the largest among the micro and small manufacturing enterprises. A survey by the Ethiopian Development Research Institute (EDRI) in 2016 showed that about a fifth of manufacturing micro and small enterprises are engaged in the production of food and beverages (Gebreeyesus et al., 2018).

In summary, the food and beverage industry as the main category in agro-industry has been the main source of value creation and employment while export earnings from the sector remain limited (but increasing in recent years).

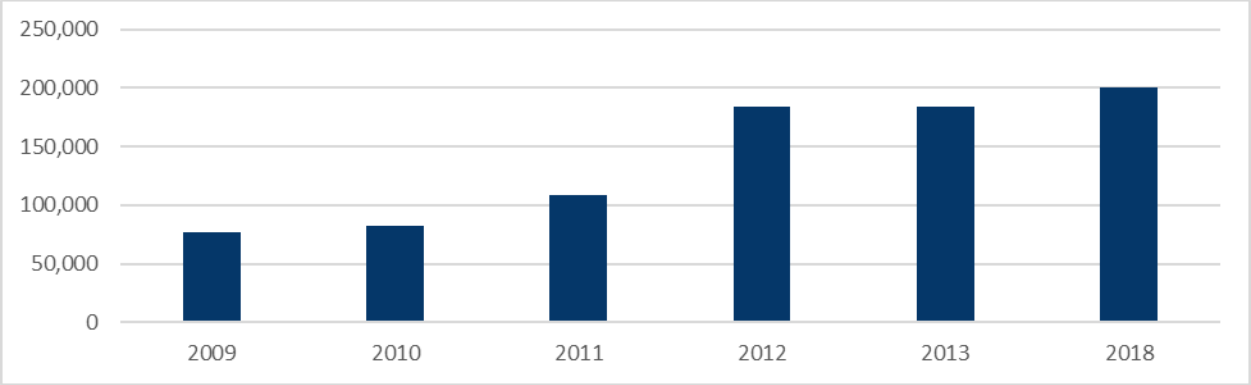
3.2.2 Horticulture

In its recent development plans, the Ethiopian government has envisaged to promote the development of agricultural investment, mainly promotion of commercialization of the agricultural sector to increase agricultural production and create rural employment opportunities. Horticulture is one of the sectors that has received a great deal of attention in various development plans, mainly in Growth and Transformation Plan I and II. In particular, the cut flower industry is one of the most highly prioritized agricultural investments in the country. According to the Growth and Transformation Plan II, the development of horticulture sector plays an important role in ensuring sustainable economic development mainly through foreign exchange earnings and employment creation (see NPC, 2016). Furthermore, the sector can play a considerable role in transforming smallholder farmers into wage laborers as well as diversifying the export sector—moving from traditional agricultural to non-traditional agricultural export.

The Horticulture industry (mainly cut flower farms) is one of the most labor-intensive export-oriented industries in Ethiopia. While the state farms made an effort to produce and export cut flower to Europe in the early 1980s, the sector thrived in the early 2000s (see Gebreeyesus and Iizuka, 2012). Since mid-2000s, the flower industry has seen a significant growth. In the following, we present the role of the sector in the Ethiopian economy (mainly its contribution in employment generation and foreign exchange earnings) as well as existing opportunities and key challenges that could hinder its growth.

One of the typical features of the horticulture sector is its potential to create job opportunities for both skilled and unskilled population of the country. Figure 7 presents the trend of jobs created in the horticulture sector between 2008 and 2017. The generated job opportunities in the industry has shown significant growth during this period. The sector created close to 200,000 job opportunities in 2018. More interestingly, the sector created more jobs for women than men. For instance, in 2013 about 90 percent of the workforce were female (see EHPEA, 2013).

Figure 7: Level of employment in the horticulture industry



Source: EHPEA.

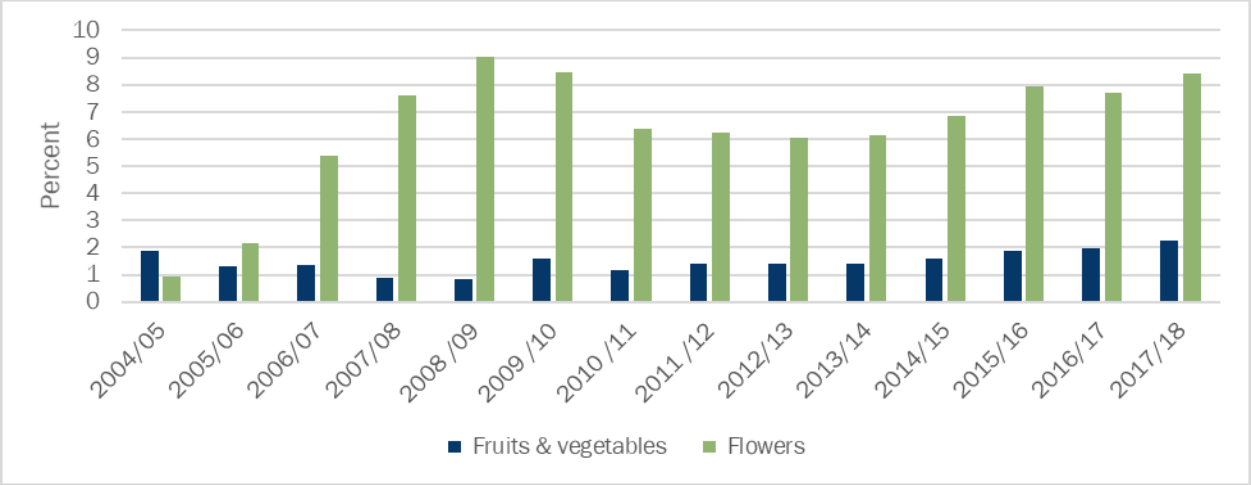
According National Planning Commission GTP midterm report, in 2016/17 fiscal year, agricultural investment created about 285,440 job opportunities for citizens, of which about 140,000 jobs were created in the horticulture industry (see NPC, 2018).

Despite being a new sector in Ethiopia, the horticulture industry—typically floriculture—showed an impressive growth. Figure 8 depicts foreign exchange earnings from horticulture industry compared to

other commodities. Export revenue from the horticulture industry increased from about $24 million in 2004/05 to $203 million in 2009/10 and further raised to $290 million in 2017/18 fiscal year.

Currently, the horticulture industry is the fourth largest contributor of export revenue for Ethiopia next to coffee, oilseed, and manufacturing sectors. For instance, in 2017/18 the sector accounted for 10.6 percent of the total merchandise export in the country, of which cut flower contributes much of the share (around 79 percent). The recent surge of export revenue from the floriculture industry ranked the country second among African countries, next to Kenya.

Figure 8: Foreign exchange earnings from horticulture industry by sub-sector (share of total exports)



Source: Author's compilation based on NBE Datasets.

