The Challenge of Unemployment and Youth Unemployment amidst Fast Economic Growth in Ethiopia

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Bringing Rigour and Evidence to Economic Policy Making in Africa

The Challenge of Unemployment and Youth Unemployment amidst Fast Economic Growth in Ethiopia

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List of abbreviations and acronyms

ACBF	African Capacity Building Foundation
AfDB	African Development Bank
COVID-19	Corona Virus Disease 2019
CPI	Consumer Price Index
CSA	Central Statistical Authority
GDP	Gross Domestic Product
GVP	Gross value of production
LMSME	Large and Medium Scale Manufacturing Enterprises
MOFED	Ministry of Finance and Economic Development
NA	National Accounts
NBE	National Bank of Ethiopia
NLFS	National Labour Force Survey
PM	Prime Minister
SAM	Social Accounting Metrix
SMEs	Small and Medium-Sized Enterprises
SNNP	Southern Nations, Nationalities and People
SSME	Smalls Scale Manufacturing Enterprises
TFP	Total Factor Productivity
TVET	Technical and Vocational Education and Training
UUES	Urban Unemployment and Employment Survey
VA	Value-Added

Abstract

Using a varies of approaches, this study examined the challenge of general and youth unemployment during the fast growth period of Ethiopia, 2000-2021. Apart from describing the recent profile of the labour market, I found a mismatch between the sectors that are the sources of fast growth and the sectors with significant potential for job creation. A simulation exercises carried to examine the employment effect of demand stimulus is not found to change this pattern although it could lead to an increase in output. The unemployment problem is accentuated by lack of structural transformation and low or declining productivity across sectors. The probability of being unemployed is also found to be relatively higher for females and youth, compared to males and adults, respectively. Government effort to address the youth unemployment problem through the establishment of technical and vocational training schools is not helping either. Based on the findings a number of policy implications are deriver. Among this, for instance, redirecting incentives and policy support to sectors with significant employment potential – the top three identified in the study being agriculture in general and animal husbandry in particular, agro-industrial parks and labour-intensive manufacturing - could be important to address the challenge of unemployment.

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1. Introduction

Ethiopia has registered one of the highest growths in Africa in the past two decades. Despite this high and continuous economic growth for a decade and half, unemployment in general, and youth unemployment in particular, remained a major challenge. This calls for an examination of the nature of growth which was not characterized, among other things, by structural transformation and decent job creation. This study, thus, will focus on an examination of the relationship between this high growth and the challenges of unemployment in general and youth employment in particular.

The Macroeconomic and growth context and unemployment

Before the onset of COVID-19 in 2020, the government expected growth of the economy in 2019/20 has been 9%. This has turned out to be 6% according to the latest official data (NBE, 2020; Alemayehu, 2020a, 2020b). The expected growth of 9% was not surprising, given the growth record since a decade and half before this period. Using the official data, growth of the economy in the last two decades could be described as impressive with an average growth of about 9% per annum between 2000 and 2012. If the abnormal years (the first three years) are left out and the growth rate is computed from the year 2003, the average annual growth rate will be about 11% per annum for consecutive nine years. This has continued in the second decade (2011/12–2018/19), with the same average annual growth rate of 9.2% (Table 1).

In the last five years, macroeconomic instability begun to feature strongly. Among the most important indicators inflation, owing to lack of prudent monetary and fiscal policy and declining productivity and production in the food supply sector, began to appear a major problem that accompanied the high growth (see Alemayehu & Kibrom, 2011, 2020;[Table 1). Given the dependence of growth on rain-fed agriculture, as well as challenges of external and domestic resource mobilization (and hence severe shortage of foreign exchange), the sustainability of this growth always has been questionable, however (Alemayehu, 2008). Structural change has largely been absent during this high growth period—thus the manufacturing sector share in GDP remained below 5% in the last 40 years (see Alemayehu & Addis, 2016). Growth is central for job creation and poverty reduction in Ethiopia, and macroeconomic stability is a necessary

condition for that growth. Since 2005 however, although growth remained strong as shown in Table 1, macroeconomic instability that includes high inflation, significant parallel exchange rate premium and significant balance of payment deficit, among others, remained a challenge for the government (Table 1; Alemayehu & Addis, 2016).

Table 1: Major recent macroeconomic development in Ethiopia (Ethiopian fiscal year, July-June)

Macro Indicator	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20
Real GDP Growth Rate (%) *	10.3	10.4	7.6	10.1	7.7	9.0	6.1^
Inflation Rate (CPI, % Change)	8.1	10.4	7.5	8.8	16.8	15.3	21.5
Food Inflation (CPI, % Change)	10.3	12.5	7.2	11.2	14.1	19.8	23
End of period Exchange rate Br/$	19.6	20.6	21.8	23.1	27.4	28.9	36
Reserve (Month of Imports)	2.3	2.5	2.6	2.4	2.1	2.4	1.7
Gross Domestic Saving (% of GDP) *	22.5	21.9	22.4	22.5	19.7	20.2	20.9
Gross Domestic Investment (% of GDP)	40.3	39.4	38.5	38.4	34.1	37.7	30.8
Overall Budget Deficit Including Grants/Primary Deficit (% GDP)	-2.6	-2.5	-1.9	-3.28	-3.03	-2.5	-2.5
Current Acct Deficit, Including Official Transfer (%GDP)	-7.7	-11.4	-10.4	-8.0	-6.3	-5.2	-4.1
Trade Balance (X-M) % of GDP	-18.7	-20.8	-19.1	-16.0	-14.7	-13.0	-10.1
External Debt (Billions of US$)	14.0	19.09	21.74	23.3	25.8	27.0	27.7
External Debt (% GDP)	25.6	29.5	30.1	29.4	31.9	29.1	28.8
Domestic Debt (% GDP)	28.6	31.8	32.1	34.9	35.6	35.7	26.7
Total Debt (% GDP)	53.2	61.4	62.2	64.3.	67.5	64.8	55.6

Notes: *See Alemayehu and Addis (2016) for a critical review of this growth and saving figures. ^The Word Bank estimated this growth to be 4%, while IMF estimated it to be 3.2% in June 2020.
Source: NBE, Annual Report (Various Years); MOFED (2016–2019).

Since 2018, there was also significant political change where the regime that ruled the country since 1991 has been ousted by popular uprising and a new PM has taken office in April 2018 (and democratically elected since 2021). The new PM embarked in a far-reaching economic reform of liberalization three years ago. He also promised to stabilize the macro-economy and enhance growth. Still the macroeconomic imbalance remained a major problem by 2021. Thus, by 2019/20, the public debt as percentage of GDP stood above 55.6%; the export-import gap remained significant because the

country was importing about five times its exports for more than a decade. The level of exports has been stagnating below a US$3 billion mark for more than a decade. The currency depreciated 55% by September 2021, compared to the level it was a year ago. Inflation, partly because of the depreciation, became the number one problem in the country, reaching 37% (with food inflation of 40%) by September 2021.This is recently being exacerbated by political instability that include a war between the former and the new regime in the northern part of the country. Despite the macroeconomic instability, official data shows a significant growth (an average annual GDP growth of 10% since 2003/04, for 17 years) (Table 1). The latter, in fact, led us to questioning the reliability of the official growth rate and found it being exaggerated at least by 4-5 percentage points (Alemayehu & Addis, 2016).

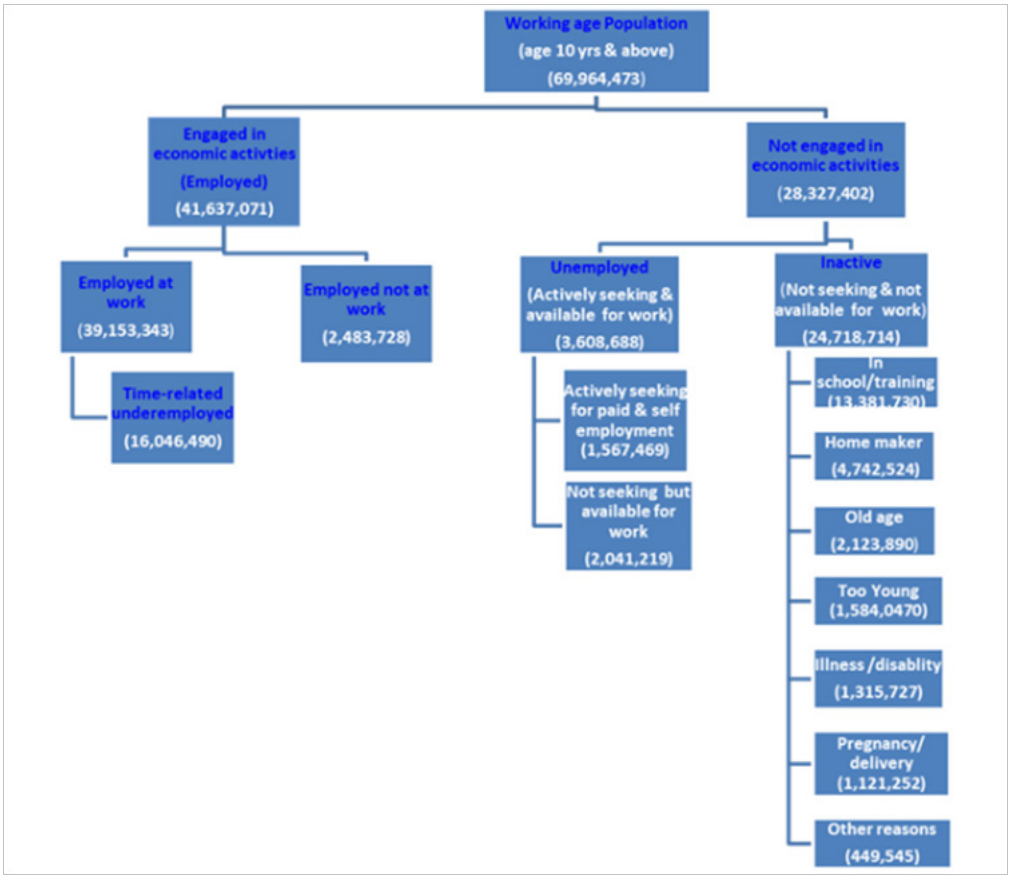
It is in the context of such growth episode and macroeconomic condition that we will examine the challenge of (youth) unemployment (urban total and youth unemployment in 2021 are 14% and 23%, respectively). What makes the unemployment problem in the country more challenging is that the country has registered one of its highest growth rates in its history yet unemployment is the major challenge. This is partly because the Ethiopian economy, and its recent excellent growth, lack structural transformation where the share of manufacturing (with a potential for significant job creation) remained stagnated at 5% of GDP for the last four decades. It might be related to the nature of growth and its financing, mal-distribution of income and the related issue of the country's feature of state fragility (Alemayehu, 2021; Alemayehu & Addis, 2016). Thus, the evolution of the economy in terms of growth, structural change and job creation for the youth is a key socioeconomic and political challenge that needs the attention of policy makers.

The challenge of youth unemployment

Like most countries in the continent, Ethiopian demographics is characterized by significant number of youths, those below the age of 30 being 72% of the population at the time of writing. The official unemployment rate, which is just 8% in 2021 (and which was just 4.5% in 2013), gives, at first sight, the wrong impression that unemployment is not a major issue in the country, in particular in 2013. This is the result of the official data presentation of the data as an average of the rural and urban where the former is very small. Rural unemployment is just 5.2% in 2021 (and negligible at 2% in 2013), while the urban unemployment rate is 18% in 2021 (16.5% in 2013). Looking at its gender dimension, the female unemployment in 2021 is much worse at 25%, compared to male which was below half this level at 11%. Thus, notwithstanding the significant disguised unemployment/under-employment in rural areas, which is estimated at 45%, unemployment is primarily an urban phenomenon in Ethiopia. The youth unemployment is also found to be higher than the general unemployment. Using the Ethiopian official definition of youth with age group 15-29, the national “reduced definition” based youth unemployment in 2021 was found to be 14%[1], 6 percentage points above the general unemployment rate. In the urban

areas the youth unemployment rate is very high at 23.1% in 2021. This, in turn is very high for females at 29% compared to that of male which is 16%. The rural youth unemployment at 12% is relatively better, however (this rural rate for female and male also being 16.4% and 7.4%, respectively). The general labour market profile of the country in 2021 is given in Figure 1.

Figure 1: The profile of the Ethiopian labour market in 2021



Source: CSA, National Labour Force Survey, 2021.

As shown in Figure 1, out of about 100 million population at the time of the data collection, 70 million are economically active, of which 42 million are engaged in economic activity. In the same year, 28 million are not engaged in economic activity (because they are in school, too young, ill, etc.), of which 3.6 million are unemployed. We will examine in detail the profile of this labour market in Section 3. The general conclusion from the above information is that, unemployment in general, and youth unemployment in particular, is a serious problem in Ethiopia, especially in urban areas, and particularly for females, despite the registered very high and continuous growth for decades. Understanding this puzzle is the subject of this study.

With this general picture, the rest of the study is organized as follows. The analytical framework of the study is given in Section 2. This will be followed by Section 3 that will present the general profile of employment and unemployment in Ethiopia. In Section 4, an in-depth analysis of the pattern of growth, structural change, and employment conditions are examined in detail. Section 5 is devoted to an identification of the major determinants of unemployment in general, and youth unemployment in particular, using micro data. Section 6 concludes the study.

2. The analytical framework

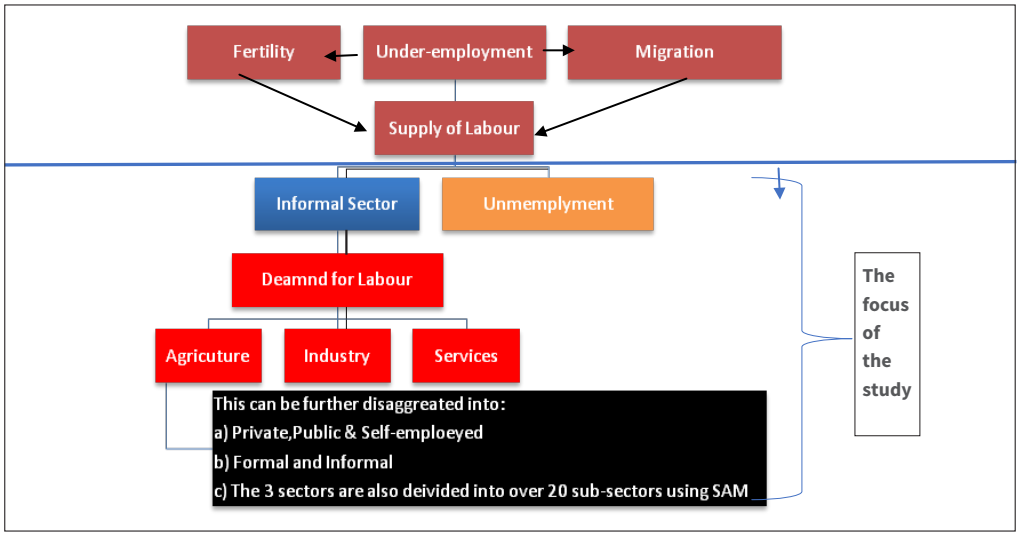
Analytical framework: General

Rapid population growth during recent decades has resulted in a large parallel growth in the labour force in Ethiopia. The absolute size of the national labour force is estimated at 69 million in 2021. This was 40 million in 2005, up from an estimated 13 million people in 1984 Lorenzo and Rosati, 2007; NBE, 2019).] This demographic dynamic has put an enormous pressure on available jobs, leading to unemployment problem in general, and significant youth unemployment in particular. The latter is not only an economic challenge, but also a political and a peace challenge as recent African conflict studies show. Recent studies about African youth unemployment (AfDB, 2012 cited in ACBF, 2017) noted that in an AfDB survey on youth unemployment in Africa, country experts identified low aggregate labour demand as a major obstacle to youth unemployment in 89% of the countries studied (AfDB, 2012). Lack of skills required by the labour market is also found to be crucial (Oppenheimer & Spicer, 2011 cited in ACBF, 2017). In addition, to a lesser extent, lack of knowledge about where to find jobs, attitudes of employers, and labour regulations are also found to be important (AfDB, 2012 cited in ACBF, 2017). These findings are similar to the picture we get by looking at the recent "urban employment and unemployment survey 2020" (UUES, 2020) in Ethiopia that is briefly presented above. This underscores the importance of focusing both on demands and supply sides of the labour market to examine the challenge of unemployment in Ethiopia. This view forms the overarching analytical framework of the study and depicted by Figure 2.

