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

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AERC-ODI-ERF-INCLUDE Collaborative Research Project on "Work and Income for Young Men and Women in Africa: A Political Economy and Social Equity Approach to the Employment Potential of Specific Sectors and Subsectors in African Economies.

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I. 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 challenged of unemployment in general and youth employment in particular.

1.1 The Macroeconomic and Growth Context and Unemployment

Before the onset of COVID-19 in 2020, the government's expected growth of the economy in 2019/20 has been 9 percent. This has turned out to be 6 percent according to the latest official data. (NBE, 2020). The expected growth of 9 percent 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 2000-2012. If the abnormal years of 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 9 years. This has continued in the second decade (2011/12-2018/19), with the same average annual growth rate of 9.2 percent (Table 1).

In the last five-year 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 and Kibrom, 2011; 2020; see 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 percent in the last 40 years (see Alemayehu and Addis, 2017). 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 and Addis, 2017).

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 (%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

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

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 has embarked in a far-reaching economic reform of liberalization three years ago. He also promised to stabilize the macroeconomy 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 percent; the export-import gap remained significant because the country was importing about 5 times its exports for more than a decade. The level of exports has stagnating below a $3 billion mark for more than a decade. The currency depreciated 55 percent 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 percent (with food inflation of 40 percent) by September, 2021.This is recently being exacerbated by political instability that include a war between the former and the new regimes in the northern part of the country. Despite the macroeconomic instability official data shows a significant growth (an average annual GDP growth of 10 percent since 2003/04, for 17 years) (Table 1). The latter, in fact led us to question the reliability of the official growth rate and found it being exaggerated at least by 4 to 5 percentage points (Alemayehu and Addis, 2017).

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 issuer of the country's feature of state fragility (Alemayehu, 2020; Alemayehu and Addis, 2015). Thus, the evolution of the economy in terms of growth, structural change and job-creation for the youth is a key socio-economic and political challenge that needs the attention of policy makers.

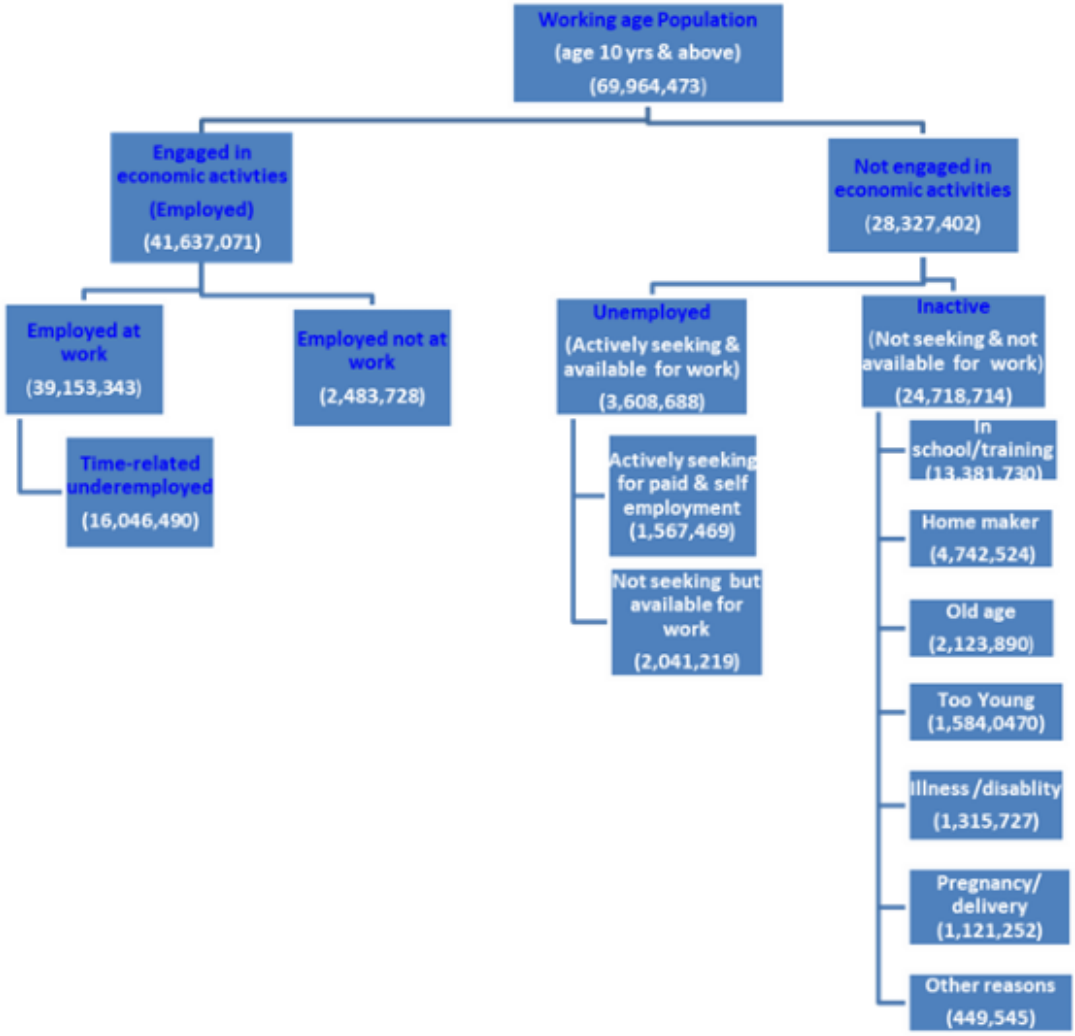
.1.2 The Challenge of Youth Unemployment