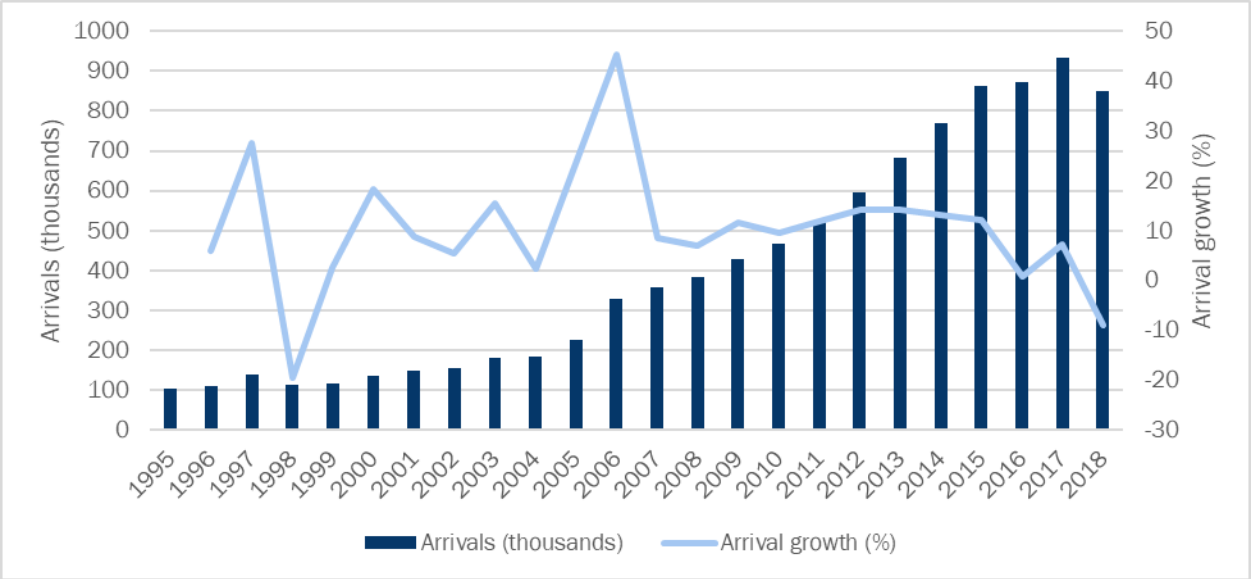
3.2.3 Tourism

Tourism has a huge potential in Ethiopia. It is a large country with a diverse natural ecosystem (ecology and biodiversity) and boasts several cultural and historical sites. Currently, eight cultural and one natural sites have been registered by UNESCO as World Heritage Sites. Seven other sites are being considered as world heritage sites. Moreover, Ethiopia has four intangible cultural heritages registered, while one is under review by UNESCO.

The tourism industry is not new to Ethiopia. To promote tourism, the Ethiopian Tourism Organization (ETO) was established in 1961. However, due to civil wars and economic closures during the socialist government of the 1970s and 80s, the tourism industry largely stagnated for many decades. After the downfall of the socialist government in 1991, the tourism sector started to revive and has been on an upward trajectory since the mid-1990s except for 1998, which showed a dip due to the Ethio-Eritrean war, and in 2016 due to nationwide protests, and 2018 as the country was undergoing instability and internal displacement following changes in administration and some opening of the political space (See Figure 9).

The country registered the highest growth of foreign visitors in 2006 (more than 45 percent growth compared to 2005). Along with reforms, political and economic stability, as well as improvement of infrastructure and service, have played an important role in the improvement of the industry. Furthermore, the rising trend of tourism—also driven by the increase of international tourism worldwide—improved air connectivity and created a dynamic economy that generates many business trips (see, for example, Altes, 2018).

Figure 9: International arrivals to Ethiopia between 1995 and 2018



Source: WDI (2020).

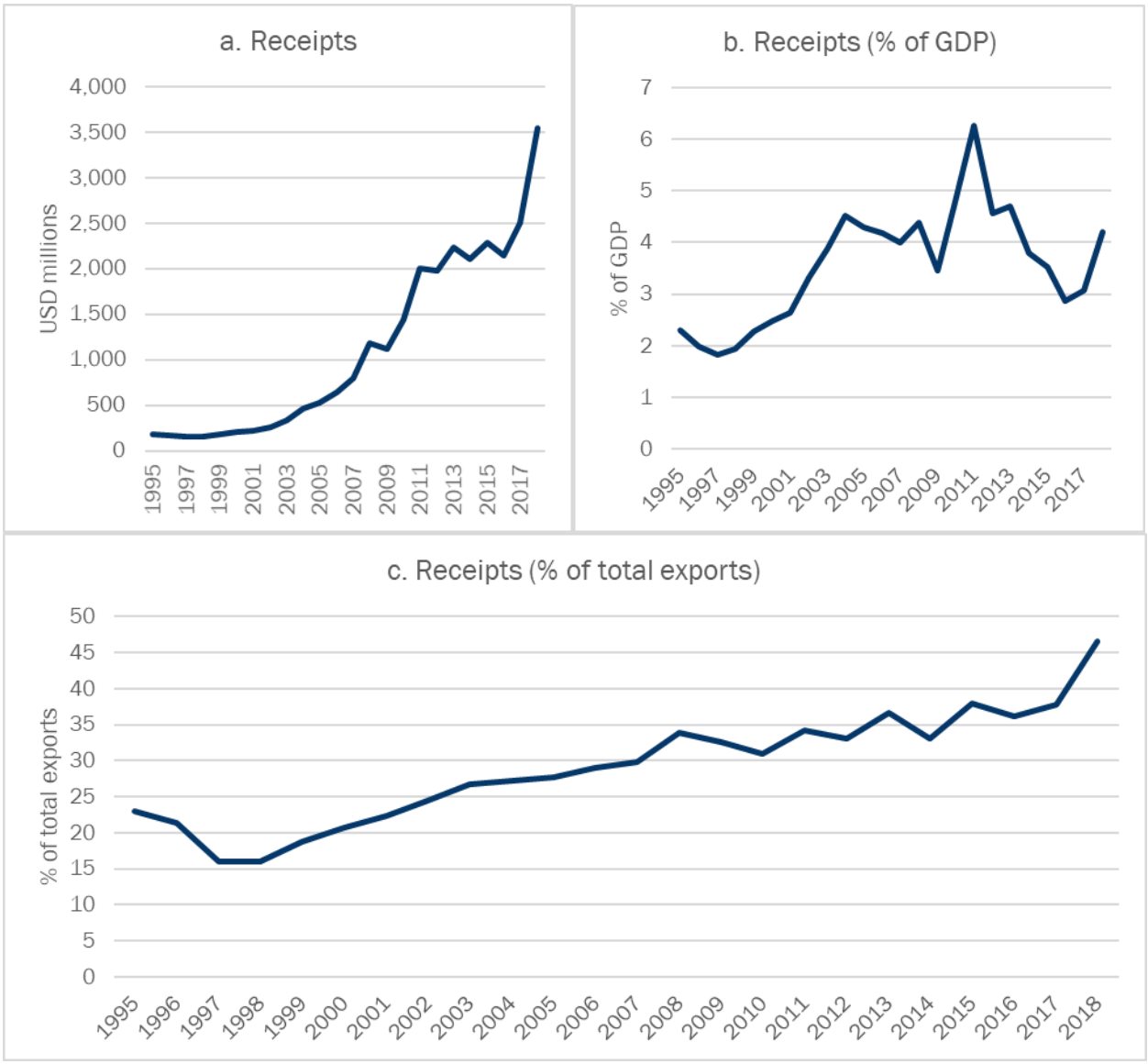
Figure 10 presents revenue generated from international tourism and its contribution to GDP in Ethiopia. Consistent with the trajectory of arrivals, the amount of revenue generated from the tourism sector has been on the rise during our period of consideration. Visitors export has increased from about $117 million in 1995 to more than $3.5 billion in 2018, and experienced rapid growth rates averaging about 14 percent per year. Since the mid-2000s, the revenue from international tourism has increased particularly rapidly; the figure almost tripled in 2010 and increased by almost seven-fold in 2018 [3].