As can be read from Figure 2, unemployment is the result of the interplay between the supply of labour, and whether this is accommodated by developments in the economy. This perspective requires analytical approach that characterizes these supply factors (fertility, migration as well as disguised unemployment conditions) on the one hand, and the demand factors related to economic growth and the type of that growth on the other hand. Understanding this interplay is crucial to understand their implications for unemployment in general and youth unemployment in particular. Despite the importance of understanding the nexuses between unemployment and demographic and socioeconomic condition (that determine the labour supply in the country in general and in urban areas in

particular, and shown by the orange colour in Figure 2), our focus in this study will be on the demand-side by taking the supply-side as given. This analytical perspective is used as an overarching theoretical framework of this study that will inform the data exploration, the descriptive and SAM-based modelling analysis, as well as the econometric modelling work that is employed in the study. These suites of methods are briefly described next.

Figure 2: The analytical framework of the study



Methods of analysis

Since the different aspects of the study needs different methods, the study has employed four approaches aimed at addressing the four major objectives of the study.

Thus, the first part of the study will focus on providing the profile of labour market and its main characteristics. This will be conducted using descriptive and data exploratory analysis which will be based on national labour force survey (NLFS) and the urban unemployment and employment survey (UUES) of the Central Statistical Agency (CSA).

This will be followed by the second part of the study that will analyse the GDP as well as sectoral growth and how that is related to youth employment condition, which is the major focus of the study. In this part of the study, we will attempt to examine the gap between the supply of and the demand for labour that is generated due to the growth and structural transformation of the economy or lack of it. This will be done by examining the employment generation effect of past growth by looking at: (i) the sectoral source of growth and, (ii) the employment intensity of each sector and sub-sectors. The first of this task will be done through a decomposition analysis of growth. Having identified the sectoral and sub-sectoral source of growth

in the last two decades (2000–2019), during which time the country registered an impressive growth, we will compare the result with the employment intensity of each of these sectors and sub-sectors using both national accounts data as well as the picture of the labour intensity of each sub-sector, which will be based the 2019 Social Accounting Metrix of the Country (SAM) and the 2020 Urban Unemployment and Employment Survey (UUES, 2020). The 2019 SAM could be used to derive the labour-output ratios of three types of labour (skilled, semi-skilled and unskilled) identified over 11 regions of the country and their distribution across the three major aggregate sectors of the economy (agriculture, industry, and services). These sectors, in turn, are divided into 27 agricultural sub-sectors (activities), 28 industrial, and four mining sub-sectors, as well as 11 service sub-sectors. This detailed sectoral picture will allow us to examine the employment intensity of each of the 70 sub-sectors of the national economy in detail. This will be mapped with the source of growth decomposition analysis to examine the relationship (and possible mismatch) between growth and employment creation potential of the economy and its sub-sectors. This will give us a good picture of the nature of growth and its employment creation effect. In addition, we can also run a SAM multiplier analysis to simulate the potential employment creation effect of the identified labour-intensive sectors, if they were the source of growth for the national economy with implications for policy.

The final part of the study will focus on examining the determinants of adults and youth unemployment, to further unravel some of the major factors behind the challenge of youth unemployment in the country using micro-level data. The literature offers various causes of unemployment that includes: (a) skill mismatch (due to asymmetric information or lack of proper government planning in aligning the education system with economic structure), as well due to the cost of education. Some related approaches also focus on failure of individuals in making effort as the cause of unemployment, with little room for market failure—this is generally the neoclassical view. Others such as the (b) Keynesian think unemployment results from macroeconomic forces, in particular from deficiency of effective aggregate demand, which is taken as important explanation in rich countries, especially following the great depression in the 1930s (Keynes, 1936). For these economists, the government is believed to ameliorate the situation by intervening in the economy (Alemayehu, 2021; Marta, 2017). Still (c) other economists—such as structuralists—take unemployment to result from the structural and socioeconomic organization of the society in which the individual finds itself that includes the segmentation of the labour market, the nature of growth and the political economy of job creation. For such economists, since the labour market in poor countries in particular is segmented, different sectors have different employment and wage conditions that inhibit upward mobility from less productive sectors to more productive sectors. Thus, growth need to occur where the poor is located and that there is a need to have upward mobility of labour to address the unemployment problems through structural transformation; and this needs to be the task of economic policy (Alemayehu, 2021; Marta, 2017).

Notwithstanding such various theoretical avenues, we will pick important variables informed by our data exploratory analysis conducted in the second and third sections of the study to model factors behind the challenge of (youth) unemployment in Ethiopia using the labour force data. In addition, we will also include migration, fertility, and informality indicators as possible factors in our unemployment model, as that also determines unemployment from the supply-side. All these factors will be incorporated in a model that attempts to unravel the major socioeconomic and demographic factors that determine the probability of being unemployed. We will conclude the study by critically examining the government policy of employment and job creation, as well as growth in the light of the findings of the study. This aims at coming up with policies that help address the challenges of youth unemployment in Ethiopia.

3. Pattern of employment and unemployment in Ethiopia

Unemployment in general and youth unemployment in particular is a major policy challenge for the Government of Ethiopia. The latest available national labour force survey (NLFS) data was for the year 2013, which is a bit outdated. Although the detailed data is not out yet for the public, a new NLFS was conducted in 2021 and a summary of its findings were out in September 2021. We have also used this in the analysis. However, since unemployment is largely an urban phenomenon, as shown below, our analysis will primarily focus on urban unemployment for which detailed urban employment and unemployment data is available for the period 2013—2018. Despite the fact that the focus of our study is primarily on (youth) unemployment, it is instructive to briefly look at the profile of the employed with the aim of informing the challenge of unemployment.

Some basic features of the employed population

I. The nature, occupational and sectoral features of employment

At the national level, the size of employed population aged ten years and above is 41.6 million in 2021 (about 20% of them in urban and the rest in rural areas) (CSA, 2021). This gives an "employment to population ratio" of 60%. This means, 60% of the total population aged ten years and above are employed. The differential by gender, furthermore, depicts that the ratio of male (69%) is higher than female (50.2%). The national rate was lower for urban areas (51%). The national "Employment to Population" rate has been 76% in 2013—showing a significant decline between the two periods. Percentage distribution of the employed by employment status is given in Table 2 The 2013 NLFS reveals that 49% were unpaid family workers, which was the category with the highest number. This has declined to 37% in the 2021 NLFS. The self-employed (at 40%) was the most important category in 2013. This has increase to 50% in 2021 to become the top category of employment type in 2021 (Table 2). The number of government employees takes a distant third place at 4.4% which increased by about 50%, reaching 6% in 2021. Employment by private organizations/enterprises was not only very small but also stagnated at about 4% during the two periods. The much-hoped category for employment, which is employment in SMEs, is found to be extremely small,

accounting only for 0.1% of the employed population. Domestic employees, at about 2% in 2021, actually performed better in terms of provision of employment opportunities than SMEs, despite the significant support of the latter by the government for many years.

Table 2: Percentage distribution of employed population by employment status (in %)

	2013 LFS			2021 LFS		
	Total	**Male**	**Female**	**Total**	**Male**	**Female**
Government Employees	4.4	2.9	1.5	5.8	6.4	5.1
Self Employed	40.1	27.7	12.4	49.6	54.4	43.2
Unpaid Family Workers	48.7	19	29.7	36.7	30.4	45.3
Private Organizations	4.2	2.9	1.3	4.1	4.9	3
Domestic Employees	0.9	0.4	0.6	1.8	1.5	2.2
Members of SMEs		-		0.1	0.2	0.1
Others*	1.7			1.9	2.2	1.1
Total	100	100	100	100	100	100

Source: CSA, LFS (2021; 2013).

In the 2020 Urban Unemployment and Employment Survey which gives more details about employment condition in urban areas of the country, out of 8.8 million total employed persons nationwide in urban areas, 4.3 million (49.4%) are paid employees—the rest being self-employed and unpaid family workers. Among paid employees 2 million of them or 46% (1.228 million civils servant and 778,000 working in parastatals) are government employees, while 1.692 million (39%) are employees of the private organizations. The rest of the paid employees being: domestic employees at about 0.499 million (11.5%), those who work in NGOs at 0.057 million, and other employees at 0.214 million. Thus, compared to 2016, employment in the private sector and the public civil service has declined by about one and two percentage points, respectively, in 2020; on the other hand, employment in parastatals has increase by 2.3 percentage points in the same period.

Finally, it is imperative to note that using the 2020 Urban Unemployment and Employment Survey, the majority of the employed youth are found in self-employed category (31% for the age group 15-24 and 34% for age group 15-29). This is followed by private organizations (26.8% for age groups 15-24 and 25% for age group 15-29), followed by being domestic employee in the third place.

Employment by occupation category was denominated by agriculture, forestry, and fishery works both in 2013 and 2021 at 48% and 51%, respectively—showing a 3-percentage point increase in 2021. This is followed by those in “elementary occupation” at 34% and 28% in 2013 and 2021, respectively (Table 3). Occupations such as sales workers and services are found at a distant third place, at 9% and 11% in 2013 and 2021, respectively.

Table 3: Percentage distribution of employed population by occupational category and industrial division/sectors (in %)

	2013 LFS			2021 LFS		
Occupational Category	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**
Skilled Agricultural, Forestry and Fishery Workers	47.9	32.2	15.7	51.1	58.3	41.3
Elementary Occupation	33.7	13	20.7	28	22.6	35.5
Services and Sales Workers	8.7	3	5.6	11.1	8.1	15.3
Craft and Related Trade Workers	4.4	2.1	2.3	2.5	2.3	2.8
Technicians and Associate Professional	1.9	1.3	0.6	2.3	2.5	2.1
Professionals	1.3	0.9	0.4	2.3	2.7	1.8
Others	2.1			2.7	3.5	1.2
Total	100	52.5	45.3	100	100	100
	2013 LFS			2021 LFS		
Industrial Sectors/Division	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**
Agriculture, Hunting, Forestry and Fishing	72.7	42.9	29.8	64.9	71.6	55.7
Other Service Sectors	15	5.5	9.6	24	17.7	32.4
Wholesale and Retail Trade	5.4	2	3.4	5.9	4.4	8
Industry	6.9	3.6	3.3	5.3	6.3	3.8
Manufacturing	4.5	3.3	5.9	2.9	2.8	3
Construction	1.9	2.8	1	1.8	2.8	0.4
Mining and Quarrying	0.4	0.5	0.3	0.6	0.7	0.4
Total	100	54	46	100	100	100

Note: Gender's share is out of the total persons in 2013 and out of all sectors of the same gender in 2021 data. Other service sectors includes: the service sub-sectors, which include public administration, defence, compulsory social security, education, health, other social activities and household activities accounts – collectively it accounted for 24% in 2021

Source: Author's computation based on Central Statistical Authority (CSA) 2013 and 2021 Labour Force Survey (LFS).

In line with the occupational category pattern, the agriculture, forestry, and fishery sector dominate employment at 73% and 65% in 2013 and 2021, respectively. Thus, despite a relative decline in employment in agricultural sectors (eight percentage points in the last eight years), employment is still dominated by agriculture. This is followed at a very distant place by employment in "whole sale and retail sales" at 6% and industry at 5.3% in 2021. While the former fairly remained unchanged from the level in 2013, industrial sector employment in 2021 has declined significantly comparted to 2013, by about two percentage points. This is chiefly attributed to a decline in the manufacturing sector because employment in the construction and mining sectors share remained about the same in the two periods (Table 3). We have pursued this trend in more detail and by comparing with sectoral growth in the next section.

II. Formal and informal employment

The informal economy is defined in CSA (2016) as "a group of production units [that] form part of the household sector as household enterprises or, equivalently, unincorporated enterprises owned by households". It is defined irrespective of the kind of work place where the productive activities are carried out, the extent of fixed capital used, the duration of the enterprise and its operation as main or secondary activity of the owner (CSA, 2016).

At the national level, according to the NLFS 2013 and using this definition, out of 31.5[2] million employed population of the country, 18% were employed in the informal economy. In the rural areas, out of 26 million employed populations, 17% were employed in the informal economy. On the other hand, the urban informal economy employed 26% of the 5.2 million people employed in the urban areas of the country in 2013. This pattern remained the same in the urban areas in 2016 and 2020. In 2016, and using this official definition, 26.5% of the urban employed population is found in the informal economy. The share of female employees in the informal urban economy was higher (35.6%) than males' (19.8%). In 2020, using the same official definition, the size of informal economy in urban areas has shrunk, employing about 16% of total employed. This rate is very small for males, being just 10.5%, and significantly high for females, which is 24.48% (Table 4).

Using the 2020 official data, the informal sector employment for the youth, aged 15-24, is 20.2%—higher than the national average—while for the age group 15-29 this becomes 16.6%. Generally, this size of the informal sector is very small by African standard of about 50-70%. This is because the CSA defines informality narrowly. That is, the official data is based on employment figure that excludes those employed persons who are engaged in "subsistence farming" (even if they are in urban areas) and those who work in "private households" sectors from the total (national/rural/urban) employed population. Given that such activities in Ethiopia are informal activities in their nature, we need to include such omitted categories in the informal economy. When this is done, the share of informal economy employment would be significantly higher than what is reported officially (Table 4). Thus, based on our realistic assumptions, employment in the informal economy would be about 40% of the total employment both in 2013 (at the national level) and 38% and 35% in 2016 and 2020, respectively, in urban areas) (Table 4)

The composition of informal economy employment by major branches of industry shows that the majority of the informal economy employment at the national level were in "agriculture, hunting, forestry, and fishing sector" (55% of the country's informal economy employment). This is followed by employment in the "whole sale and retail trade" industry (19.2%). In the urban areas, on the other hand, in 2013, the "whole sale and retail trade" industry (38%) and "manufacturing, construction, mining and quarrying" sector (33%) were the two most important informal economy employers. This pattern in urban areas remained the same both in 2016 and 2020 (CSA, UUES).