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 (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 worst 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

[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

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

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 documented, weighted by the urban and rural population of 0.20 and 0.80, respectively.

young, ill etc), of which 3.6 million are unemployed. We will examine in detail the profile of this labour market in section three below. 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.

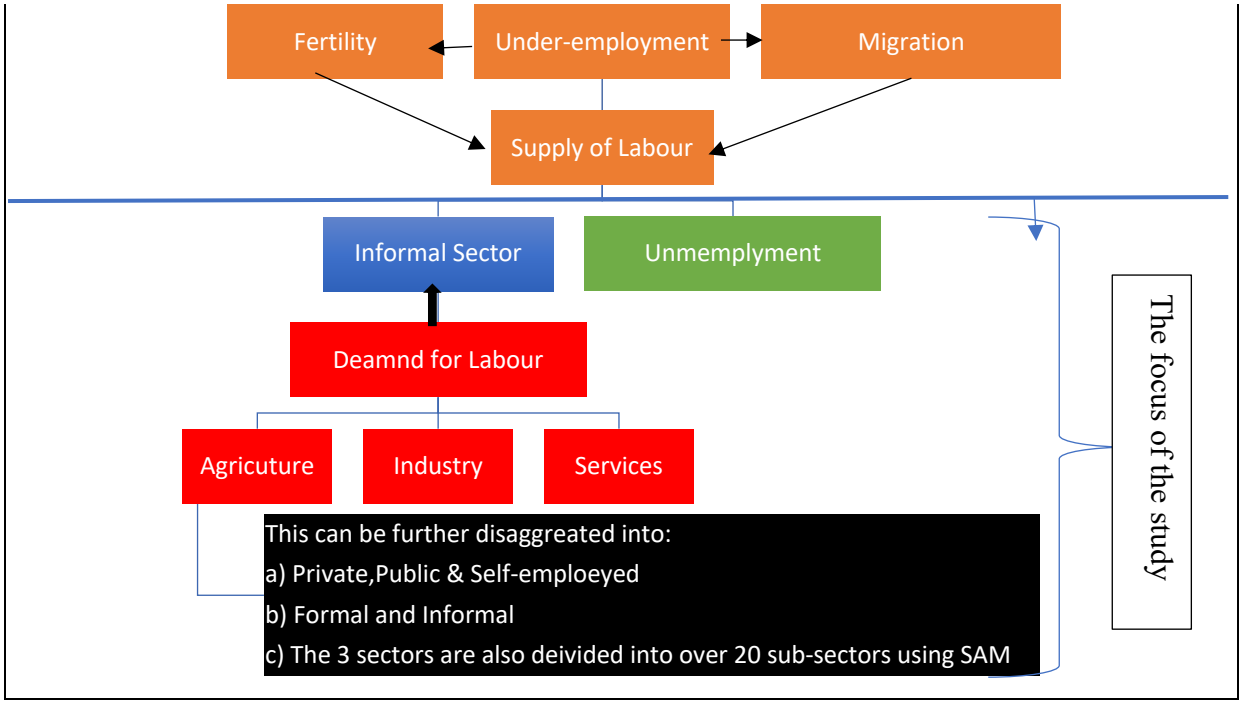
With this general picture, the rest of the study is organized as follows. The analytical framework of the study is given in section two. This will be followed by section three that will present the general profile of employment and unemployment in Ethiopia. In section four an in-depth analysis of the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