The increasing role of the tourism sector in Ethiopian economy can be illustrated by its direct contribution to the country's GDP, which accounted for more than 3 percent of GDP since 2002 and recorded the highest contribution in 2011 (about 6 percent of GDP)[4]. The total contribution of the tourism industry to GDP, however, is much higher than this due to its indirect and induced impacts. For instance, the total contribution of Travel & Tourism to GDP (including wider effects from investment, the supply chain, and induced income effects) was 10.3 percent in 2013.[5] A separate data from the WTTC Economic Impact report 2020, shows that in 2019 the share of travel and tourism in GDP in Ethiopia was 6.7 percent while the share in total employment was 7 percent creating close to 2 million jobs.

Figure 10 also presents the contribution of the tourist industry to the total export of goods and services. Consistent with the number of arrivals and revenue, the export share of the tourism industry has grown remarkably over the period of consideration, increased from 20.6 percent in 2000 to 46.5 percent in 2018, and experienced on average 4.5 percent growth rate per annum.

[3] The 2019 WTTC annual review of travel and tourism economic impact shows that Ethiopia's Travel & Tourism economy grew by 48.6 percent in 2018, the largest of any country in the world.
[4] The direct effect mainly consisting of economic activity generated by industries such as hotels, travel agents, airlines, and other passenger transportation services (excluding commuter services) (see WTTC, 2015).
[5] See UNECA, 2015.

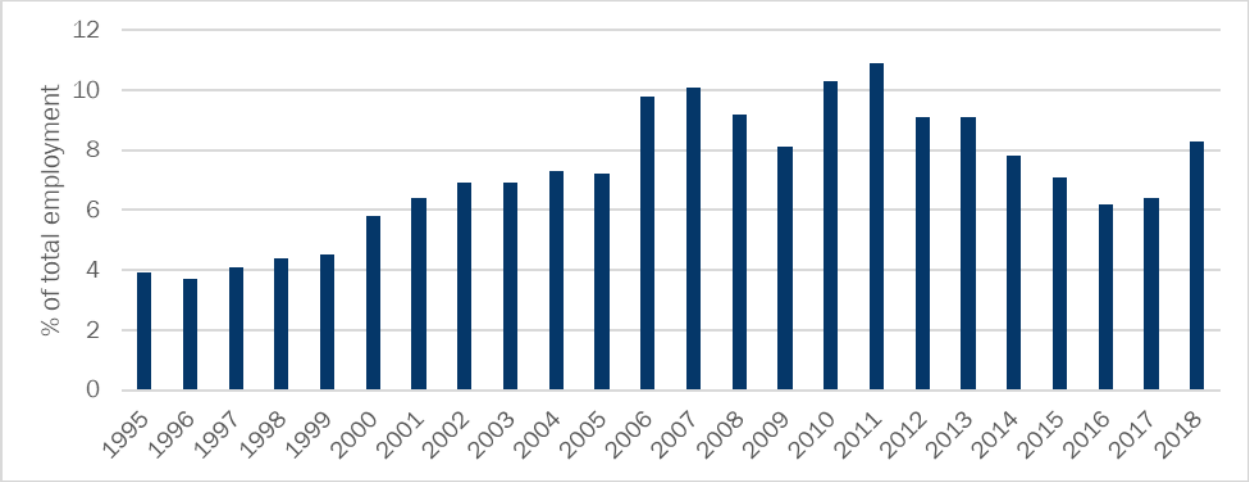
Figure 10: Receipts from international tourism in Ethiopia, 1995-2018



Source: Author's calculations based on data from WDI, 2020.

In terms of employment opportunities especially for youth and women, the tourism industry has substantial potential (e.g., Gebreeyesus, 2017). Figure 11 provides the share of employment of travel and tourism in total employment. While it steadily increased from 1995 to 2011 (except declines in 2008 and 2009), it started to decline after 2011 and then shows a sign of revival in 2018. The decline in 2008 and 2009 can be explained by the world economic recession while the declines in 2016 and 2017 can be ascribed to the protests in the country. Between 1995 and 2005, the average share of employment in travel and tourism in total employment was 5.6 percent while the average for 2010 to 2018 was 8.4 percent. Overall, the contribution of employment of the tourism industry has shown an increase in recent years.

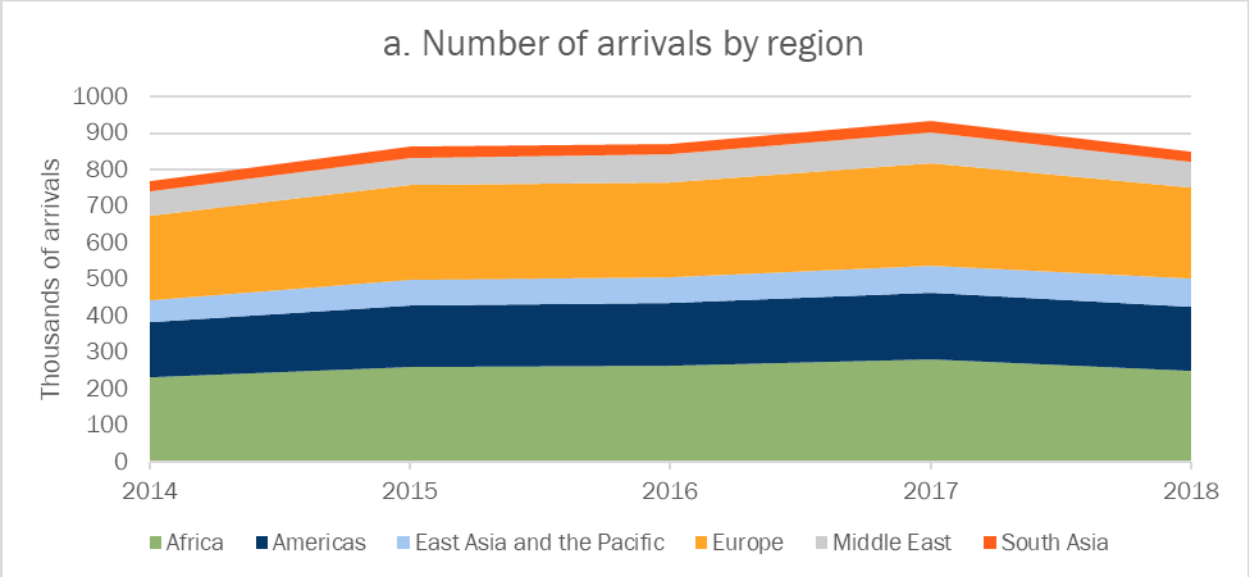
Figure 11: Employment share of tourism in total employment (%), 1995-2018