Table 4: The informal sector in Ethiopia (2013-2020)

All Age and Sex	Excluding Subsistence Farming and Work in Private Households					Subsistence Farming and Work in Private Households	Including Subsistence Farming and Work in Private Households	
	Sector of Economy				Per cent Informal		Informal Job	Per cent Informal
	Total Employed	Formal Job	Informal Job	Not Identified				
2013 National								
Total	31,498,583	25,464,838	5,718,308	315,437	18.2	10,905,296	16,623,604	39.2
Male	18,484,871	15,592,461	2,717,658	174,752	14.7	4,401,776	7,119,434	31.1
Female	13,013,712	9,872,377	3,000,650	140,685	23.1	6,503,520	950,4170	48.7
2013 Rural								
Total	26,311,238	21,691,333	4,378,748	241,157	16.6	9,709,783	14,088,531	39.1
Male	15,474,614	13,177,881	2,171,675	125,057	14.0	3,882,727	6,054,402	31.3
Female	10,836,624	8,513,452	2,207,073	116,100	20.4	5,827,056	8,034,129	48.2
2013 Urban								
Total	5,187,344	3,773,505	1,339,560	74,280	25.8	1,195,514	2,535,074	39.7
Male	3,010,257	2,414,580	545,983	49,694	18.1	519,050	1,065,033	30.2
Female	2,177,087	1,358,925	793,577	24,586	36.5	676,464	1,470,041	51.5
2016 Urban								
Total	6,253,833	4,548,360	1,657,880	47,593	26.5	1,175,689	2,833,569	38.1
Male	3,594,264	2,849,304	710,953	34,007	19.8	548,602	1,259,555	30.4
Female	2,659,569	1,699,056	946,927	13,586	35.6	627,087	1,574,014	47.9
2020 Urban								
Total	5,844,877	4,710,302	943,178	191,396	16.1	1,079,312	2,022,494	34.6
Male	3,478,077	2,975,084	364,716	138,277	10.5	567,856	932,572	26.8
Female	2,366,799	1,735,218	578,462	53,120	24.4	511,460	1,089,922	46.1

Source: Author's computation based on CSA, 2013 NLFS and 2016 & 2020 UUES.

Basic features of unemployment and youth unemployment

I. Unemployment and underemployment: Youth and adult

Like most countries in the continent, Ethiopian demographics is characterized by significant number of youths, those below the age of 30 being 72% of the population. Thus, providing decent job for these young populations is a major challenge of the government.

The official unemployment rate of Ethiopia, which was just 4.5% in 2013 and even the recently increased to 8% 2021, gives at first sight the wrong impression that unemployment is not a major issue in the country. This low national figure is the result of the negligible rural unemployment figure in the official data, which

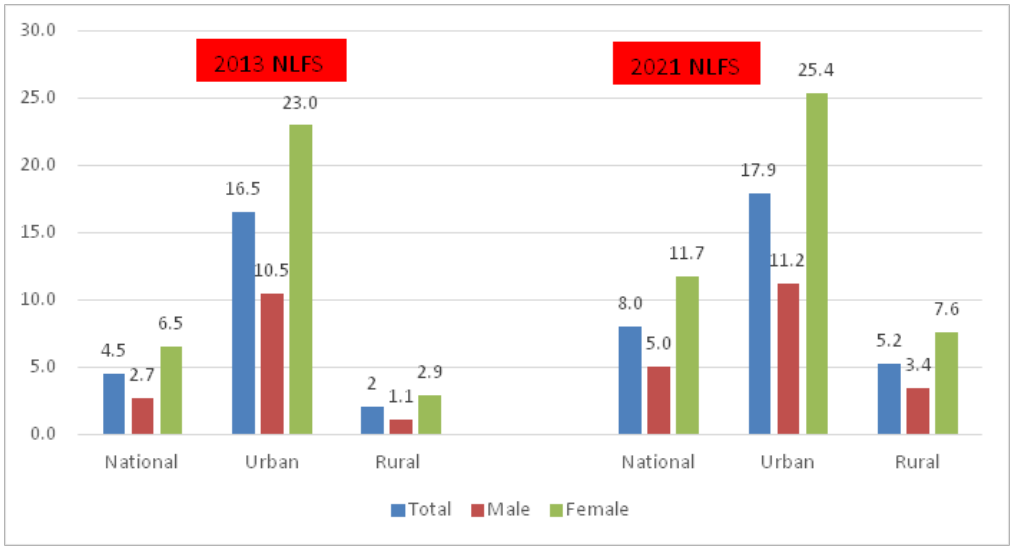
underscore the importance of looking unemployment data by rural and urban category. For example, according to the 2013 NLFS, which is the latest available detailed national level data, out of 44.5 million economically active population of the country, 4.5% were unemployed (CSA, 2013). This has increase to 8% in 2021. The unemployment rate for females was significantly higher (6.5% in 2013 and 12% in 2021) than males (2.7% in 2013 that grew to 5% in 2021). In general, both at national level and across gender, the rate of unemployment nearly doubled in 2021 compare to the level in 2013 (Figure 3). This trend is strikingly puzzling, compared 8% to 10% GDP growth the government claimed during the same time as noted in Section 1(see Table 1).

Rural unemployment rate was 2%, out of a total of 37 million economically active rural populations in 2013 and increased to 5.2% in 2021. In urban areas, unemployment is significantly higher. Thus, out of 7.7 million economically active urban population, 16.5% were unemployed in 2013 and this has increased to 18% in 2021 (Figure 3; CSA, 2013). Thus, notwithstanding the significant disguised unemployment/ underemployment in rural areas, which is estimated at 45%, unemployment is primarily taken to be an urban phenomenon in the official data.

However, given the general high trend of rural-urban migration, this high level of rural underemployment shows the potential for migrant labour that could potentially raise the urban unemployment rate. For example, the 2021 labour force survey shows that internal migration was very significant where 17.1% of the population are (internal) migrants and two-thirds of the internal migrants were aged 15-39. This shows that most migrants are in the youth and those in productive age group. Among the internal migrants, 32.2% of migrants are rural-urban, followed by urban-urban migration of 26% (rural-rural and urban to rural being 23.4% and 13.7%, respectively). Among all the immigrants, aged ten years and above, about 9% were unemployed and about 27% of migrants were neither employed nor unemployed during the survey. This shows that, in addition to the natural rate of growth, internal migrants also contribute to the urban unemployment from the supply-side. This is in particular in the capital Addis Ababa, where the migrant rate is 42.2% as well as in Gambella (31.7%). The lowest rate of migrants is found in Somali region (8.6%). However, recent (last five years) migrants are not that big. For example, the recent net migrant rate, which is the highest, is for Dire Dawa is 31.3 per 1,000 people, followed by Harari and Addis Ababa, which are just 23 and 16.3 per 1,000 people, respectively (CSA, LFS, 2021).

In terms of its regional variation, unemployment is found to be the highest in the capital, Addis Ababa (22.1%), Dire Dawa (16%%), and Somali region (12%) in 2021, while Benishangul-Gumuz region registered the lowest unemployment rate of 4.3%. Among the country's major towns and cities, Kombolecha (in North of the country) and Burayu (town bordering Addis to the North) towns are found to have the highest unemployment rate of about 28% each. This is followed by Adama (about 80km for Addis to the East) and Sebeta (a town bordering Addis to South-West direction) at 27% each (CSA, LFS, 2021).

Figure 3: Unemployment between the 2013 and 2021 Labour Force Survey



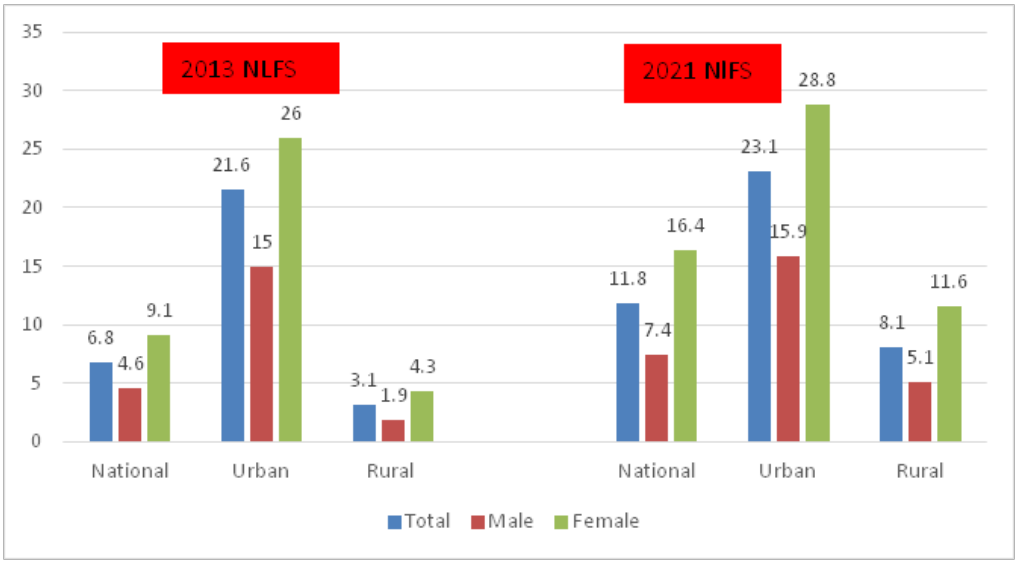
Source: Author's computation based on CSA's National Labour Force Survery (201, 2021).

Figure 4 shows the condition of youth unemployment. Using the Ethiopia government's definition of youth unemployment (age group 15-29), the youth unemployment rate that was 7% in 2013 has increase to 12% in 2021. It is, however, found to be a major problem in the urban areas. Thus, it was 22% in 2013 and increased to 23% in 2021. Within the urban areas, the unemployment rate is the highest for the female (26% in 2013 and 29% in 2021) compared to that of the males (which were 15% and 16% in 2013 and 2021, respectively). Although the rural youth unemployment has more than doubled between 2013 and 2021, as shown in Figure 4, it is relatively small compared to the urban levels (Figure 4).

Using the 2016 and 2020 Urban Unemployment and Employment Survey (UUES), among the youth unemployment rate within the age group of 10-29, the rate is found to be the highest for the age group 20-24 (27.2% which has increased to 31% in 2020), followed by the age group 15-19 (21.4% that has increased to 20% in 2020), and age group 25-29 (18.2% that has increased to 21% in 2020). In all the age groups, female unemployment rate was higher than their male counterpart (see CSA, 2016, 2020).

Regionally, youth unemployment is the highest in Addis Ababa at 26.2% (the rate for females being very high at 28.6% while for male being 22.5%). This is followed by Dire Dawa region (22.4%; while the rate for city of Dire Dawa being 29%) and Somali region (19%). The lowest youth unemployment is found for Benishangul-Gumuz region at 6.4%. Even for this latter region, the urban youth unemployment rate being very high at 18.3% (CSA, LFS, 2021).

Figure 4: Youth (age group 15-29) unemployment in 2013 and 2021 Labour Force Survey



Source: Author's computation based on CSA's National Labour Force Survey (2013, 2021).

II. Characterizing the unemployed

The majority of unemployed persons in 2021 attended primary education (35%). This is followed by those from the never-attended category (33%). While the unemployed who attended secondary education are about 19%, this rate is found to be about 15% for those who attended above high school level. The lowest share of unemployed was found among persons who attended pre-school and informal education (0.2% and 0.8%, respectively). (CSA, LFS, 2021). Generally, according to the 2021 LFS, the unemployment rate of the literate persons (9.3%) is higher than illiterate persons (6.3%). Since the 1999 LFS survey, the unemployment rate for both literates as well as illiterates depicts a declining trend until 2013, during the three LFS survey periods (1999, 2005, and 2013). It exhibited an increasing trend since 2013 and up to 2021, however. Female unemployment rate is higher than male in both literate and illiterate categories (CSA, LFS, 2021).

About 60% of the unemployed in the 2020 UUES data reported lack of jobs and skill mismatch as main reasons for their unemployment status. Lack of experience and training follows this as the second important factor, being the response of 22% of the respondents. This data also shows that about 49.3% of the employed are underemployed (of which half needs additional job in addition to the present, while the other half needs jobs with more hours of work or more hours being in the current job).

In 2020 and in urban areas, out of the 8.8 million employed persons 49.3% of them (4.3 million persons) are available and ready to work on additional job. The figure is slightly higher for males (52%) compared to that female (45.7%). Among these 4.3 million employed people who were seeking addition job, 54.5% of them want other job in addition

to the present job. In addition, 22.9% of them are available for more work at the present job while 22.7 were seeking "other job with more hours" to replace their present job. Among the youth who already are employed, this rate is found to be the highest for the age group 20-29 at 54%, compared to the youth of the age group 15-19, which is about 40%.

Given the precarious nature of employment in the informal sector, as well as the significant level of underemployment (disguised unemployment) in the country, these latter two are also reservoirs of potentially employable people if better opportunities for decent job emerge in the formal sector. Thus, the significant level of underpayment shows the potentially high effective level of unemployment in the county. The high unemployment as well as the significant underemployment and informality conditions in the country clearly show that the economy was, and still is, unable to create sufficient demand (for decent job) for the growing labour force. This issue is examined in detail next.

The unemployed have attempted to ameliorate their situation. In the 2020 UUES most of the unemployed attempted to establish own business to get out of this unemployment condition. The majority of them, however, reported that, in order of importance, "shortage of finance" (51% of the unemployed), both "lack of working place and finance" (13.3%), "lack of working place" (10.7%), and "lack of training" (3%) among the top problems they encountered.

In sum, the link between demographic dynamics and economic development realms is mediated, inter alia, through the unemployment variable, especially in urban areas. The demographics of the country, where 72% of the population is below the age 30, show the urgency of job creation for the youth in a continuous manner for years to come. Yet, despite various initiatives to address the youth unemployment problem in Ethiopia, including the setting up of "the Job Creation Commission" recently, despite the fast growth registered in the country in the last two decades, unemployment remained stubbornly high. This unemployment problem is also potentially even larger, given the significant level of the informal sector as described above, as well as the high level of underemployment in the country. This is accentuated by the rural-urban migration, as discussed briefly above.

This general picture shows that unemployment is a serious problem in Ethiopia, and it is generally the result of lack of job creation relative to labour force growth. Thus, understanding the challenge of unemployment and the related issue of employment creation for the youth is an important issue that deserves the utmost attention of the government. This is because it is, not only the sure way out of poverty that engulfed the country, but also, if neglected, could threaten peace and social stability of the society in a fragile state such as Ethiopia. Given its paramount importance, as briefly expounded here, and the paradox of high growth and significant unemployment with it, it is imperative to have an in-depth understanding of this phenomenon and why past high and sustained growth failed to create sufficient job so as to inform policy for the betterment of the county through job creation for the youth. The answer to this is strongly linked with identification and understanding about how the growing labour force was absorbed or not in the growing economy and in which sectors. It is also related to the understanding of the factor behind (determinants of) the unemployment problem. These issues are discussed in the next section.

4. Sources of growth and employment: A growth decomposition and structural change analysis

This section attempts to examine the mismatch between growth and job creation using sectoral growth decomposition analysis and mapping the result with sectoral employment growth. This will be done first using sectoral data. The analysis will focus on the employment implication of both sectoral growth and structural transformation in the economy. This will be followed by the analysis of the same using labour intensity profile of all sub-sectors of the economy that will be derived from a Social Accounting Metrics (SAM) and labour force (and manufacturing sector) survey data. A SAM-based multiplier analysis will also be used to see the implication of sub-sectoral growth for employment creation.