II. The Analytical Framework

2.1 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 today (2021) is estimated at 69 million in 2021. This was 40 million in 2005, up from an estimated 13 million people in 1984. (WB,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 percent of countries studied (AfDB 2012). Lack of skills required by the labour market is also found to be crucial (Oppenheimer and 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 can 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 1.

Figure 1: The Analytical Framework of the Study



As can be read from Figure 1, 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 characterize 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. 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 socio-economic condition (that determine the labour supply in the country in general and in urban areas in particular and given by the orange colour in Diagram 1), 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 both the data exploration, the descriptive & 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.

2.2 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.

This, 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 employment and unemployment survey (UUES) of the Central Statical 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, I 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 first, (i) the sectoral source of growth and, second, (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 this 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 4 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 mis-match) 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 to further unravel some of the major factor behind the challenge of youth unemployment in the country using micro level data. The literature offers various cause 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, 2020; Marta, 2017). Still (c) other economists – such as structuralists - take unemployment to result from the structural and socio-economic

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 sector 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, 2020; Matra, 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 is also determines unemployment form the supply side. All these factors will be incorporated in a model that attempts to unravel the major socio-economic and demographic factors that determine the probability of being unemployed. We will conclude the study by critically examining the govern policy of employment and job creation as well as growth in the light of the findings of the study. This aims at coming up policies that help address the challenge youth unemployment in Ethiopia.

III. 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 survey (NLFS) was for the year 2013, which is a bit outdated. Although the detailed data is not out yet for public, a new NLFS is conducted in 2021 and a summary of its findings are out a month back (Sept, 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 primally on (youth) unemployment, it is instructive to briefly look at the profile of the employed with the aim of informing the challenge of unemployment.

3.1 Some basic Features of the Employed Population

A. The Nature, Occupational and Sectoral Features of Employment,

At national level, the size of employed population aged ten years and above is 41.6 (about 20% of them in urban and the rest in rural areas) million in 2021 (CSA, 2021). This gives an "employment to population ratio" of 60%. This means, 60 percent of the total population aged ten years and above are employed. The differential by sex, furthermore, depicts that the ratio

of male's 69 percent is higher than female's 50.2 percent. The National rate was lower for urban areas being 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 3.1 The 2013 NLFS reveals that 49 per cent were unpaid family workers, which was the category with the highest number. This has declined to 37% in the 2021 NLFS. The se self-employed at 40 per cent) 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 3.1). The number of government employees takes a distant third place at 4.4% which increased by about 50 percent, reaching 6 percent in 2021. Employment by private organization/enterprises was not only very small but also stagnated at about 4 percent during the two period. 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 percent in 2021 actually found to performed better in terms of provision of employment opportunities than SMEs, despite the significance support of the latter by the government for many years.

Table 3.1: Percentage Distribution of Employed Population by Employment Status (in Per cent)

	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 Organization	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) *Others: NGO 0.2; Members of Cooperative 0.2; employer 0.4

In the 2020 Urban Employment and Unemployment 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 organization. The rest of paid employees being domestic employees about 0.499 million (11.5%), those who work in NGOs 0.057 million and other employees 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 percent, 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 3.2). Occupations as sales workers and services are found in the third place, at a distant third place at 9 and 11 percent in 2013 and 2021, respectively.