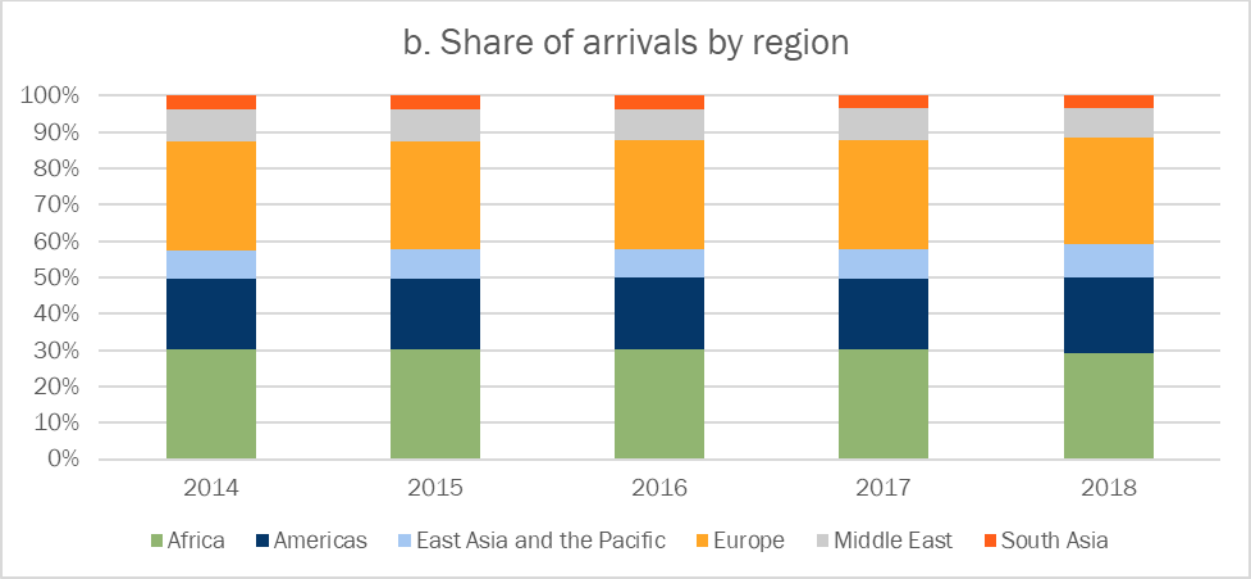


Source: World Travel and Tourism Council Data.

In terms of the source countries of tourists, Figure 12 indicates Africa and Europe as the major sources with each covering about a third of tourist arrivals. The Americas follow with about 20 percent of tourists (the majority of whom are from the U.S.) to Ethiopia. By individual countries, the top five tourist sources are U.S. (17 percent), UK (5 percent), China (5 percent), Germany (4 percent), and Italy (4). Among countries in Africa, East Africa, mainly Kenya, Sudan, Djibouti, Tanzania, and Uganda, are the largest source of tourists followed by West Africa (mainly Nigeria). Unlike trade in good, the tourism sector in Ethiopia has a fairly strong regional integration with even further potential. In the last couple of years, Ethiopia has waived visa before arrival for all members of the African Union, which will potentially boost tourism flows (e.g., McKay and Tekleselassie (2018); Reilly and Tekleselassie (2018)) for the role of visa on the flow of people across borders).

Figure 12: Foreign tourist arrivals by region



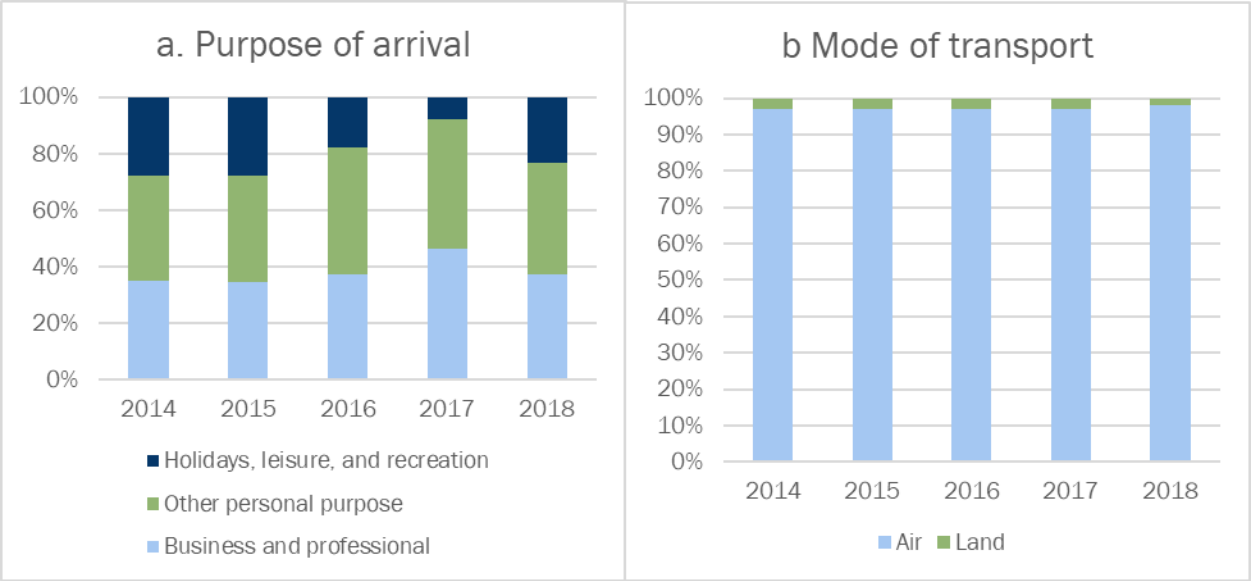


Source: UNWTO (2019).

In terms of the purpose of visit, the vast majority of visitors to Ethiopia are for holidays, leisure, and recreation purposes accounting for more than 45 percent in 2016 and 2017 (with a slight decrease in shares in 2018). Travel for business and professional purposes accounted for about 23 percent of visitors, while the remaining for other personal reasons as shown in Figure 13.

Regarding the mode of transport, air travel is the major means of transportation for international tourists to Ethiopia. About 98 percent of tourists who visited Ethiopia in 2018 arrived by air (shown in the second panel of Figure 9). In particular, Ethiopian Airlines is playing a vital role in supporting the tourism sector. According to the 2020 IATA report on the Ethiopian economy, the air transport industry and its supply chain support $1.54 billion of GDP in Ethiopia with a further $2.61 billion of the GDP coming from spending by foreign tourists arriving by air. Hence, up to 5.7 percent of GDP of the country is supported by the air transport sector and tourists arriving by air (IATA, 2020).

Figure 13: Foreign visitors, arrivals by purpose and mode of transport



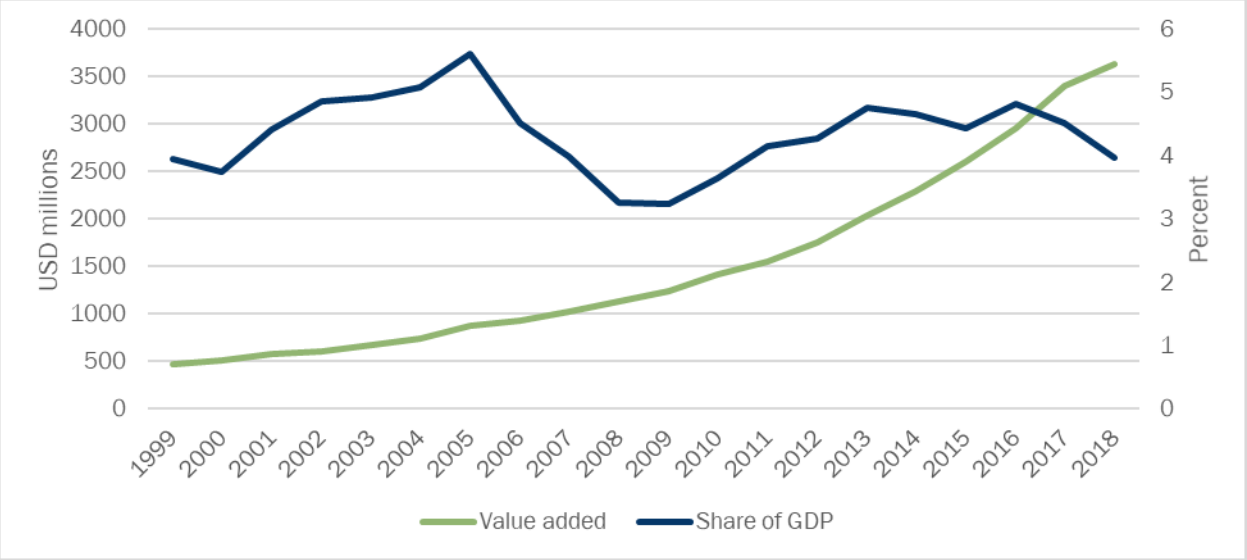
Source: UNWTO (2019).