Macro and sectoral decomposition of GDP and employment growth

We have decomposed both GDP and employment growth by sectors and sub-sectors to identify the contribution of each sector and sub-sector to GDP and employment growth in the last two decades (2000–2018). The Groningen university "structural change data" is used for the purpose. The decomposition is done using Equation 1.

$$\text{Growth in GDP} = \frac{GDP_t - GDP_{t-1}}{GDP_{t-1}!} = \frac{\Delta GDP_{Agr} + \Delta GDP_{Ind} + \Delta GDP_{Serv}}{GDP_{t-1}} \qquad (1)$$

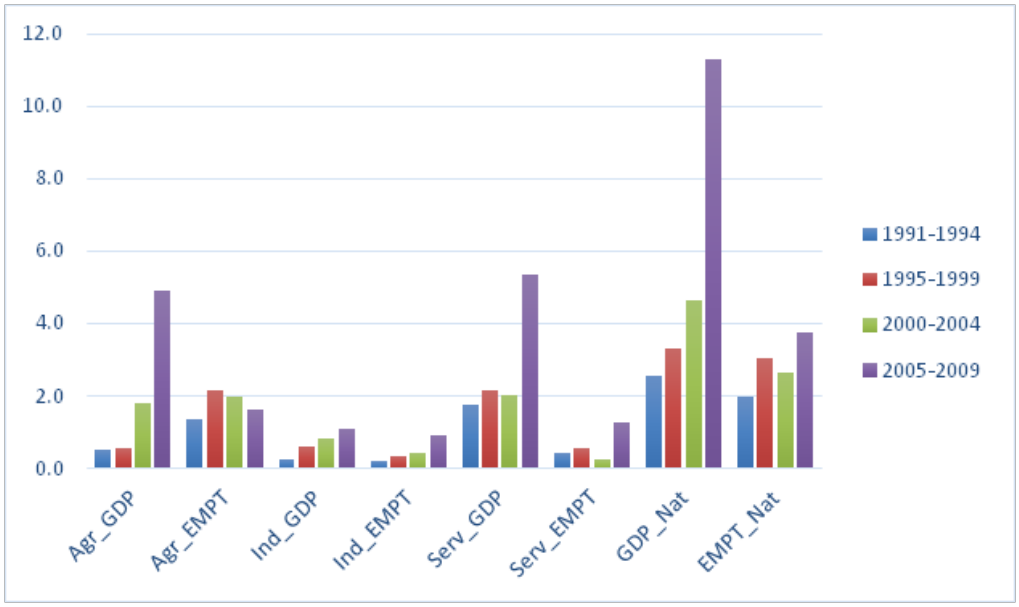
Note that, as an example $\frac{\Delta GDP_{Agr}}{GDP_{t-1}}$ is the contribution of agriculture to national growth.

Equation 1 is used for the decomposition analysis and the result of this exercise is given in figures 5a and 5b (the data for this is given in Annex A1a). The sub-sectoral decomposition result is given in Table 5a (for the first two decades, 1990–2009), and 5b (for the last decade, 2010–2018).

As Figure 5a (and also Table A1, Annex A3) shows, in the first decade (1990–2000), both the economy and employment grew fairly at the same rate. The role of employment growth in the agricultural sector was crucial for this national result. This began to change in the first half of 2000 where GDP growth (4.6%) became significantly larger than the employment growth (2.6%). This period also saw the

beginning of the declining contribution of the agricultural sector to GDP growth after reaching its pick contribution of 5% (to 11.3% GDP growth) in 2005–2009. Starting the year 2005, we observe a dramatic growth of the gap between GDP and employment growth. GDP growth began to register two to three times that of the growth of employment. This has persisted through the rest of the period (Figure 5b).

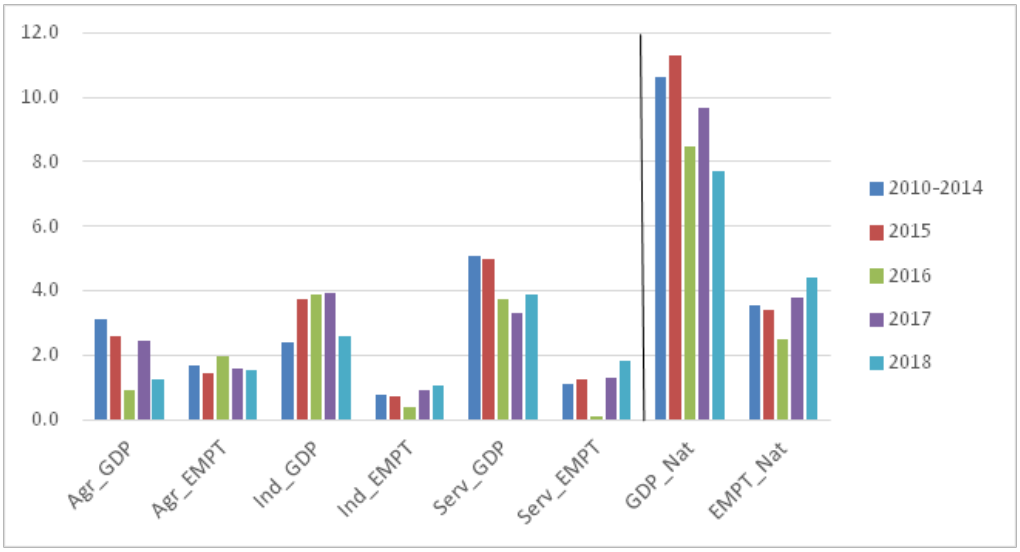
Figure 5a: Sectoral contribution to GDP and employment growth (2000□2009)



Source: Author's computation based on Groningen University Structural Change data.

In tandem with this declining contribution of agriculture to GDP growth since 2010, its contribution to employment first declined and then stagnated throughout the last two decades (2010–2018), except for a small rise in 2016. Similarly, declining and stagnated contribution to employment growth is also observed in the industrial sector during this period (Figure 5b). The services sector exhibited a declining trend both in its contribution to GDP and employment growth until 2017, but saw a rising contribution to employment growth, despite the stagnation of its contribution to GDP growth in 2018. Since 2010, however, its contribution to GDP growth was the highest, averaging at 4.6% between 2010–2018, while its contribution to employment growth in the same period being just 1.1%, lower from the agricultural sector's contribution at 1.6% but better than the industrial sector's rate of 0.8% in the same period.

Figure 5b: Sectoral contribution to GDP and employment growth (2010□2018)



Source: Author's computation based on Groningen University Structural Change data.

This mismatch between the GDP growth and employment growth, especially in the non-agricultural sectors, suggests looking at two important issues. First, a detailed look at the industrial and the services sub-sector may shed light about this pattern. Second, if the Ethiopian economy has been characterized by structural change during this period, we would expect a declining share of agriculture and rising share of employment in more productive (non-agricultural) sectors. This calls for an in-depth look at structural change issues, and their implications for employment creation, which is done next. We begin by looking at the sub-sectoral patterns first, and this is given in Table 5a (for industry) and Table 5b (for services).

Table 5a shows that the major source of growth in the industrial sector has been the growth in the construction sector (its contribution in the sector being 73.2% in the last decade). This is followed by manufacturing at 23.8% contribution; utilities and mining contributing the least at 1.8% and 1.2%, respectively. However, this growth contribution is not matched by their contribution to employment growth. The latter was dominated by the manufacturing sector at 71.6%. This is followed by the contribution of the construction sector at 20.1%. The contribution to employment growth of the mining and utilities sectors being 3.2% and 1.4%, respectively, in the same period. This result suggests the capital-intensive nature of the construction sector, while the manufacturing sector is relatively labour-intensive.

Table 5a: Growth and employment contribution of the industrial sub-sectors

	Industrial Sector Contribution to Growth				Industrial Sector Contributing to Employment Growth			
	Mining	Manufac-turing	Utilities	Construc-tion	Mining	Manufac-turing	Utilities	Construc-tion
1991-1994	0.1	0.2	0.0	0.0	0.02	0.15	0.00	0.01
1995-1999	0.0	0.2	0.0	0.3	0.02	0.27	0.00	0.05
2000-2004	0.0	0.2	0.1	0.6	0.02	0.27	0.00	0.12
2005-2009	0.0	0.4	0.1	0.6	0.01	0.70	0.02	0.16
2010.0	0.2	0.4	0.0	0.6	0.04	1.00	0.07	0.14
2011.0	0.4	0.7	0.0	0.7	0.01	0.26	0.00	0.06
2012.0	0.1	0.5	0.1	1.8	0.02	0.27	0.00	0.12
2013.0	0.1	0.7	0.1	2.7	0.01	0.70	0.02	0.16
2014.0	0.0	0.7	0.1	2.1	0.04	0.74	0.10	0.17
2015.0	-0.2	0.8	0.0	3.1	0.03	0.37	0.04	0.29
2016.0	0.0	0.9	0.1	2.9	0.02	0.24	0.00	0.14
2017.0	-0.1	1.3	0.0	2.8	0.01	0.70	0.02	0.16
2018.0	-0.1	0.3	0.0	2.3	0.04	0.74	0.10	0.17
Average (2010-2018)	**0.0**	**0.7**	**0.1**	**2.1**	**0.02**	**0.56**	**0.04**	**0.16**
Share in Industry (%)	**1.2**	**23.8**	**1.8**	**73.2**	**3.2**	**71.6**	**1.4**	**20.1**

Source: Author's computation based on Groningen University Structural Change data.

Like that of industrial sector, the mismatch between contribution of the services sector and its sub-sectors to growth and employment has also been shown in Table 5b. In terms of growth contribution, the "trade" and "the government services" followed by the "transport" and financial sectors are found to be very important. However, it is the "other services", followed by the "trade" and "government services" sub-sectors, in order of importance, that contribute the highest in terms of employment. The "Others Services" category in the data is defined as "Arts, entertainment and recreation; Other service activities; Activities of households as employers; Undifferentiated goods- and services-producing activities of households for own use; Activities of extraterritorial organizations and bodies". These sub-sectors are, in turn, dominated by household as employees. In sum, both Table 5a and Table 5b show that the source of growth is not the source of employment.

Table 5b: Growth and employment contribution of the service sub-sectors

	Contribution to GDP Growth of Services Sub-Sectors						
	Trade Services	**Transport Services**	**Business Services**	**Financial Services**	**Real Estate**	**Government Services**	**Other Services**
1991-1994	0.55	0.09	0.06	0.18	0.21	0.37	0.31
1995-1999	0.72	0.14	0.08	0.16	0.19	0.61	0.27
2000-2004	0.68	0.29	0.17	0.11	0.36	0.25	0.15
2005-2009	2.41	0.38	0.25	0.69	0.57	0.78	0.28
2010	1.99	0.49	0.36	-0.01	0.90	0.80	0.25
2011	1.60	0.34	0.37	0.87	1.09	2.61	-0.02
2012	2.05	0.43	0.17	0.95	0.20	0.33	0.35
2013	2.08	0.58	0.21	-0.56	0.20	0.69	0.49
2014	3.48	0.47	0.17	0.52	0.19	0.71	0.12
2015	3.12	0.50	0.18	0.28	0.19	0.59	0.11
2016	1.97	0.53	0.18	0.35	0.15	0.61	-0.06
2017	1.09	0.61	0.21	0.67	0.18	0.45	0.10
2018	2.21	0.27	0.13	0.42	0.24	0.48	0.10
Average (2010–2018)	**2.18**	**0.47**	**0.22**	**0.39**	**0.37**	**0.81**	**0.16**
Share in Service (%)	**47.4**	**10.2**	**4.8**	**8.4**	**8.1**	**17.6**	**3.4**
	The Services Sub-Sector's Contribution to Employment Growth						
1991-1994	0.14	0.00	0.00	0.00	0.00	0.14	0.16
1995-1999	0.26	0.01	0.01	0.00	0.00	0.16	0.11
2000-2004	0.27	0.02	0.02	0.01	0.00	-0.06	0.00
2005-2009	0.65	0.04	0.04	0.02	0.00	0.14	0.38
2010	0.13	0.09	0.08	0.04	0.00	0.18	1.08
2011	0.24	0.01	0.01	0.00	0.00	0.20	0.07
2012	0.27	0.02	0.02	0.01	0.00	-0.06	0.00
2013	0.65	0.04	0.04	0.02	0.00	0.14	0.38
2014	0.11	0.09	0.09	0.04	0.00	0.20	1.28
2015	0.31	0.04	0.06	0.02	0.00	0.18	0.63
2016	0.26	0.02	0.02	0.01	0.00	-0.19	0.00
2017	0.65	0.04	0.04	0.02	0.00	0.14	0.38
2018	0.11	0.09	0.09	0.04	0.00	0.20	1.28
Average (2010–2018)	0.30	0.05	0.05	0.02	0.00	0.11	0.57
Share in Service (%)	27.7	4.6	4.4	2.0	0.1	10.0	51.5

Source: Author's computation based on Groningen University Structural Change data.

In sum, Ethiopia has registered excellent growth in the last two decades. Despite the initial focus of policy on agriculture, the main source of growth has been the non-agricultural sector, led by the services and industrial sectors—the industrial sector being dominated by the construction sector. Productivity in agriculture remained stubbornly low, yet the sector is the source of employment for over 73% of the employed population. The growth also failed to bring about structural transformation, the share of manufacturing in GDP remaining below 5% in the last 40 years. From the analysis above, we conclude that the major source of growth had not been the major source of employment growth. This could be related to effect of structural change and/or the low employment elasticity of sectors or sub-sectors that grew fast, issues that are discussed next.

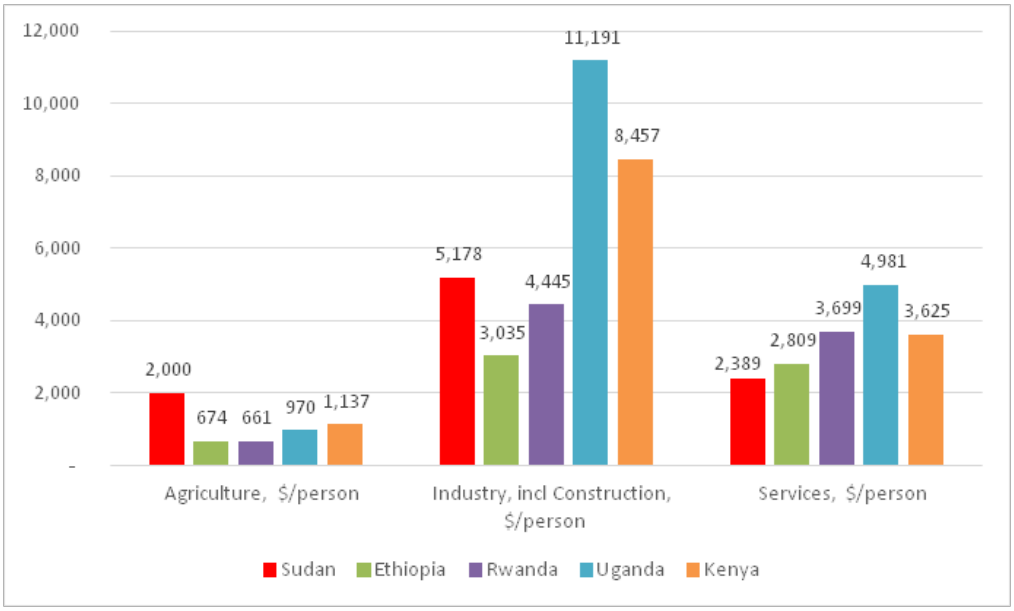
Productivity, structural change and employment creation

Here, we want to answer: a) is it productivity growth that led to unemployment? (b) what is the nature of productivity growth in each sector? The latter is important because if productivity did not grow, the sector will not grow, and if the sector did not grow employment will not grow.