Table 3.2: Percentage Distribution of Employed Population by Occupational Category and Industrial Division/Sectors (in Per cent)

	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 Quiring	0.4	0.5	0.3	0.6	0.7	0.4
Total	**100**	**54**	**46**	**100**	**100**	**100**

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

Note: Gender's share is out of the total persons in 2013 and out of all sectors of the same Gender in 2021 data

In line with the occupational category patter, the agriculture, forestry and fisher sector dominate employment at 73 and 65 percent in 2013 and 2021, respectively. Thus, despite a relative decline in employment in agricultural sectors (8 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 2 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 3.2). We have pursued this trend in more detail and by comparing with sectoral growth in the next section.

B. 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 national level, according to the NLFS 2013 and using this definition, out of 31.5[2] million employed population of the country, 18 per cent were employed in the informal economy. In the rural areas, out of 26 million employed populations, 17 per cent were employed in the informal economy. On the other hand, the urban informal economy employed 26 per cent 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 per cent of the urban employed population is found in the informal economy. The share of female employees in the informal urban economy was higher (35.6per cent) than males' (19.8per cent). 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 3.3).

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 3.3). Thus, based on our realistic assumptions, employment in the informal economy would be about 40 per cent of the total

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

employment both in 2013 (at the national level) and 38 and 35 percent in 2016 and 2020,

Table 3.3 The Informal Sector in Ethiopia (2013-2020)

All Age and Sex	Excluding Subsistence Farming and Work in Private Households: Sector of Economy: Total Employed	Formal Job	Informal Job	Not Identified	Per cent Informal	Subsistence Farming and Work in Private Households	Including Subsistence Farming and Work in Private Households: Informal Job	Per cent Informal
2013 National								
Total	31498583	25464838	5718308	315437	18.2	10905296	16623604	39.2
Male	18484871	15592461	2717658	174752	14.7	4401776	7119434	31.1
Female	13013712	9872377	3000650	140685	23.1	6503520	9504170	48.7
2013Rural								
Total	26311238	21691333	4378748	241157	16.6	9709783	14088531	39.1
Male	15474614	13177881	2171675	125057	14.0	3882727	6054402	31.3
Female	10836624	8513452	2207073	116100	20.4	5827056	8034129	48.2
2013 Urban								
Total	5187344	3773505	1339560	74280	25.8	1195514	2535074	39.7
Male	3010257	2414580	545983	49694	18.1	519050	1065033	30.2
Female	2177087	1358925	793577	24586	36.5	676464	1470041	51.5
2016 Urban								
Total	6253833	4548360	1657880	47593	26.5	1175689	2833569	38.1
Male	3594264	2849304	710953	34007	19.8	548602	1259555	30.4
Female	2659569	1699056	946927	13586	35.6	627087	1574014	47.9
2020 Urban								
Total	5844877	4,710,302	943,178	191,396	16.1	1,079,312	2,022,494	34.6
Male	3478077	2,975,084	364,716	138,277	10.5	567,856	932,572	26.8
Female	2366799	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 UEUS

respectively, in urban areas) (Table 3.3)

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 per cent of the country's informal economy employment). This is followed by employment in the "whole sale and retail trade" industry (19.2 per cent). In the urban areas, on the other hand, in 2013, the "whole sale and retail trade" industry (38 per cent) and "manufacturing, construction, mining and quarrying" sector (33 per cent) were the two most important informal economy employers. This pattern in urban area remained the same both in 2016 and 2020 (CSA, UEUS, 2016, 2020).

3.2 Basic Features of Unemployment and Youth Unemployment

A. 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 population 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 instance, 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 per cent 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% that grew to 5% in 2021). In generally, both at national level and across gender, the rate of unemployment nearly doubled in 2021 compare to the level in 2013 eight years ago (Figure 2). This trend is strikingly puzzling, compared 8 to 10 percent GDP growth the government claimed during the same time as noted in section one (see Table 1).