3.2.4 Transport

Transport is regarded as an important service sector in the Ethiopian economy. The development of transport industry has both direct and indirect consequences. Investment in transport sector can play a direct role in reducing traders' logistical costs and time of delivery through minimizing travel times, reducing the operating costs of transport, and enhancing access to destinations within the network. It also has an indirect effect on productivity and the spatial pattern of economic development, mainly by stimulating a variety of inter-connected economic wide processes. For instance, in 2018/19 the service sector recorded 11 percent growth rate, which was largely ascribed to the expansion of transport and communication sector (21 percent) (NBE annual report, 2018/19).

Figure 14 below depicts contribution of transport, storage, and communication sector to Ethiopia's GDP over last two decades. As we can see from the Figure, the value addition generated by the industry has steadily grown during that period; it has increased from $509 million to more than $3.6 billion in 2018 (recorded an average growth rate of 10 percent per annual). In addition, the sector accounted for about 4 percent of GDP in the country. The transport and communications also accounted for 14 percent of the total service output, the second largest contributor next to wholesale and retail trade (35.9 percent) (see NBE annual report, 2018/19).

Figure 14: Transport, storage and communication, value added (constant 2015 prices)

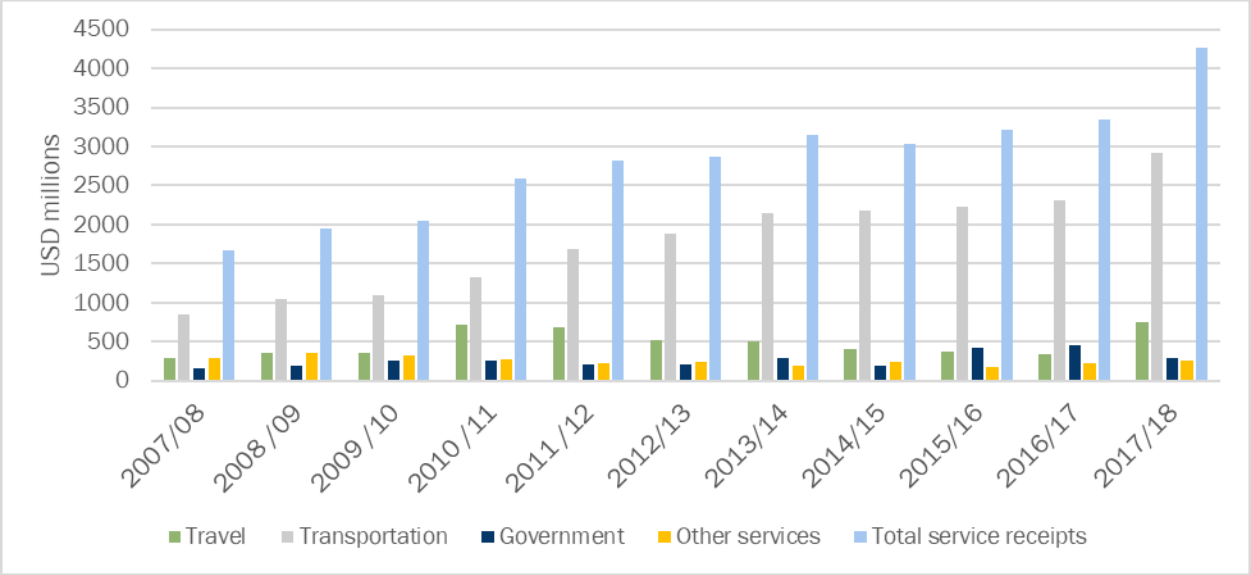


Source: Author's compilation based on UNSAT Datasets.

Service exports are important parts of Ethiopian growth strategy. In particular, the transport industry (mainly air transport) is a key export service sector in the country. Figure 15 shows export revenue generated from non-factor service sectors over time. Total service export has registered significant growth under the period of consideration, climbing from about $1.6 billion in 2007/08 to almost $4.2 billion in 2017/18.

Ethiopian Airlines has been crucial for exporting key items such as flower and 'khat'. A typical example is when the COVID-19 lockdown in Europe was eased after April 2020, flower and coffee exports from Ethiopia sharply increased as the Ethiopian Airlines transported the flowers to Europe while airlines in other flower exporting countries were struggling to do so.

Figure 15: Export revenue from non-factor service sectors (in million USD)



Source: Author's compilation based on NBE datasets.

4. Sectoral decomposition: IWOSS in comparative perspective with manufacturing and with Non-IWOSS

This section provides a comparative perspective of the IWOSS industries with the manufacturing sectors and other non-IWOSS industries particularly focusing on productivity, employment, and export.

Table 2 reports employment growth and share by sector. The non-IWOSS industries, particularly agriculture, remain the major employer in the Ethiopian economy. About 87 percent (2000) and 85 percent (2017) of employment in the country comes from non-IWOSS industries respectively. Agriculture share of employment remains high at 68 percent in 2017, slightly lower than the 80 percent in 2000.

In 2000, the total employment by the IWOSS industries was about 9 percent of total employment. The share of IWOSS employment increased to 11 percent in 2017. The share of manufacturing sector in total employment remained at about 4 percent in 2000 and 2017 and hence its share remained static. In terms of annual growth, total employment in the country grew on average by 5 percent between 2000 and 2017. Employment by the IWOSS industries grew, on average by 6 percent annually between 2000 and 2017. Transport and financial services particularly showed remarkable growth in the period—both of which are crucial service sectors that can propel the rest of the economy. Among the non-IWOSS industries, mining, utilities, and construction showed remarkable growth in employment. However, despite the growth, the share of employment in mining and utilities remained very low. The employment data on agro-processing only includes those of medium and large enterprises due to lack of data on smaller enterprises. Hence, the data on the employment of agro-processing has been underestimated. Similarly, employment data in agriculture has been slightly overestimated as it includes horticulture (due to a lack of data), which is normally categorized under IWOSS. Therefore, the employment data on Table 2 slightly exaggerates the share of agriculture as a non-IWOSS sector and underestimates the share of the IWOSS industries.

Table 2: Employment trends comparison

	Employment			Employment share		Annual growth
	2000	2017	Change	2000	2017	2000-2017
	('000)				(%)	
Total employment	26449.31	47894.01	21444.70			4.77
Total IWOSS	2479.27	5045.07	2565.80	9.37	10.53	6.09
Agro-processing	427.05	550.80	123.75	1.61	1.15	1.70
Transport	162.115	593.715	431.60	0.61	1.24	15.66
Financial and business services	76.35	745.49	669.14	0.29	1.56	51.55
Trade	1813.751	3155.061	1341.31	6.86	6.59	4.35
Manufacturing	1006.00	2072.07	1066.07	3.66	4.25	6.23
Other non-IWOSS	22964.038	40776.868	17812.83	86.82	85.14	4.56
Agriculture	21075.677	32655.053	11579.38	79.68	68.18	3.23
Mining	26.74	274.093	247.35	0.10	0.57	54.41
Utilities	38.929	276.762	237.83	0.15	0.58	35.94
Construction	327.01	1621.588	1294.58	1.24	3.39	23.29
Government	822.89	1827.91	1005.01	3.11	3.82	7.18
Other	672.789	4121.466	3448.68	2.54	8.61	30.15

Note: This data excludes employment in hotels and restaurants due to poor quality. Data on agro-processing only contains those by medium and large enterprises due to lack of data. Hence its value is underestimated.
Source: Author's calculations computed from PDC and ILO.