Compared to reference countries selected for benchmarking, the labour productivity in Ethiopia is one of the lowest in the Eastern Africa region (the only exception being Sudan that has services sector productivity marginally below Ethiopia) (Figure 6). Moreover, Ethiopia's productivity is less half the level attained by the country with the highest productivity in each sector—the industrial sector level being only about one-third the level of Uganda and Kenya. Leaving aside its comparative position, its productivity is highest in the industrial sector that includes construction, followed by the service sector (Figure 6).

To get more insight into this general pattern and its implications for employment creation or lack thereof, the productivity trend and the condition of structural transformation is examined further by decomposing it into its different components. Due to lack of time-series data about capital accumulation, the analysis relied on labour productivity data to explore further the sources of Ethiopia's growth and its implication for (youth) employment from the perspective of structural change and productivity. This is done using Equation 2.

Figure 6: Sectoral labour productivity in Ethiopia and its comparator countries (2019)



Source: Author's computation based on WDI, World Bank data (2021).

$$g_L = \sum_i w_{Si} g_{Li} + \sum_i w_{Li} g_{Si} + \sum_i z_i g_{Li} g_{Si} \quad (2)$$

Where: g_{Li} is the growth rate of labour productivity of sector "i"; g_{Si} is the growth rate of the share of sector "i" in total employment, and w_{Li} and w_{Si} are the weight of sector "i" in total GDP and total employment, respectively. Zi is the ratio of sectoral (labour) productivity to national (labour) productivity.

The first part of Equation 2 measures the contribution of productivity growth of each sector to total or national productivity growth—referred to sometimes as the "*within sector effect*" or "*intra-effect*". The second term shows the contribution of the reallocation of labour (level effect) from low productivity sector to high productivity sector to the aggregate productivity growth—sometimes referred to as "the level" or "*the between sectors effect*" or "*re-allocation effect*". The national productivity of a country can increases even if there is no growth in sectoral productivity simply by reallocation labour from low to high productivity sectors. Thus, this second term captures this effect.

The final term, which could also be computed as residual, is a proxy to measure the contribution of re-allocation of labour from low productivity to high productivity growth sectors. It captures the growth interaction effect. It will be positive either when labour has moved towards a sector with positive labour productivity growth or when

labour has moved away from a sector with negative labour productivity growth. Its magnitude also depends on the ratio between the sector's labour productivity and the aggregate labour productivity levels, the weight which is given by "z". This effect is sometimes referred to as the '*dynamic re-allocation effect*" (see de Avillez, 2012). The last two parts of Equation 2 together show the effect of *structural change* in productivity growth. The result of this computation for Ethiopia, using data for the last two decades, is given in Table 6.

The first point to note from Table 6 is that national productivity growth was very low between 2000 and 2010, being about 0.30% per annum during this period. This began to rise in 2010–14 by 3.25% and further by 6.9% in 2015–18. This growth in national productivity is largely the result of productivity growth in agriculture, followed by the service sector—the contribution of agriculture and industry being 3.9% and 0.30%, respectively, in the last decade (2010–18). In all the periods the contribution of the industrial sector (including construction) to national productivity growth was negative (Table 6). The significant national level growth in the last decade, unwarranted by the productivity growth in all sectors, especially given the small share of agriculture in GDP (which is about 33% in the last five years) and its limited contribution to national growth (which is about 15% in the last five years) suggests at possible problem of the GDP data, discussed below (see also Alemayehu and Addis, 2016 Table 6 also shows that productivity growth, both at the national level as well as in the agriculture sector, was generally significant and positive since 2010. Though its magnitude is very small, the services sector has also seen a positive productivity growth of 0.27% per annum during this period. The "*within*" productivity growth is negative in the industrial sector that includes manufacturing, mining, construction, and utilities. The sub-sector "trade in services" also had a negative growth rate during the entire period (Table 6).

Notwithstanding the positive picture in agriculture in the last decade and national productivity growth throughout the period under analysis, the "within" productivity growth in agriculture had been on average about 1.2% per annum, despite its record high growth of about 5% in 2015–2018. Given the average population growth of about 2.6% during the same period, this shows a negative per capita output growth in the agricultural sector, as well as at national level (Table 6).

Second, the "between" productivity growth shows labour is shifting primarily to the services sector at an average rate of 1.2% during the period under analysis. Within the services sector, the "trade in services" and "financial services" at 0.61% and 0.23%, respectively, are the major contributors to this growth. This is followed by the industrial sector at 1.8%—the construction sector leading this growth. Two important issues emerge from this result. First, the structural transformation (what is called the 'structural bonus" in the literature) is not happing as was historically the case in today's developed countries or that of the East-Asian tiger economies. These two groups of countries were characterized by shift of labour to high productivity industrial sector in general and manufacturing sector in particular. In the Ethiopian case, labour is rather predominantly shifting to the service sectors such as "trade in services" which are characterized by low productivity.

Table 6: Decomposition of productivity growth in Ethiopia on half-decade basis (2000-18)

Within (%)	National	Agriculture	Ind(M+M+C+U)	Manufacturing	Construction	Service*	Trade services	Transport services	Business services	Financial services
2000–04	0.29	-0.84	-0.08	-0.07	-0.01	0.23	-0.03	0.01	0.01	0.001
2005–09	0.33	-1.38	-0.13	-0.10	-0.02	0.26	-0.03	0.01	0.00	-0.001
2010–14	3.25	2.62	-0.18	-0.13	-0.05	0.22	-0.04	0.01	0.00	-0.002
2015–18	6.93	5.09	-0.21	-0.18	-0.01	0.38	0.47	-0.01	-0.01	0.002
Average (2000–18)	2.48	1.18	-0.15	-0.12	-0.03	0.27	0.07	0.01	0.00	0.00
Between (in %)		**Agriculture**	**Ind(M+M+C+U)**	**Manufacturing**	**Construction**	**Service**	**Trade services**	**Transport services**	**Business services**	**Financial services**
2000–04		-0.31	0.61	0.27	0.19	0.93	0.61	-0.03	-0.01	0.09
2005–09		-0.34	0.68	0.23	0.42	0.91	0.36	0.00	0.02	0.13
2010–14		-0.22	1.15	0.21	0.88	0.62	0.60	0.17	0.12	0.22
2015–18		-0.90	1.00	0.33	0.48	2.51	0.93	0.27	0.20	0.56
2000–18	Average	-0.42	0.85	0.26	0.50	1.18	0.61	0.09	0.08	0.23
Dynamic		**Agriculture**	**Industry**	**Manufacturing**	**Construction**	**Services**	**Trade services**	**Transport services**	**Business services**	**Financial services**
2000–04		-0.03	-4.99	-0.35	-3.73	-6.52	-0.11	-0.46	-1.86	-4.60
2005–09		-0.01	-6.23	-0.23	-5.79	-3.05	-0.06	-0.04	0.02	-3.80
2010–14		-0.03	-6.61	-0.17	-6.53	-25.94	-0.09	1.97	0.49	-27.23
2015–18		-0.07	-33.00	-0.20	-1.53	-1.23	-0.56	-5.88	-2.04	9.29
2000–18	Average	-0.03	-11.64	-0.24	-4.55	-9.61	-0.19	-0.85	-0.78	-7.42

Note: *The positive growth in this column comes from “government and other services”, if it is not shown among the selected service sub-sectors shown here.
Source: Author's computation based on Groningen University Growth and Structural Change data.

This underscores the need to examine in detail these two services sub-sectors. Second, the second highest structural change is registered in the industrial sector. Unfortunately, this sector is characterized by negative productivity growth as can be read from the "within" productivity growth given in the same table.

Interestingly, except in the agricultural sector, the contribution of *static re-allocation effect* to growth had been generally positive but very small in all sectors. This is found to be the highest for the service sector, with an average annual rate of 1.2%, which is followed by the industrial sector at 0.8%.

Third, "dynamic productivity" growth in Ethiopia is generally found to be negative in all sectors and sub-sectors. The latter shows that either productivity growth or growth of employment in each of the sectors is negative. Interestingly, this is found to be the highest in the industrial sector at negative 11.6% (the negative rate of growth in the construction sector being very significant), followed by the services sector at negative 9.6%—the bulk of the latter being contributed by "financial services" at 7.4%. This significant negative dynamic productivity result in all sectors, and in particular in the services and industrial sectors—which were very high—may also be related to exaggerated GDP growth at the national level as it represents an interaction term or residual. If employment growth is fairly accurately recorded, such exaggeration may lead to significant total factor productivity (TFP) growth if this computation is triangulated from the supply-side. This, indeed, is what the Ethiopian data shows (see Alemayehu and Addis, 2017). *The dynamic re-allocation effect* on productivity growth is, however, found to be negative in all sectors (Table 6). The latter indicates the absence of a movement of labour either to sectors with high productivity growth or away from the sectors with low productivity growth.

The policy lessons that can be drawn from these findings are the following. First, halting the declining trend of per capita output and productivity growth in the agricultural sector by addressing major binding constraints in the sector will have a significant contribution to national productivity growth, and hence growth. If there is no productivity growth, a sector will not grow in a sustainable manner. If a sector doesn't have growth, gain full employment growth will not grow either. Thus, it is imperative to identify major constraints in all sectors in general, and the agricultural sector in particular, for a high impact on growth and employment. This finding shows the weak structural features of Ethiopia's agriculture characterized by a very higher share of the population depending on farming than in many of its regional peers, combined with lower agricultural value-added per worker. This also explains the declining contribution of the sector to national growth over the last two decades. Given, agriculture accounts for about 65% per cent of employment (77% of the rural employment) (CSA, LFS, 2021), about 33% of GDP, and 80% to exports in 2019/20 (NBE, 2020), a positive development in the sector will have a significant effect, both on the national growth and welfare of the majority of the Ethiopian population.

Second, although the static re-allocation of labour to the services and industrial sectors was one of the major factors to productivity growth and economic growth in Ethiopia in the past, as can be learned from the "between effect", labour is moving to

sectors generally characterized by very low "within" sector productivity (the average annual productivity growth in the last decade for the industrial and services sectors being just 0.85% and 1.2%, respectively, Table 6). This result implies that *raising sectoral productivity, both in the industrial and services sectors, by addressing their binding constraint, is crucial to have a high impact on growth and gain full employment growth.*

Finally, *the finding also shows that lately, labour is not moving either to sectors with rising productivity or leaves sectors with low or negative growth in productivity.* Effecting a structural transformation that changes this observed pattern is also crucial to raise national productivity, sectoral growth, and hence employment in Ethiopia.

In sum, from the analysis above, we could infer the following three points. First, from Table 6, the "within" productivity result shows that the highest productivity growth is found in the agricultural sector. This is shown dramatically in 2015–18 where its growth was 74% of the national productivity growth. This is followed by the services sector (and with it in the "trade in services" sub-sector) at a very significant distance, averaging at 0.27%, compared to agricultural sectors average of 1.18%—the national average being 2.5%. Second, "within" productivity growth in the industrial sector and its dominant sub-sectors, the construction and manufacturing sectors, has been negative throughout the period of analysis, where the country registered the fastest growth in its entire history.

SAM-based analysis of the unemployment problem

In this section, we will be using the 2015 Social Accounting Metrics (SAM), which is published in 2019 and the latest SAM available (Andualem et al., 2019), to further examine the job creation potential of past growth. This is done by examining if the sources of the recent growth have been the sectors and sub-sectors which have the strong potential for job creation. The 2015 SAM has rich data that could be used to derive a proxy for the labour-output and capital-output ratios of three types of labours (skilled, semi-skilled, and unskilled) identified over 11 regions of the country and their distribution across the three major aggregate sectors of the economy (agriculture, industry and services). These three sectors in turn are divided into 27 agricultural sub-sectors (activities), 28 industrial and four mining sub-sectors, as well as 11 services sub-sectors. This detailed sectoral picture will allow us to examine the employment intensity of each of the 70 sub-sectors of the national economy in detail. This will be mapped with the source of growth decomposition analysis examined in the foregoing to examine the existence of mismatch (or not) between sources of growth and employment creation potential of the economy's sub-sectors. This will give us a good picture of the nature of growth and its employment creation effect. In addition, we have conducted a SAM-based economy-wide multiplier analysis to simulate the potential employment creation effect of the identified labour-intensive sectors, if they were the sources of growth through demand stimulation for the national economy with implications for policy. A condensed summary of the 2015 SAM is given as Table 7.

Table 7: Macro SAM for Ethiopia, 2015/16 (millions of birrs)

	Activities	Commodities	Factors	Enterprise	Households	Government	Taxes	Investment	Rest of the world	Total
Activities		2,151,741								**2,151,741**
Commodities	735,638				1,099,313	148,837		588,705	122,366	**2,694,859**
Factors	1416,103								9,282	**1,425,386**
Enterprise			509,423			5,595			277	**515,295**
Households			910,486	369,922		11,211			127,340	**1,418,959**
Government				18,729	8,298		188,892		28,570	**244,489**
Taxes		118,590		41,207	29,096					**188,892**
Saving				84,828	279,600	73,063			151,215	**588,705**
RoW*		424,528	5,478	610	2,652	5,783				**439,501**
Total	2,151,741	2,694,859	1,425,386	515,295	1,418,959	244,499	188,892	588,705	439,051	

Note: *RoW: Rest of the World.
Source: Andualem et al. (2019).

I. A SAM-based capital–labour (K/L) ratio and sectoral employment potential

A comparison of each sub-sectors' capital–labour ratio would have given us the potential job creation sectors of each sub-sectors. However, since capital stock data is not available in the SAM, we have attempted to infer about capital (K)/labour (L) ratio using a proxy variable computed by taking the ratio of the return to capital and labour per unit of output (Q): L/Q to K/Q=L/K. Given the limitation of this approach because it doesn't use capital stock data, we have triangulated it for robustness, using the Large and Medium Scale Manufacturing (LMSM) survey data which has industrial level capital stock data. The K/L ratios computed in this manner using the SAM are given in Table 8.