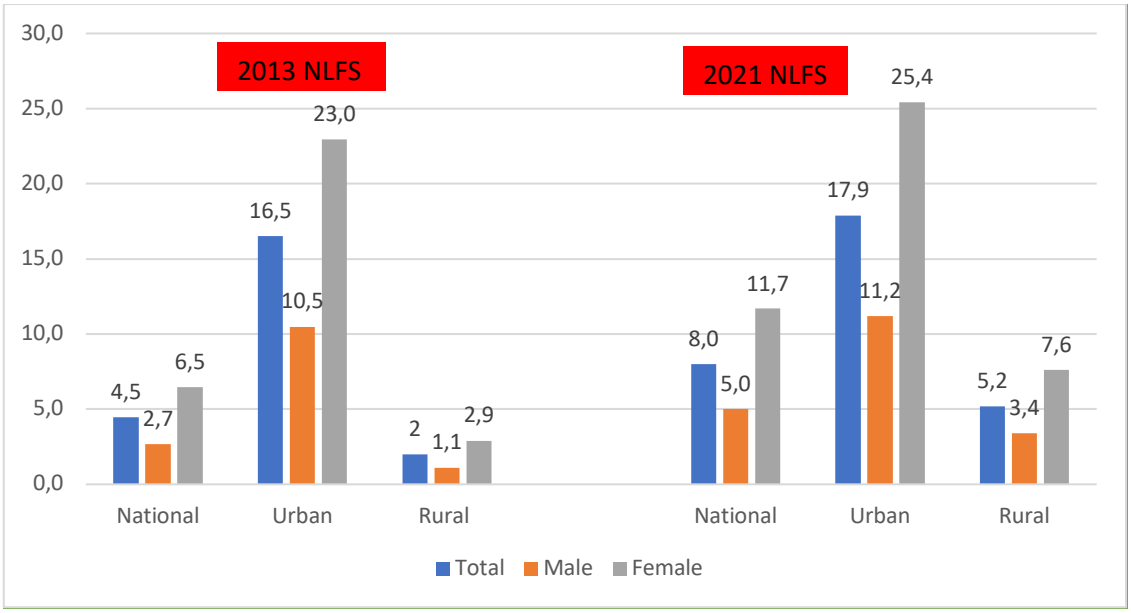
Rural unemployment rate was 2 per cent, out of a total of 37 million economically active rural population in 2013 and increased to 5.2% in 2021. In urban areas, unemployment is significantly higher. Thus, out of 7.7 million economically active urban population, 16.5 per cent were unemployed in 2013 and this has increased to 18% in 2021 (Figure 2; CSA, 2013). Thus, notwithstanding the significant disguised unemployment/under-employment 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 that the potential for migrant labour that could potentially raise the urban unemployment rate. For instance, the 2021 labour force survey shows that internal migration very significant where 17.1 percent 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 10 years and above about 9 percent were unemployed and about 27% of migrants were neither employed nor unemployed during the survey. This shows, 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 percent as well as in Gambella (31.7 percent). The lowest rate of migrants is found in Somali region (8.6 percent). However, recent (last five years) migrants are not that big. For instance, the recent net migrant rate which is the highest is for Dire Dawa is 31.3 per 1000 people, followed by Harari and Addis Abeba which are just 23 and 16.3 per 1000 people, respectively (CSA, LFS, 2021).

In terms of its regional variation, unemployment is found to be the highest in the capital, Addis Abeba (22.1%), Dire Dawa (16%%) and Somali (12%) region in 2021 while Benishangul-Gumuz region is registered the lowest unemployment rate of 4.3%. Among the country' 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 2: Unemployment between the 2013 and 2021 Labour Force Survey



Source: Author's Computation based on CSA's National Labor Force Survery (201, 2021)

Figure 3 shows the condition of youth unemployment. Using the Ethiopia government's definition of youth unemployment (age group 15-29), They 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 3, it is relatively small compared to the urban levels (Figure 3).

Using the 2016 and 2020 Urban Employment and Unemployment Survey (UEUS), 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 per cent which has increased to 31% in 2020), followed by the age group 15-19 (21.4 per cent that has increased to 20% in 2020), and age group 25-29 (18.2 per cent 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 Abeba at 26.2 % (the rate for females being very high at 28.6 while for male 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).