Table 3 reports changes in GDP and employment and employment elasticity. Overall employment elasticity for the period 2000 and 2017 has been 0.28. The employment elasticity of the IWOSS industries is 0.24 while that of manufacturing stands at the lower level of 0.18. The other non-IWOSS category, which comprises agriculture, utility, construction, and government sectors also has an employment elasticity of 0.24 for the 2000-2017 period. Hence, IWOSS industries have had one of the highest employment elasticities between 2000-2017 despite the underestimation due to the exclusion of the booming horticulture sector (lack of data) in Ethiopia.[6]

The share of export by the IWOSS industries increased from 15.58 percent in 2011 to 19.17 percent in 2017 as shown in Table 4. Given that Ethiopia's export has been dominated by primary agricultural goods, the share of IWOSS industries can be considered large among those that involve processing. In this analysis, coffee—the largest export item for Ethiopia, which accounts for 30 percent of total exports alone—is categorized under non-IWOSS as it is exported predominantly unprocessed. Manufacturing export remains low at 6.84 percent in 2017.

Overall, export earning in Ethiopia cover only a quarter of its import bills. Export revenue in the last decade has remained stagnant due to a number of supply side constraints including power outages, foreign exchange shortage, logistics problems, and skills shortage among others.

[6] Value-added and employment data for horticulture in Ethiopia are lumped with agriculture. The most common data on horticulture reported officially in Ethiopia is exports by medium and large horticulture enterprises.

Table 3: Changes in GDP (value-added) and employment

	Change in GDP (%)	Change in employment (%)	Employment elasticity
	2000-2017	2000-2017	2000-2017
Overall economy	319.17	89.31	0.28
Total IWOSS	432.16	103.49	0.24
Agro-processing	228.12	28.98	0.13
Transport	568.97	266.23	0.47
Financial and business services	485.78	876.36	1.80
Trade	416.61	73.95	0.18
Manufacturing	575.72	105.97	0.18
Other non-IWOSS	265.45	63.40	0.24
Agriculture	160.60	54.94	0.34
Utilities	308.89	610.94	1.98
Construction	1467.65	395.88	0.27
Government	149.91	122.13	0.81

Source: Author's calculations based on data from PDC and ILO.

Table 4: Export shares and growth

	2011		2017		2011-2017
	USD million	Share	USD million	Share	Annual % growth
IWOSS total	430.44	15.58	544.66	19.17	4.42
IWOSS services exports					
Various services	158.49	5.74	195.18	6.87	3.86
IWOSS goods exports					
Horticulture	208.37	7.54	250.67	8.82	3.38
Agro-processing	63.58	2.30	98.81	3.48	9.24
Manufacturing total					
Leather and Textiles	166.92	6.04	194.29	6.84	2.73
Mining	467.84	16.94	208.98	7.35	-9.22
Total exports (goods and services)	2762.51		2841.38		0.48

Source: Author's calculations using data from National Bank of Ethiopia, various years.

5. Constraints to IWOSS growth

5.1 Constraints to agro-industry

Agro-processing, particularly the food and beverage industry, contributes the highest value added to GDP and employment among manufacturing industries. However, the contribution of the

manufacturing industry in general to GDP and employment remains very low. Moreover, among export earnings from the manufacturing industry in general, agro-industry in particular, remains insignificant. Hence, Ethiopia is lagging in realizing its potential in agro-processing. Some of the key binding constraints for the development of the agro-processing industry are the following (e.g., Abebe et al., 2019).

***Lack of quantity and quality of raw material*:** The country currently imports a large amount of wheat despite large potential arable land to produce domestically. Moreover, the varieties required for agro-processing and the ones being produced by farmers are different. There is also a low productivity of grains. Moreover, there is a weak linkage between farmers and agro-processing enterprises.

Inadequate skilled manpower: Mismatch between demand and supply of labor force. Currently, there are no technical and vocational education and training (TVET) level courses specifically in agro-processing except two TVET colleges (Holeta and Wukro Poly Technic colleges), which are providing training in agro-processing as pilot programs. There is a plan to expand courses in agro-processing in other colleges. The skill shortage is not only on the side of production workers, limited quality and safety standard practices in the agro-processing industry also pose difficulties. Admassie et al. (2016) find attracting and retaining skilled labor to be a challenge in the agro-processing industry.

***Inadequate rural infrastructure*:** Poor rural connectivity to link farmers with agro-processing enterprise and limited irrigation practice and power interruptions pose challenges to the agro-processing industry. Despite substantial improvement in road infrastructure in the country, most of rural Ethiopia remains poorly connected with roads.

5.2 Constraints to horticulture

Despite presence of many opportunities doing business in the floriculture industry, several factors hinder further development of the sector. Despite significant improvement in recent years, performance has been below par and lags behind its potential level as well as its big competitors. The followings are key bottleneck of doing business in the cut flower industry.

Cool chain management (CCM): is the process of planning, implementing, and controlling efficient, effective flow and storage of perishable goods. CCM is crucial to keep the quality of the product and consists of a farm level pack-house, cold truck, and airport storage. Cut flowers are one of the most easily perishable products. Hence, CMM is important to maintain the quality of cut flower exports. Lack of cold chain management is one of the key bottlenecks of cut flower firms in Ethiopia. In particular, there are only a few refrigerated trucks to transport packed cut flower from farms to airport cold storage. Lack of such service providers raises investment requirements of exporting firms. For instance, farm cold storage, packing shed, and trucks and vehicles investment accounted for about 16 percent of total start-up investment (e.g., Gebreeyesus and Sonobe, 2012). Furthermore, lack of handling and forwarding service providers are other key challenges of floriculture industry. Thus, improving availability and quality of packaging and handling materials and service providers, cooling facilities, and coordination among key stakeholders are very important to maintain timely and high quality cut flower exports.

Shortage of skilled work force: Availability of skilled labor force is very important to produce and deliver high quality horticulture products. In particular, skillful labor force is important during harvesting, packaging, handling, and marketing to the international market. In this regard, there are shortages of skilled labor force specialized in flower production and marketing. This problem was very serious for most early entrant cut flower farms in the country (see Gebreeyesus and Sonobe, 2012).

Political instability: Many scholars argue that political uncertainty is a serious malaise for economic development. Political unrest could result in frequent policy changes and adversely affect economic performance of a given country mainly through lowering productivity growth and physical and human

capital accumulation (e.g., Aisen and Veiga, 2013). The recent political instability, mainly between 2015 and 2018 highly affects the flower farms industry. In August 2016, protests occurred in the country resulting in the destruction of machines, vehicles, and greenhouses of various companies, which resulted in more than 11,000 job losses in the flower industry.[7] In general, Political disruption, associated with social unrest, could adversely affect the growth of the sector through lower foreign and domestic investments.