Table 8: K/L ratio across sectors and sub-sectors

Agriculture		Industry: Manufacturing (Mfg.), Mining &Construction				Services	
Agriculture	**L/K Ratio**	**Industry**	**L/K Ratio**	**Industry**	**L/K Ratio**	**Service**	**L/K Ratio**
Poultry	62.26	Agro Ind. Parks	5.00	Textile Mfg	0.20	Health	8.72
Sheep raising	45.60	Grain mill Mfg	2.30	Beverages &, Spirits	0.19	Education	3.29
Goat raising	43.28	Mining	1.74	Cement	0.19	Other Services	2.54
Cattel raising	22.75	Electricity	1.67	Vehicles Mfg	0.17	Transport	2.47
Forestry	11.49	Construction	1.58	Sugar Mfg	0.16	Public Administration	1.57
Fishing	10.19	Water	1.25	Electrical Material Mfg	0.12	Real estate, Renting etc	0.75
Cash Crop	8.26	Chemicals Mfg	1.00	Wood Mfg	0.11	Communication	0.50
Camel raising	8.17	Dairy Mfg	0.58	Tobacco Mfg	0.09	Trade, wholesale & retail	0.30
Crops	5.77	Mineral Products Mfg	0.55	Metal Mfg	0.08	Financial Services	0.28
Fruit	2.29	Other Mefg	0.54			Hotels and Resultants	0.14
Puls	1.86	Leather Mfg	0.44				
Flower	1.79	Pharmaceutical Mfg	0.35				
Food Crops	1.77	Spinning &weaving	0.33				
Olil	1.63	Ovens and furnaces	0.30				
Wheat	1.55	Pharm	0.35				

continued next page

Table 8 Continued

Agriculture		Industry: Manufacturing (Mfg.), Mining &Construction				Services	
Agriculture	**L/K Ratio**	**Industry**	**L/K Ratio**	**Industry**	**L/K Ratio**	**Service**	**L/K Ratio**
Teff	1.24	spinning	0.33				
Sorghum	1.23	machinery	0.30				
Coffee	1.04	Apparel wearing Mfg.	0.26				
Enset	1.03	Metal Product	0.22				
Maize	1.00	Other food Mfg (Meat Products)	0.20				

Note: See Annex A1a for details of the L/K ratio by level of skill and more detailed sub-sectors. *= Mfg is Manufacturing.
Source: Author's computation based on 2015 SAM.

From Table 8 we can generally infer that at sectoral level, the agriculture sector is found to be the most labour-intensive activity with significant potential for job creation. This is followed by the services sector (in the 2nd level) and the industrial sector. However, the gap in terms of job creation potential in the agricultural and the non-agriculture is extremely big–the top agricultural sub-sector in terms of job creating potential (poultry farming) creating 7- and 12-times employment per unit of capital compared to the top job creating sub-sectors in the services (the health sub-sector) and the industrial (agro-industrial parks) sub-sectors, respectively. In general, also, the top sub-sector (health) in the second top sector (services sector) becomes nationally important job creating sub-sector following six agricultural sub-sectors.

Interestingly, within the agricultural sector, it is animal farming (husbandry) that is found to have the top and significant potential for job creation. This followed by cash crops production first and fruits and vegetables next. Non-cash crops production come next, ranking 9th out of 13 agricultural sub-sectors (Table 8). They are also found to have this potential for job creation, both in unskilled and semi-skilled labour at comparable intensity. So does forestry and fishing, following animal husbandry.

In the services sector, the health, education, "others services", public administration, and the transport sub-sectors are found to have the top, in order of importance, sub-sector with high job creation potential. The education sector is found next to the health sub-sector, though its potential is half that of the health sector. Interestingly, both the health and education sub-sectors' potential significance is found primarily for skilled labour. However, except the transport sector where private sector's role is dominant, the provision of these services is generally dominated by the public sector. We note here that, despite the significant share of "trade services" in total employment of the services sector (see Table 5b) which, on average, was 28% (2010–2018), which is next to the "other services" sub-sector (52%), its employment creation potential relative to sub-sectors spending on capital as can be read from the L/K ratio in Table 7 is very small.

In the industrial sector, the employment potential of the government "agro-industrial parks" is found to be significant. In fact, if the health sub-sector is left out, agro-industrial parks rank second to that of agriculture. In addition, grain mill-based manufacturing (see below), mining (especially the traditional mining which is labour-intensive) and chemical products manufacturing are found to be very important in terms of their L/K ratio and hence employment creation potential. The construction sector, which is usually considered with potential for job creation ranks fourth, following the electricity sub-sector, among the industrial sub-sectors—with significantly less labour intensity compared to most of the agricultural sub-sectors (Table 8). All the industrial sub-sectors, except electricity, also primarily employ unskilled labour, followed by semi-skilled one (see Annex A1a for more detailed K/L ratio from which these inferences are made).

We have attempted to triangulate the above SAM-based K/L ratio and employment condition using two industrial survey data of the Central Statistical Authority (CSA: the Large and Medium Scale Manufacturing Enterprises (LMSME) survey and the Small Scale Manufacturing Enterprises (SSME) survey conducted in 2016/17, which is a date closer to the SAM data. Given that the Ethiopian agriculture is subsistence and small-holder farmers based, the focus is on the industrial and services sectors.

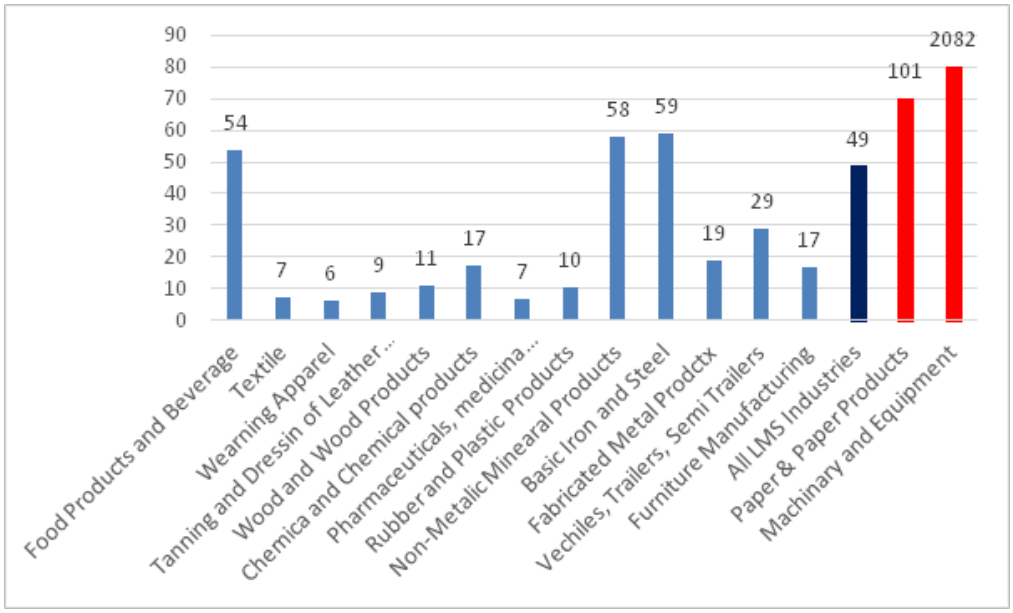
The manufacturing sector share in the industry is about 24% in 2019/20, the bulk (73%) share being the construction sector. The industry sector share in GDP in turn, in the same year, is 29% (services being 39% and agriculture 33%) (NBE, 2020). LMSMEs are defined as those engaging ten or more persons and using power-driven machinery. The total number of LMSEs reported in 2016/17 (2009 E.C) survey year was 3,627. About 39% of these manufacturing industries were located in Addis Ababa followed by Oromiya region and Amhara regions at 29% and 14% of the industries, respectively. More than 26% of the manufacturing industries fell in the category of food products and beverages followed by non-metallic mineral products with about 18% and the furniture industry with more than 13%. Over 298,510 persons were engaged in all the manufacturing industries surveyed in 2016/17 (2009 E.C). The total gross value of production in 2016/17 (2009 E.C) of all was about 167 billion Birr. This is gross value-added in national accounts (NA) concept of about 93.2 billion birr.

In addition to the LMSME, there were 139,982 small-scale manufacturing establishments (SSME) in Ethiopia in another SSME survey conducted in 2016/17 (Ethiopia fiscal year 2009). Out of the total, the largest in number, 36.8%, were grain mills, manufacturing of furniture establishments numbering next at 26.7%. This is followed by manufacturer of fabricated metal establishments at 13.3% of the total. They engaged 2,159,526 people, which is roughly a ratio of 1 to 15.42, i.e., on average, ten SSMEs engaging 154 people. Gross value of production (GVP) in the stated period of these SSMEs amounted to 64.7 billion birr, out of which food product manufacturers, except grain mills, contributed 23.7 billion (37%). This amounts to 32 billion birr in value-added in NA concept. A further look reveals that, in absolute terms, grain mill firms employed the most: 699,667 (32.4%), followed by manufacturing of furniture, 665,207 (30.8%), and manufacture of fabricated metal, 286,456 (13.3 %).

From the two surveys, the VA using the NA concept in 2019 (2016/17) had been 92 billion for LMSME and 32 billion for SSME. This is about 5.3% and 1.8% of GDP in the same years, respectively. However, the contribution of the industrial sector to GDP as a whole in the same year was 27%; and within the industrial sector, the share for construction was (72%), manufacturing (25.3), electricity (2.6%), and mining and quarrying (0.7%). Thus, if manufacturing is composed of LMSEs and SSME, as it should be, the surveys must have understated their GDP contribution. If we assume the NA data is correct, and using the proportion of the LMSE and SME from the survey, their contributions to GDP could be 20% and 7 % for LMSME and SSME, respectively.

The SSMEs employ less people per firm, but labour is their single most important factor. Thus, their employment creation potential normally comes from the growth of their number. We don't have capital stock data for SSMEs but it might not give us more information about employment condition than what we already have stated in the previous paragraphs. On the other hand, the capital labour ratio in the LMSMEs can inform us about the nature of labour and capital intensity in the production process of these firms. We also have, fortunately, a capital stock data of LMSMES in the surveys. The K/L ratio computed for the LMSMEs, which are the dominant type of manufacturing firms in terms of value (though not employment) that is based on this survey is presented in Figure 7. The capital stock data is the book value of fixed assets with estimated life of one year and more in each sector in the reference year.

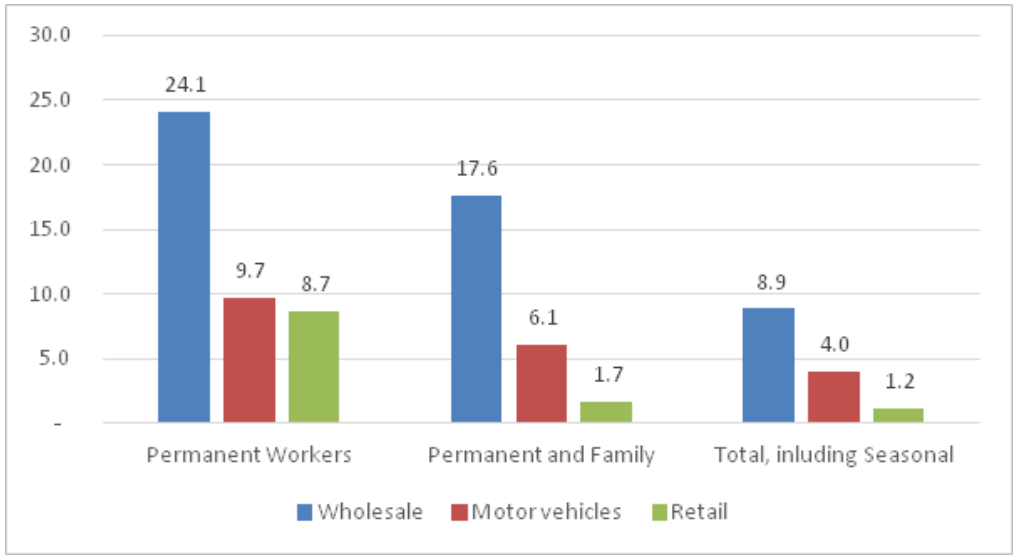
Figure 7: The K/L ratio in the Large and Medium Size Manufacturing Enterprises (2016/17– 2009 Ethiopia, in '000 birr)



Note: The scale is not relevant for the last two (red bars), they are modified to make the other bars visible; the figures/ labels on top of each bar are comparable, however.
Source: Author's computation using the CSA LMSM Industries Survey.

The other sector missing in Figure 9 is the K/L condition in the services sector. The latest survey we have about this is the "Urban Distribution Sector Survey of 2013/14 (2006 E.C). This survey covers the "wholesale" "Retail" and "Motor Vehicles" sub-sectors that employed about 2.34 million persons, of which 822,000 are seasonal workers. The non-seasonal are composed of 1.52 million and 972,000 unpaid family workers. The three groups also contributed about 20% to national GDP (70% of this being from wholesale while 27% from retail trade) at the time, which was just 11% five years ago in 2008/2009. Figure 8 shows the K/L ratio of this sector using two version of fixed asset: machines and equipment as well as total fixed assets. The latter includes the book value of "buildings", "other construction works" and "vehicles", in addition to "machines and equipment". In either case, the sector is characterized by capital intensity and this finding is in line with the SAM-based K/L ratio-based information that is give in Table 8.

Figure 8: K/L ratio in the services sector using fixed "machinery and equipment" assets only (2013/14, in '000 birr)

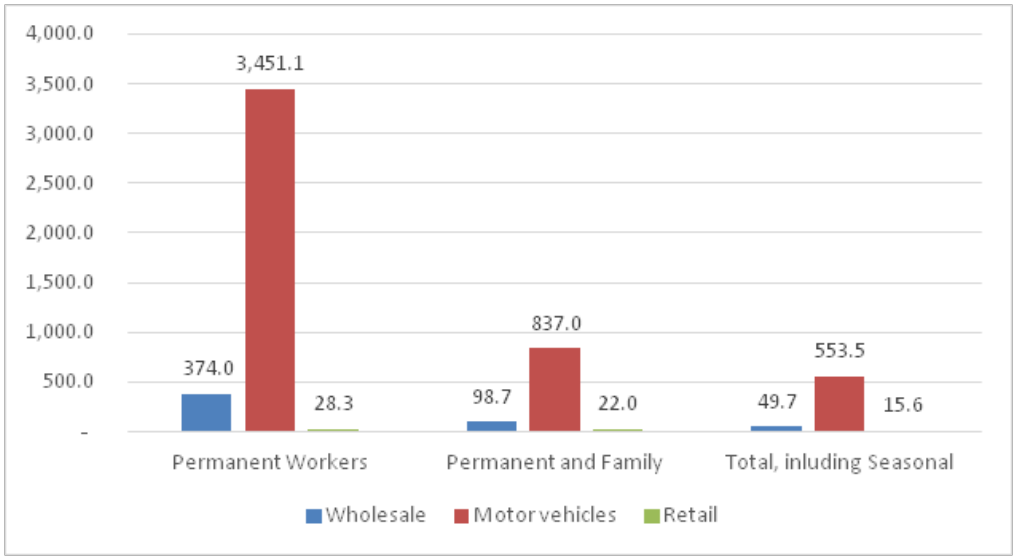


Source: Author's computation based on CSA, 2013/14 Urban Distribution Survey.

Top labour-intensive firms (per unit of capital employed) are found to be, in order of importance, producers of "wearing apparels", "textiles: "pharmaceutical and chemicals", "tanning and dressing of leather" "rubber and plastic", and "wood and wood products" that have a K/L ratio of less than 11 in Figure 4. The latter firms are similar to the second group of firms, following the agro-industrial parks, non-manufacturing industrial firms (agro-industrial firms as well as mining, electricity, construction) as well as grain mills form SSMEs identified in the SAM data-based ranking in Table 8. Thus, our SAM-based analysis is reliable. The only exception to this conclusion is "textiles" sub-sector, which we found in the survey-based K/L ratio

the top labour-intensive sub-sector while it was identified in the SAM-based analysis to be at medium level.