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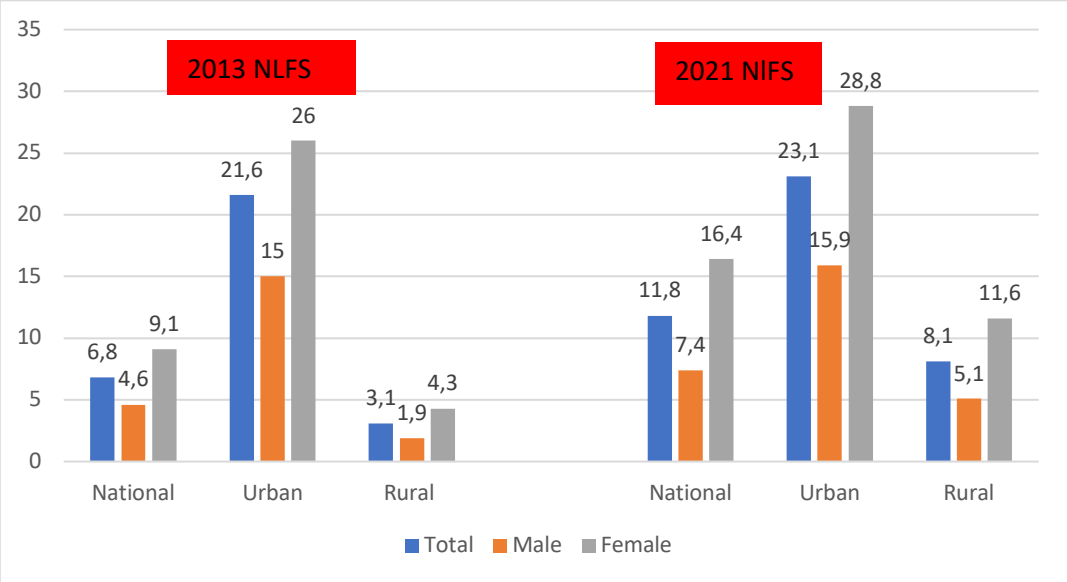
Figure 3: Youth (15-29 age) Unemployment in 2013 and 2021 Labour Force Survey



Source: Author's Computation based on CSA's National Labor Force Survery (2013, 2021)

B. Charaterizing the Unemployed

The majority of unemployed persons in 2021 attended primary education (35.0 percent). This is followed by those from the never attended category (33 percent). 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 were found among persons who attended pre-school and informal education (0.2 and 0.8 percent, respectively). (CSA, LFS, 2021). Generally, according to the 2021 LFS, the unemployment rate of the literate persons (9.3 percent) is higher than illiterate persons (6.3 percent). Since 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, 2021 LFS).

About 60% of the unemployed in the 2020 UEUS 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 wore 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 to 29 at 54% compared to the youth between the age 15 to 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 UEUS, most of the unemployed attempted to establish their owen 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 shows the urgency of job creation for the youth in a continues manner for years to come. Yet, despite various initiative 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 atomist attention of 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 also related to understanding of the factor behind (determinants of) the unemployment problem. These issues are discussed in the next section.

IV. Sources of Growth and Employment: A Growth Decomposition and Structural Change Analysis

This section attempts to examined 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.

4.1 Macro and Sectoral Decomposition of GDP and Employment Growth

I 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.