Poor quality of infrastructure and logistic coordination: Despite expansion in recent years, infrastructure system in the country is characterized by poor quality of services, low capacity of the existing road network, and lack of all-weather road networks. Low quality of transport sector (including lack of all-weather condition road network) and poor transport policy are constraining effective and efficient service provisions and therefore, hinder effective implementation of various development policies designed to stimulate and intensify national development of which horticulture sector is one. In addition, a distinct lack of coordination among diverse actors, such as federal and regional governments, financial institutions, investment promotion agencies, and implementing agencies deter the full operation of licensed investment projects and exploitation of the existing potential in the horticulture sector.

High competition: Access to global market is a big challenge for most developing countries, including Ethiopia, mainly due to intense competition. Furthermore, lack of market diversification is another main challenge of Ethiopian producers and exporters of cut flowers. For instance, over 90 percent of cut flower exports are destined to the EU market, mainly Netherlands (e.g., Gebreeyesus and Sonobe, 2012).

High transportation cost: According to Ethiopian Flower Producers and Exporters Association, air transport is one of the key constraints they face in the sector. Specifically, the sector faces the ever-increasing air transportation costs, paying the airline $1.75 per kg.[8]

5.3 Constraints to the tourism industry

Notwithstanding the significant improvement in recent years, the tourism industry in Ethiopia lags behind its potential and in comparison, to its peers. The following are some of the key bottlenecks of the tourism industry.

Despite the huge potential for the tourism sector as a source of foreign exchange, employment and value additions to the economy, the industry maintains lower competitiveness compared to peer countries such as Kenya. The key binding constraints for the growth of the tourism industry in the country include the following (e.g., Wondowossen, et.al, 2014; UNECA, 2015; Gebreeyesus, 2017).

Lack of infrastructure: Despite its expansion over recent periods, the infrastructure development is still at its infancy stage. There is insufficient transport infrastructure in Ethiopia in quality and coverage (e.g., see, UNECA, 2015). Besides transport infrastructure, other supporting infrastructure such as hotels and restaurants, health services, and banking services near the tourist destinations remain insufficient.

Low level of promotion and marketing: Despite slight improvement recently, tourism marketing and promotion remain at a low level in Ethiopia. For instance, there are lack of signages to tourist attractions of the country. Even in Addis Ababa, there are few brochures or maps of the city or its attractions. Access to tourist products are difficult and can be inappropriately expensive. Lack of

[7] See allAfrica.com, which published on October 26, 2016. https://www.floraldaily.com/article/7249/Ethiopian-flower-market-less-rosy-in-the-face-of-unrest/

[8] Market Insider (published on March 28, 2014). Ethiopian Flower Sector - Bloomer or Gloomer. International Trade Center. https://www.intracen.org/itc/blog/market-insider/Ethiopian-flower-sector-bloomer-or-gloome/

effective marketing strategies is one of the key challenges to the development of the tourism industry in Ethiopia.

Weak coordination among the stakeholders: Even though the institutional framework is in place, there is weak coordination and implementation capacity due to financial constraints and lack of skilled manpower. Tourism planning remains fragmented at the national and regional levels.

Lack of trained manpower: Poor Human resource capacity is another challenge of the tourism industry in Ethiopia. The sector faces a shortage of diversified skilled manpower in the desired quality such as guides, marketers, frontline hospitality service providers, event managers, etc. This has resulted in poor service quality of the tourism industry.

Other challenges: The following are additional challenges (Altes, 2018):

- Lack of basic and IT infrastructure and poor digital marketing
- Narrow product range offered to the market by incoming operators
- Unplanned destination development
- Poor visitor management in natural and heritage sites
- Poor tourism statistics
- Little attention for sustainable practices among public and private players
- Lack of suitable funding options available for tourism especially for SMEs

5.4 Constraints to the transport sector

According to the World Bank (2015), Ethiopia ranks low in logistics services—104th out of 160 economies, lagging behind Kenya (74th) and Rwanda (80th). It generally fares poorly on infrastructure and international shipments. Some of the key constraints facing the transport sector, notably the air transport in Ethiopia, include the following (e.g., AUC (2015):

- Government key focus areas have remained on manufacturing sector: the sector has not been identified as a priority for support by government despite being an important enabling sector even for the manufacturing industry.
- Excessive regulatory restrictions on investment opportunities: except for the Ethiopian Airlines, which enjoyed substantial autonomy in management, the transport sector remains highly regulated making investment in the sector less profitable.
- Bureaucratic business environment: Permits and licenses for engaging in the sector require excessive red-tape and is prone to corruption.
- Challenging financial services regulation: currently the Ethiopia financial system lacks flexibility.
- Regional political instability: stability problems in the Horn of Africa has negatively affected transport links in the region.

6. Trends into the future: Potential growth and labor demand

As discussed, the IWOSS in Ethiopia have an enormous potential for job creation. In this section, we discuss potential future growth of the industries and trends in labor demand.

6.1 Potential growth and labor demand for agro-industry and horticulture

Agro-industry and horticulture growth potential

With a growing economy and the operationalization of the integrated agro-processing industrial parks (IAIPs), the food and beverage industry is expected to grow. According to a forecast by the Ministry of Industry (MOI, 2015), the share of food and beverage industries in GDP is expected to rise to 6.3 percent by 2025 from a value of 3.1 percent in 2013. Hence, this shows the food and beverage industry to be one of the fast-growing industries in the Ethiopian economy.

The MOI (2015) forecasted employment in the food and beverage industries to grow to about 3.8 million by 2015 from about 66,000 in 2025. This translates to a compounded annual growth rate of close to 50 percent. This was based on ambitious GTP-II targets and potential projections. Like most of the GTP-II targets, this is likely to overestimate the actual performance. However, it is indicative of the importance of the sector as a key employment creator. About 90 percent of the jobs in the food and beverage industry in 2025 is forecasted to be at the IAIPs, which will be constructed at various locations throughout the country.

Some of the key issues the establishment of the IAIPs can help address include improved provision infrastructure such as electricity, access to land, and enhanced services such as customs. Moreover, the Rural Transformation Centres (RTCs), which are being setup, will facilitate an efficient collection of agricultural outputs from farmers to agro-processors as each RTC will have warehouses in selected areas. The RTCs are also envisaged to play a crucial role enhancing productivity of farmers through training and extension services to farmers and rural communities.

The sectoral 10-year plan by the Ministry of Agriculture (MoA) seeks to promote smallholder farmers engaged in horticulture by availing technologies that enhance the productivity of the sector such as nethouses and greenhouses. Between 2020 and 2030 horticulture by smallholder farmers is expected to grow annually at an average of 4.5 percent (Table 5).

Table 5: 10-year plan for smallholder horticulture

	Millions of quintals		Average annual growth
	2020	2030	2020-2030
Main raining season (Meher)	68	112	6.47
Second season (Belg)	47	54	1.49
Irrigation	65	95	4.62
Total smallholder horticulture	180	261	4.50

Note: A quintal is equivalent to 100 kgs.
Source: MoA (2020).

Labor demand and skill requirement in agro-industry and horticulture

Currently, the food and beverages sector faces several gaps in the skills of the workforce. For example, MOI (2015) identified the following gaps in skills.

- The current workforce lacks formal qualification as per the national qualification framework.
- Many of TVET and higher education institutions graduates employed in the sector demonstrate lack of competences in production processes.
- Specific areas of training (for example, edible oil technologist, turbine specialist, powder milk processors, fish processing technologists etc.) are not easily available in the labor market.
- Competence in using modern food and beverage production machinery is limited (for example, limitation in the using electromechanical equipment.
- Skill gaps in maintenance and repair of food and beverage production machineries.