Figure 9: K/L ratio in the service sector using total fixed assets (2013/14, in '000 Birr)



Source: Author's computation based on CSA, 2013/14 Urban Distribution Survey.

The second group with potential for job creation among the industries given in Figure 4 is found to include producers of "chemical and chemical products", "furniture manufacturing", "fabricated metal products" as well as "vehicles, trailers and semi-trailer" manufacturers which are at a medium level labour-intensity, having a K/L ratio below the industrial average K/L ratio of 49 (Figure 4). This ranking also fairly corresponds to the SAM data-based ranking given in Table 8

The rest of the sectors given in Figure 4 are found to be relatively capital-intensive with K/L ratio above the industries average. Yet, among this "food products and beverage" producer firms are found to have relatively the lowest K/L ratio, while "paper and paper product" as well as "machinery and equipment" producing industries are found to be the most capital-intensive with a K/L ratio of 2 to 42 times higher than the industries K/L ratio. This also fairly corresponds with SAM-based ranking, except for "wood and wood products" which was found to be one of the least labour-intensive in the SAM-based ranking.

In sum, except for "textile", "wood and wood products" which the survey-based, analysis shows they are labour-intensive, our inference about the job creation potential using our proxy K/L ratio derived from the SAM database is generally correct. In addition, agro-industrial parks and non-manufacturing industries are found to have significant potential in the SAM-based analysis. Thus, our triangulation of the result from the SAM-based analysis above using the survey-based data shows that

our inference is generally reliable, excluding for the two sub-sectors (textile and wood products) for which Figure 4 is the better data for inference.

In sum, three major conclusions could be made from our analysis of the source of growth in section three and the sectoral employment potential analysis in this sector. First, we identified the agricultural sector in general and animal farming in particular as sectors with significant potential for employment. However, the role of agriculture as source of growth has significantly declined since 2010. Thus, the sector with significant potential for job creation was not the source of growth, especially after 2005. The latter year was a year of failed democratic election that was followed by violence in urban areas. The government began to focus on urban areas, urban and industrial development using what is called a 'developmental state model". Agriculture, which had significant potential for job creation ceased as the source of growth after this period. No wonder then the fast economic growth since then is accompanied by high unemployment too.

Second, since 2005, and especially after 2010, the industrial and the services sectors became the major sources of growth. Within the industrial sector, construction was the main driving force behind GDP growth. Our K/L ratio shows it has also significant potential for job creation. Although it has created some jobs, it did not manage to create significant jobs comparable to the manufacturing sector contribution, relatively low to economic growth, however. Thus, had the source of growth been manufacturing, instead of construction, we would have seen more job creation. Finally, although the health, education, and transport sectors were sectors with significant employment potential, the major source of growth was the trade sector which is not labour-intensive as that of these services sectors. With these major conclusions, next we examine this finding from economy-wide multiplier analysis perspective, so as to have a comprehensive macro-level perspective about our conclusion.

II. The SAM-based multiplier analysis of employment and sectoral growth

We have used Equation 3 to capture the 70 sector SAM as summarized in Table 7 to compute SAM-based multipliers. Thus, our SAM, represented with a coefficient matrix of A, output X and final demand, FD, is given by:

$$AX + FD = X \tag{3}$$

$$(I - A)X = FD \tag{4}$$

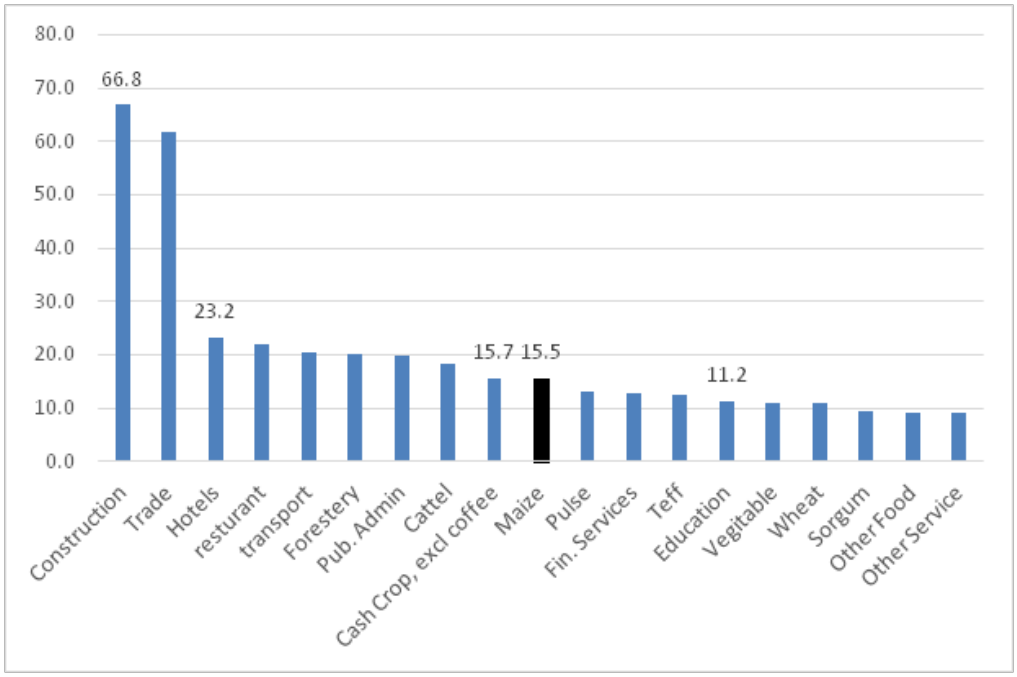
Which can be given using the product of the Leontief inverse (the multiplier matrix), and the final demand (FD) as:

$$X = (I - A)^{-1}[FD] \tag{5}$$

Using Equation 3 and the multiplier given by the first part of the right-hand side of Equation 3—the "Leontief Inverse"—we have computed what will be the sectoral

output response (X's) for a unit injection in the final demand (FD). The result of the multiplier effect of such one-unit demand injection in each commodity sectors is given in Figure 10, which is a summary of detailed multipliers for the 70 sub-sectors (see Annex A2 for detail).

Figure 10: Top 20 sectors with the highest multiplier effect, in millions of birrs (with one million birr demand injection in all commodity sectors)



Note: The exogenous account used for this simulation is the "rest of the world" account.
Source: Author's computation based on 2015 SAM; details given in Annex A2.

Figure 10 shows the sectoral response (incorporating the multiplier effect) for one unit (one million birr) demand injection (or stimulation) in each of the commodity sectors. The major points to be made from this result are the following. First, if supply is elastic, a demand stimulus will have the highest output effect on the construction and trade sectors. This is followed by hotels, restaurants, transport, forestry, public administration, and animal husbandry (cattle's); and cash crops, excluding coffee in the agriculture sectors are found to have the highest multiplier effect, above the medial value of 15.5 (the black bar in Figure 10). However, the effect on the construction and trade sectors is found to be above four times larger than the average (the medial) effect, given in Figure 10.

Second, although the construction sector is one of the sectors with significant potential for job creation (yet did not create job as that of manufacturing), the trade sector is not among the top sub-sectors with significant potential for job creation in the services sector either.

Third, although this demand stimulus also stimulated some of the agricultural sub-sectors with significant potential for employment (animal farming, cash crops, and crops such as maize) that will grow above average, their growth from this demand stimulus is not as high as their potentially for job creation, especially when compared to the construction and trade sub-sectors. There could be many factors for the latter that include supply factors that need further examination (see caveat for this result below).

Fourth, this demand stimulus is found to have differential implication for different type of labours and factor incomes, as well as different regions of the country—has distributional implication. First, in terms of different categories of factor income, the demand injection is found to favour primarily the income of the unskilled labour, followed by income of the non-agricultural capital. Land related capital and skilled labour follow next. Again, the effect on the factor income to this first group (unskilled labour and non-agricultural capital) is found to be more than four times larger than the latter groups of factor income and 11 times higher than the return to capital in the livestock sector, which is getting the least. In terms of institutional categories of income, the government sector is found to benefit better than the enterprises. This result is given in Table 9

Table 9: Factor distribution of income effect of a demand increase (by one million birr in each commodity, in millions of birrs)

Labour and Capital		By Institutional Category	
Unskilled Labour	135.1		
Non-Agricultural Capital	112.0	Government	48.4
Capital in Land, Rural Areas	29.6	Enterprises	34.0
Skilled Labour	28.3		
Semi-Skilled Labour	21.6		
Capital in Livestock Sector, Rural	11.7		

Source: Author's computation based on SAM-based model.

Second, in terms of the regional dimension of the distribution of income, generally those regions and specific geographic part of regions with the largest population benefit more than the others (Table 10). Thus, in order of importance, rural Oromia, Amhara, and SNNP regions are found to be the top beneficiaries of this demand injection and its economy-wide multiplier effect. This is followed by Addis Ababa (the capital city) and the urban areas of three of the same regions (in the same order of importance). The gap between the income that accrues to the other regions and the Oromia region is found to be very significant (rural Oromia scoring more than twice that that of the other top regions; and urban Oromia is also getting about 1.7 times larger than the other top urban regions. Harar (urban), Gambela (rural), and Benishangul-Gumuz small towns are found to benefit the least—getting 100 times less than the top region. However, on per capita basis, it is generally the urban areas, Addis Ababa and Dire Dawa cities, leading it at significant distance, which are beneficiaries than the rural areas (see values in square bracket in Table 10).

Table 10: Regional distribution of income effect of demand increase (by one million birr in each commodity, in millions of birrs; population size based on 2021 LFS)

Region	Birr	Region	Birr	Region	Birr
Oromia Rural	88.6 [2.75]	Afar Urban	1.3 [3.1]	Afar Rural	2.1 [1.34]
Amhara Rural	40.5	Tigray Rural	11.5	Dire Dawa (Urban)	2.0
	[2.17]				[5.85]
SNNP Rural	32.6 [1.86]	Oromia Small Towns	8.3	Tigray Small Towns	1.6
Addis Ababa (Urban)	29.7	Somali Rural	7.9	Somali Urban	1.3
	[7.8]		[1.4]		[1.32]
Oromia Urban	25.4 [3.95]	Amhara Small Towns	6.3	Benishangul Small Towns	0.8
Amhara Urban	16.7 [3.7]	SNNP Small Towns	4.4	Gambela Rural	0.8 [2.53]
SNNP Urban	13.8 [3.63]	Benishangul Rural	2.2 [2.5]	Harar (Urban)	0.8 [5.2]

Source: Author's computation based on SAM-multiplier model simulation.

The mismatch that we have discovered in the decomposition analysis also seems to appear in relation to the potential job creation of a sector and the sector's potential for expansion due to demand stimulus. In addition, sectors with capacity to expand a lot due to demand injections as can be read form Figure 6 and Annex A2, are not sectors with significant job creation potential as can be inferred form the K/L ratio as given in Table 8. From Table 8, we have seen that the top five L-intensive sectors are related to animal husbandry (with 23 to 62 score in the K/L ratio), forestay (11.5) and cash crop production (8.3). Except forestry, these are not in the top seven sectors with significant potential to expand with demand injection, as can be read from Figure 7. The top sectors with significant potential for employment (animal husbandry) is found the eighth top sector (cattle) in terms of potential for expansion.

In the industrial sector agro-industrial parks (at 5), grain mills (2.3), electricity (1.7), construction (1.6), and water (1.3), in order of importance are found to be the most L-intensive sub-sectors. Among these sub-sectors, only the construction sector (ranking top) is found to have a potential to expand fast.

In the services sector, the health sector (8.7) followed by Education (3.3), other services (2.5), transport (2.5), and public administration (1.6) are found to be the most L-intensive sub-sectors. In terms of potential for higher expansion from demand stimulus, only “transport” and “pubic administration”, ranking the top 5th and 7th, respectively, are found to be important (Figure 7)

One of the major problems with the analysis above is the demand-driven nature of the SAM-based multiplier approach and its implicit assumption about the existence

of elastic supply that automatically respond to demand stimulus. The latter is a very limiting assumption in a country like Ethiopia where production activity is generally characterized by supply bottleneck (that includes, inter alia, low productivity, low technology, low skilled work force, dependence on rain-fed agriculture, limited infrastructure, and import-dependent manufacturing sector) which makes the elastic supply assumption unrealistic. Thus, the above result needs to be taken cautiously.

5. Determinants of youth unemployment

The model

The second aspect of the study relates to identification of factors behind the youth unemployment problem. This will be carried using a probit model estimated using the national labour force survey data. The probit model is given by:

$$y^* = \beta' X + \varepsilon \quad (6)$$

*Y** is unobservable but we can observe,
y=1 if the status of the individual is unemployed, and
y=0 otherwise

The status of unemployment depends on measurable factors **X** that depicts socioeconomic and demographic factors and unobservable factors ε. Each individual may fall in unemployment or employment categories depending on measurable explanatory (**X**'s) and unobservable (ε) factors that determine his/her status of employment; β is a vector of slope parameters of the determinants of unemployment to be estimated. Assuming ε is normally distributed, we can have the following probabilities from the probit model,

$$\begin{aligned} Prob(y = 1) &= \Phi(\beta'X), \\ Prob(y = 0) &= 1 - \Phi(\beta'X), \end{aligned} \quad (7)$$

Where: Φ(.) is the standard normal cumulative distribution's function, cdf.

The log-likelihood function and its derivatives can be obtained readily by estimating this model (see Green, 2000). This model is estimated for both total (adult) unemployment and youth unemployment. The data and the estimation results are given in next section.

Data and estimation results

The latest national labour force survey (2021) is not officially released in electronic form yet. Thus, the econometrics model is estimated using the latest available electronic data, which is for the year 2013. In the official LFS data, youth unemployment is defined for the youth age group 15-29. We have estimated the probit model specified above both for total unemployment as well as for youth unemployment. The result shows that there is no fundamental difference between the two models. Thus, to briefly present the result in a compressed form, we have estimated the model for the total unemployment by including the youth as an additional dummy variable where an observation is given the value 1, if the unemployed individual is in the age group 15-29 (youth) and zero otherwise. The result of this is given as Table 11 (the model that is estimated the dependent variable "youth unemployment" instead is given in Annex B.

Table 11: Determinants of unemployment (National Labour Force Survey, 2013, probit model)

Dependent variable: Unemployment (all adults, age 15+)	Coefficient	z-value	Dy/dx (Marginal Effect)
Sex	-0.61	0.02	-0.109
Attended formal education	0.07	0.02	0.0144
Primary school finished	0.16	0.03	0.030
High school finished (9 to 12)	0.35	0.03	0.074
TVET completed	0.05*	0.04	0.044
Having a first degree	-0.25	0.05	-0.038
Having a Master's level, plus	-0.44	0.13	-0.059
Married	0.14	0.02	0.024
Received some training	-0.22	0.03	-0.0358
Reside in urban areas	1.03	0.03	0.123
Age	0.003	0.00	0.0005
Migrated searching for a job	-0.36	0.02	-0.061
Migrated along a family	0.16	0.02	0.03
Youth (aged 15-29)	0.36	0.02	0.064
_cons	-2.21	0.07	
Number of Observation (	44,230.		
Pseudo R^2	0.13		
Wald Chi^2 (13)	3506 (Pr=0)		

Note: *All, except this, are statistically significant at 1% and better.