- Limited opportunity for skill development in the existing workforce to upgrade their skills.
- Lack of skilled professionals in the standardization of products and processes in the sector.
- Skill shortage in product development and innovation.

According to MOI (2015), up to 72 percent of the workforce in the food and beverage sector is the skilled production workforce, whereas the remaining 38 percent is distributed between the professional workforce (engineers and technologist) and management and administrative staff. Skilled production workforce includes mostly TVET levels such as basic operations level I, processing /production II, processing /production III, processing /production IV, and processing V.

Meeting the skill demand of the food and beverage industry at the desired quality will be a daunting challenge for the county's Higher Education Institutions (HEIs) and TVET system. Current skill and labor supply in the country is characterized by low quality, skill gap and mismatch, low productivity, and high labor turnover among others (e.g., Beyene and Tekleselassie, 2018). Since agro-processing requires modest skills, the potential of the TVET system in producing the required skills is high (e.g., World Bank, 2015). However, there is a need for improving the quality of the TVET system as well as the relevance of the programs being offered currently as they rely less on skill anticipation systems and remain far from being demand-driven.

6.2 Potential growth and labor demand for tourism industry and transport industries

Based on the projection of the Ministry of Culture and Tourism (MoCT) 10-year perspective plan (MoCT, 2020), the tourism sector is envisaged to create about 6 million jobs by 2030, up from about 1.6. million in 2020 mostly, focusing on youth and women (Table 6). This translates to annual job-creation growth of 26.6 percent. Similarly, the MoCT plans to increase the number of tourists to 7.3 million from its current value of 849,122, which implies an annual average growth rate of 76 percent. In addition, the MoCT has set ambitious targets for revenue generation as it targets its $23 billion by 2030, up from its current value of $3 billion. The share of tourism in GDP is projected to grow to 10 percent by 2030 from its current value 6.1 percent. The 2015-2025 sustainable tourism masters plan prepared by the MoCT and ECA also sets ambitious plans for the tourism sector (UNECA, 2015). However, those projections will be difficult to achieve unless the country's current political instability is tamed.

Table 6: Ethiopia tourism growth projections, 2030

Indicator	2020	2030	Average annual growth (2020-2030) (%)
Employment opportunities	1,639,856	6,000,335	26.59
Number of inbound tourists	849,122	7,300,000	75.97
Tourism revenue (USD billions)	3.17	23.15	63.26
Tourism's share of GDP (%)	6.1	10	6.39

Source: MoCT (2020).

The high tourism growth projected in Table 6 will induce significant labor demand. Similarly, a study by The International Air Transport Association's (IATA)[9] indicated that currently air transport and foreign tourists arriving by air contributed to 5.7 percent of the nation's GDP valued at $4.2 billion and about 1.1 million jobs. The report also showed that if current trends continue, Ethiopia's air transport market

[9] https://www.iata.org/en/pressroom/pr/2020-03-04-02/

will expand by 226 percent over the next 20 years, which translates to annual average growth rate of 11.3 percent.

Meeting the labor demand with the desired quality of diversified skilled manpower in several fields such as guides, marketers, frontline hospitality service providers, event managers, etc. will be a daunting challenge. The county's higher education and TVET system will have to be equipped with the desired machinery and human resource to supply the induced labor demand.

7. Policy implications: Unlocking growth potential and overcoming skill gaps

In this section, we provide brief policy recommendations to unlock the growth potential of the IWOSS in Ethiopia focusing on agro-industry (food and beverage), horticulture, tourism, and the transport sector.

7.1 Policy implications: Agro-industry and horticulture

To unlock the potential of the food and beverage industry in Ethiopia to create gainful employment especially for the youth, we recommend specific points of skill-related and other interventions.

Skilled-related interventions

Improve core skills training provision:

Ethiopia is at the early stage of industrialization; most workers are sourced from rural areas with experience in agriculture but not in other industry. To help this group adapt to industry culture, special attention to developing core skills is needed, such as improving communication, reducing absenteeism, and enhancing industrial discipline.

- Introduce pre-employment short-term core skills training for workers who aspire to work in agro-industry.
- Develop a standard core skills training for all TVET trainees.

Expand TVET training for skills in production in agro-processing and horticulture industries

Currently, TVET courses in agro-processing are not provided by the TVET system except as a pilot program in two polytechnic colleges.

- Rollout the TVET training in agro-processing especially in colleges near the IAIPs and other potential areas.
- Enhance the quality of the TVET system by implementing cooperative training with the industry.

Enhance training in managerial skills

- Introduce a mid-level supervisor training program for agro-processing.
- Strengthen high management training customized to agro-processing industry.

Cross-cutting

- Occupational standards for agro-processing are being developed. There is a need to regularly update them in collaboration with industry representatives.
- Enhance HEI/TVET- industry linkage to enhance the provision of cooperative training.
- Equip TVET colleges with up-to-date machinery.

- Introduce a skill-demand anticipation system: currently, there is no functional skill anticipation system for any industry, and this has contributed to a skills-mismatch in the country.

7.1.2 Other interventions

- Enhance the quality of inputs by training farmers in new ways of production and desired grain varieties.
- Improve rural infrastructure to link them with agro-processing industries.

7.2 Policy implications: Tourism and transport industries

To unlock the potential of the tourism industry in Ethiopia to create gainful employment especially for the youth, we suggest skill-related and other interventions.

7.2.1 Skilled-related suggested interventions

- Expand diversified training in the desired quality to produce guides, marketers, frontline hospitality service providers, event managers, etc. especially near tourist hotspots. Universities close to major tourist destinations can take the lead in tourism training and research.
- Introduce pre-employment short-term core skills training for workers who aspire to work in tourism.
- Develop standard core skills training for all TVET trainees and university students in tourism and hospitality.
- Update occupational standard for the tourism industry regularly in collaboration with industry representatives.
- Introduce a skill-demand anticipation system: Currently, there is no functional skill-demand anticipation system for any industry in Ethiopia. The lack of such a system has contributed to skill-mismatch in the country.

7.2.2 Other interventions

- Invest in infrastructure to access tourism sites such as airports, roads, and hotels.
- Enhance coordination between stakeholders in the hotel and hospitality industries.
- Invest in tourism marketing and promotion by learning from more experienced peer countries.
- Enhance digital marketing.
- Expand the range of tourism products.
- Improve visitor management in natural and heritage sites.
- Improve tourism statistics to enhance planning and policy related to tourism.

8. Conclusion

The study has investigated the potential of industries without smokestacks to create jobs in Ethiopia focusing on agro-processing (particularly food and beverage), horticulture, tourism, and transport sectors. These categories were selected due to their employment potential, productivity, and tradability. It has also explored the key challenges and provided recommendations focusing on skills implications.

With close to 68 percent of employment share, agriculture remains by far the major source of employment in Ethiopia followed by trade (IWOSS) and manufacturing (non-IWOSS) with 7 percent and 4 percent respectively. Looking at employment growth between 2000 and 2017, mining (non-IWOSS), finance (IWOSS), utility (non-IWOSS), construction (non-IWOSS), and transport (IWOSS) registered the

fastest growth. In terms of productivity, finance (IWOSS) and transport (IWOSS) were the most productive sectors in 2017.

The study has identified a number of challenges that hinder the growth of the IWOSS in Ethiopia. The constraints relate to inadequate skilled manpower, lack of quantity and quality of raw material, poor infrastructure, high cost of transportation, poor cold chain management, and political instability. If the key constraints facing the IWOSS in Ethiopia are addressed, these industries have the potential to become important sources of employment and high-value contributors to the national economy.

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