The result shows that, all the determinants in the models, except completion from the technical and vocational training, are found to have statistically significant coefficients. Despite the government's attempt to tackle the unemployment problem through the expansion of the TVET, the result shows that this endeavour doesn't

have effect on reducing unemployment. Similarly, attending a formal education, as well as completion of both primary and high school, are found to have positive association with unemployment. On the other hand, having a first and master degree is found to have a negative association with unemployment—the likelihood of being unemployment significantly being reduced when one holds a master degree. Similarly, those who have received some kinds of training are also found to be less likely to be unemployed—the effect of such training being comparable to having a first degree, but not that of a master degree.

Table 11 further shows that residing in urban areas, migrating with the family, being older and married are found to be positively associated with the likelihood of being unemployed. However, if the migrants are migrating in search of job, the likelihood of them being unemployed is found to be strongly negative. Interestingly, and in relation to youth unemployment, being young by itself increases the probability of being unemployed significantly. Thus, in addition to being affected by all factors that increase the likelihood being unemployed like any other adult, being a youth will further aggravate the likelihood of being unemployed (Table 11).

6. Conclusion

In this study, an attempt to understand the unemployment problem in general, and the youth unemployment in particular, is made. This is a pressing issue in Ethiopia because, despite quite high growth for extended period (in the last two decades), youth unemployment remained stubbornly high in Ethiopia.

This study attempted to examine this paradox of high unemployment amidst fast growth using three approaches: (i) a growth decomposition and structural change analysis, (ii) an examination of the sectoral and sub-sectoral production activity in terms of capital and labour ratio that is based on social accounting model and enterprises survey data, as well as (ii) by estimating a model that attempts to identify major determinants of unemployment (youth unemployment). The study came up with the following findings, which has implications for policy.

Our examination of the source of the rapid growth and the condition of sectoral employment potential revealed the following findings. First, we identified the agricultural sector in general, and animal farming in particular, as sectors with significant potential for employment. However, the role of agriculture as source of growth has significantly declined since 2010. Thus, the sector with significant potential for job creation was not the source of growth, especially after 2005. A policy attention that focused on agriculture since 2005 would have had significant impact on job creation. Second, since 2005, and especially after 2010, the industrial and the services sectors became the major sources of growth. The policy focus of the government in urban areas and the industrial sector which might have been the result of the 2005 failed election where the opposition to the government in urban areas were strong might explain this. Within the industrial sector, construction was the main driving force behind GDP growth, and the manufacturing sector remained fairly stagnant in the last four decades with its share in GDP remaining below 5% (and below 8% in the last five years). Our capital–labour ratio-based analysis using SAM data shows it has also significant potential for job creation. Although it has created some jobs, it did not manage to create significant jobs comparable to the manufacturing sector contribution, relatively low to economic growth, however. Thus, a concerted effort in supporting the manufacturing sector would have the dual effect of high job creation and structural transformation at the same time. Third, in the services sector, although the health, education and transport sectors were sectors with significant employment potential, the major source of growth was the trade sector, which is not labour-intensive as that of these services sectors.

Having identified the above findings, we have examined the potential job creation of the economy and its sectors and sub-sectors using economy-wide model which is based on SAM multiplier analysis. The mismatch between the sources of growth and employment that we have discovered in the decomposition analysis also seems to appear in relation to the potential job creation of the various sub-sectors' potential for expansion due to demand stimulus. That is, sectors with capacity to expand relatively a lot due to demand injections are not sectors with significant job creation potential. More concretely the SAM-based economy-wide model-based multiplier analysis also revealed the following. First, if supply is elastic, a demand stimulus will have the highest output effect on the construction and trade sectors. This is followed by hotels, restaurants, transport, forestry, public administration and animal husbandry (cattle), and cash crops, excluding coffee, in the agriculture sectors that are found to have the highest multiplier effect, above the median value. However, the effect on the construction and trade sectors is found to be significantly higher than the others—with four times larger than the median value. Although the construction sector is one of the sectors with significant potential for job creation, it did not create jobs as that of manufacturing sector. The trade sector is not among the top sub-sectors with significant potential for job creation in the services sector either.

Second, although this demand stimulus also stimulated some of the agricultural sub-sectors with significant potential for employment (animal farming, cash crops, and crops such as maize) that could grow above average growth of all sectors, their growth from this demand stimulus is not as high as their potential for job creation, especially when compared to the construction and trade sub-sectors. There could be many factors for the latter, including supply factors that limit agriculture production and productivity; this needs further examination (which is a major caveat for a SAM-based analysis, which depicts a demand-led growth).

Third, this demand stimulus is found to have differential implication for different types of labours and factor incomes, as well as different regions of the country; it has distributional implication. In relation to this, (i) in terms of different categories of factor income, the demand injection is found to favour primarily unskilled labour (income), followed by income of the non-agricultural capital. Land related capital and skilled labour follow next. Again, the effect on the factor income to this first group (unskilled labour and non-agricultural capital) is found to be more than four times larger than the latter groups of factor incomes and 11 times higher than the return to capital in the livestock sector, which is getting the least. In terms of institutional categories of income, the government sector is found to benefit better than the enterprises. (ii) in terms of the regional dimension of the distribution of incomes, generally those regions and specific geographic part of regions with the largest population, are found to benefit more than the others.

In sum, the mismatch that we have discovered in the decomposition analysis also seems to appear in relation to the potential job creation of a sector from the technology of production (capital–labour ration) and the sector's potential for expansion due to demand stimulus. In addition, sectors with capacity to expand a lot due to demand

injections are not sectors with significant job creation potential as can be inferred form their capital–labour ratio.

Finally, since the end result of the mismatch between sources of growth and employment as, well as the effect of demand stimulus on output and employment growth is to render high unemployment (low employment), we have examined further the other possible factors behind both adults and youth unemployment using micro-level data. Our unemployment model results revealed the following major findings: (i) that, despite the government's attempt to tackle the unemployment problem through the expansion of the TVET, the result shows that this endeavour does not have effect on reducing unemployment. On the other hand, (ii) having a first (a bachelor) and second (master) degrees is found to have a negative association with unemployment—the likelihood of being unemployed significantly reduce when one holds a master degree or better. Similarly, (iii) those who have received some kinds of training are also found to be less likely to be unemployed. Finally, (iv) all factors that affect total adult unemployment are also found to affect youth unemployment in a similar direction and magnitudes. However, being young by itself significantly increases the probability of being unemployed. We conclude by stating that, all these findings have implications for employment creation that can inform such policy objective.

Notes

1. In the official LFS data (2021) the “reduced” youth unemployment is defined as the youth (age 15 to 29) unemployed (both seeking and not-seeking/discouraged—the wider definition which is relevant for Ethiopia) as the share of economically active youth, in the same age range. This national rate is given in the 2021 LFS data at 7%, which seems an error. Thus, the 14% given here is the weighted average of the rural and the urban youth unemployment rate in the same document, weighted by the urban and rural population of 0.20 and 0.80, respectively.

2. This figure (employed population) is actually 42.4 million. The source of this discrepancy has to do with CSA's exclusion of subsistence and domestic employees in its analysis and reporting.

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Annexes

Annex A1a: SAM-based labour-capital ratio (L/K)

	General L/K Ratio	L_USK/K Ratio	L_SSK/K Ratio	L_Skilled/K Ratio
apoul	62.26	56.68	3.21	2.37
ashee	45.60	44.45	1.01	0.14
agoat	43.28	42.19	0.96	0.13
acatt	22.75	22.09	0.60	0.07
afor	11.49	9.91	0.60	0.98
afish	10.19	8.65	1.29	0.25
acash	8.26	7.07	0.50	0.69
acaml	8.17	8.03	0.14	0.00
acrop	5.77	5.25	0.40	0.11
aveg	4.63	4.43	0.16	0.04
afruit	2.29	1.70	0.38	0.21
apul	1.86	1.69	0.15	0.02
aflower	1.79	1.33	0.30	0.16
aoils	1.63	1.39	0.10	0.14
awhea	1.55	1.41	0.13	0.02
atef	1.24	1.13	0.10	0.01
asorg	1.23	1.11	0.10	0.01
acoff	1.04	0.89	0.06	0.09
aenset	1.03	0.98	0.04	0.01
amaiz	1.00	0.90	0.08	0.01
abar	0.89	0.81	0.07	0.01
adairy	0.58	0.46	0.09	0.03
aoliv	0.52	0.52	0.00	0.00

Source: The SAM (194X 194).

Annex A1b: The industrial sector

	General L/K Ratio	L_USK/K Ratio	L_SSK/K Ratio	L_Skilled/K Ratio
aapark	5.0	3.6	0.7	0.7
agmill_agmillserv	2.30	1.65	0.48	0.17
amining	1.74	1.64	0.05	0.05
aelect	1.67	0.21	0.40	1.07
acons	1.58	0.92	0.42	0.24
awater	1.25	0.89	0.11	0.24
achem	1.00	0.35	0.37	0.28
aminprod	0.55	0.49	0.04	0.02
aomanu	0.54	0.22	0.30	0.03
aleath	0.44	0.32	0.09	0.04
apharm	0.35	0.28	0.05	0.01
aspin	0.33	0.23	0.06	0.03
amach	0.30	0.14	0.11	0.05
aapar	0.26	0.14	0.09	0.04
amprod	0.22	0.10	0.04	0.08
aofood	0.20	0.17	0.03	0.01
atext	0.20	0.14	0.04	0.02
abev	0.19	0.15	0.02	0.02
acement	0.19	0.11	0.03	0.05
aveh	0.17	0.13	0.02	0.02
asug	0.16	0.12	0.02	0.01
apaperp	0.16	0.11	0.04	0.01
aelecq	0.12	0.11	0.01	0.01
awood	0.11	0.06	0.03	0.01
atob	0.09	0.08	0.01	0.00
ametal	0.08	0.06	0.01	0.01
amedq	0.02	0.02	0.00	0.00

Source: The SAM (194X 194).

Annex A1c: The services sector

	General L/K Ratio	L_USK/K Ration	L_SSK/K Ratio	L_Skilled/K Ratio
aheal	8.72	0.96	0.47	7.28
aeduc	3.29	0.25	0.43	2.61
aoserv	2.54	2.48	0.05	0.01
atrans	2.47	1.68	0.41	0.38
apadmin	1.57	0.34	0.29	0.94
arest	0.75	0.04	0.28	0.44
acomm	0.50	0.06	0.10	0.33
atrad	0.30	0.21	0.05	0.04
afserv	0.28	0.01	0.02	0.25
ahotel	0.14	0.09	0.02	0.03

Source: The consolidate SAM (194X 194).

Annex A2: Sector with a higher multiplier effect for one million demand injection in each commodity sectors block (in millions of birrs)

acons	66.8	abev	6.7	amining	2.0
atrad	61.7	aenset	6.5	ametal	1.9
ahotel	23.2	abar	6.2	aomanu	1.9
arest	21.9	aheal	5.8	aminprod	1.8
atrans	20.5	acomm	5.6	aspin	1.6
afor	20.2	achem	5.4	atob	1.6
apadmin	19.9	acoff	4.7	apaperp	1.6
acatt	18.4	awater	4.3	asug	1.4
acrop	15.7	agoat	4.2	aleath	1.3
amaiz	15.5	agmill_agmillserv	3.8	afish	1.2
apul	13.0	aelect	3.6	aveh	1.2
afserv	12.6	ashee	3.6	aapar	1.1
atef	12.5	afruit	3.4	aflower	1.0
aeduc	11.2	aoliv	3.3	aapark	1.0
aveg	11.0	aoils	3.1	apharm	0.8
awhea	10.8	apoul	3.0	aelecq	0.8
asorg	9.6	acaml	2.9	awood	0.7
aofood	9.2	amprod	2.8	adairy	0.5
aoserv	9.0	atext	2.5	amach	0.0
acash	7.8	acement	2.3	amedq	0.0

Source: The consolidate SAM (194X 194).

Annex A3

Table A1: Sectoral growth contribution to GDP and employment growth

	Output Growth (Value-Added, in %)				Employment Growth (Numbers, in %)			
	GDP	Agri-culture	Industry	Services	Total Employ-ment	Agri-culture	Industry	Services
1991–1994	2.5	0.5	0.3	1.8	2.0	1.4	0.2	0.4
1995–1999	3.3	0.6	0.6	2.2	3.1	2.2	0.3	0.6
2000–2004	4.6	1.8	0.8	2.0	2.6	2.0	0.4	0.3
2005–2009	11.3	4.9	1.1	5.4	3.8	1.6	0.9	1.3
2010	9.7	3.7	1.3	4.8	3.9	1.1	1.3	1.6
2011	12.9	4.2	1.8	6.9	3.0	2.1	0.3	0.5
2012	9.2	2.3	2.5	4.5	2.6	2.0	0.4	0.3
2013	10.3	3.1	3.5	3.7	3.8	1.6	0.9	1.3
2014	10.8	2.3	2.8	5.7	4.4	1.5	1.0	1.8
2015	11.3	2.6	3.8	5.0	3.4	1.4	0.7	1.2
2016	8.5	0.9	3.9	3.7	2.5	1.9	0.4	0.1
2017	9.7	2.4	3.9	3.3	3.8	1.6	0.9	1.3
2018	7.7	1.3	2.6	3.9	4.4	1.5	1.0	1.8
2010–18	10	2.5	2.9	4.6	3.5	1.6	0.8	1.1

Source: Author's computation based on Groningen University Structural Change data.

Annex B: Determinants of youth unemployment (probit model)

Determinants of Youth Unemployment (National Labour Force Survey, 2013)

Dependent variable: Youth Unemployment (Age 15-29)	**Coefficient**	**z-value**	**Pr>z**
Sex (Male=1; female =0)	-0.62	-33.9	0.00
Attended formal education	0.05	2.3	0.02
Primary school finished	0.14	5.2	0.00
High school finished (9 to 12)	0.33	11.7	0.00
TVET (Technical & Vocational Education and Training) completed	0.06*	1.4	0.16
Having a first degree	-0.24	-4.5	0.00
Having a master level, plus	-0.45	-3.4	0.00
Married	0.10	5.8	0.00
Received some training	-0.23	-8.6	0.00
Reside in urban areas	1.01	31.2	0.00
Age	-0.01	-9.3	0.00
Migrated searching for a job	-0.35	-17.7	-0.061
Migrated along a family	0.16	6.9	0.03
_cons	-1.61	-23.5	0.00
Number of Observations (	43,055.		
Pseudo R^2	0.13		
Wald Chi^2 (13)	3289 (Pr=0)		

Note: *All, except this, are statistically significant at 1% and better.

Mission

To strengthen local capacity for conducting independent, rigorous inquiry into the problems facing the management of economies in sub-Saharan Africa.

The mission rests on two basic premises: that development is more likely to occur where there is sustained sound management of the economy, and that such management is more likely to happen where there is an active, well-informed group of locally based professional economists to conduct policy-relevant research.

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