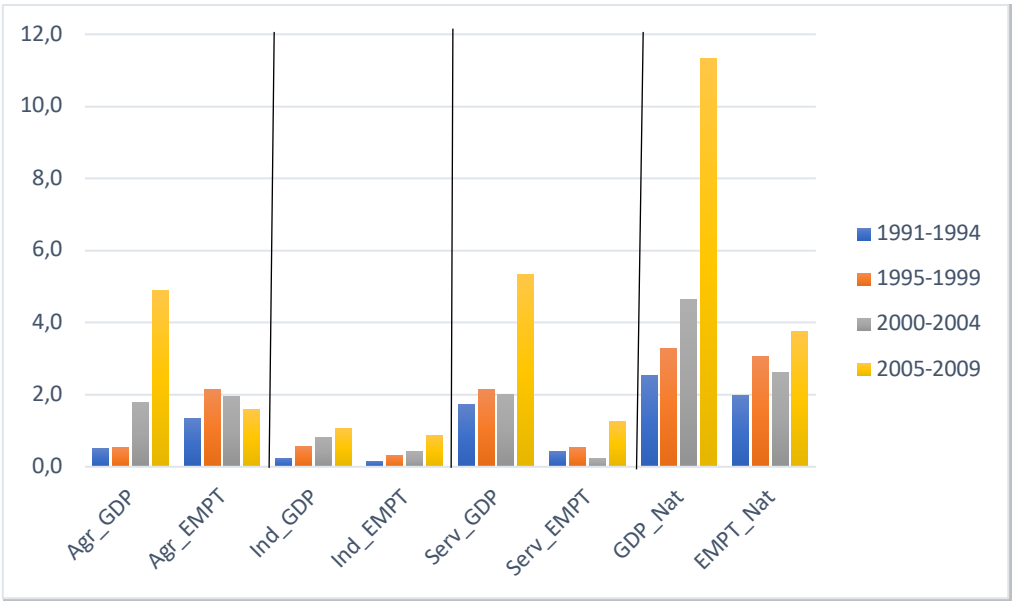
$$\text{Growth in GDP} = \frac{GDP_t - GDP_{t-1}}{GDP_{t-1}!} = \frac{\Delta GDP_{Agr} + \Delta GDP_{Ind} + \Delta GDP_{Serv}}{GDP_{t-1}} \quad [1]$$

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

Equation [1] is used to for the decomposition analysis and the result of this exercise is given in Figures 1a and 1b (the data for this is given in Annex A1). The sub-sectoral decomposition result is given in Table 3.1a (for the first two decades, 1990-2009) and 3.1b (for the last decade, 2010-2018) below.

As Figure 1a (and also Table A1, Annex A) 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 contrition 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 three times that of the growth of employment. This has persisted through the rest of the period (Figure 1b).

Figure 1a: Sectoral Contribution to GDP and Employment Growth (2000-2009)

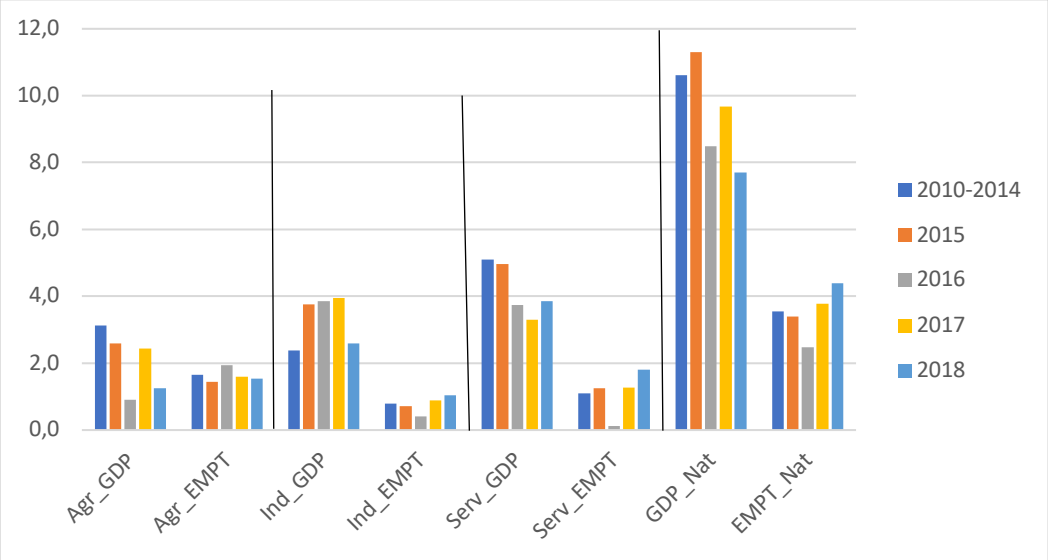


Source: Author's Computation based on Groningen University Structural Change Data

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. Similar, declining and stagnated contribution to employment growth is also observed in the industrial sector during this period (Figure 1b). The service 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 1b: 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 at looking two important issues. First, a detailed look at the industrial and the service 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 callas for an in-depth look at structural change issues and their implications for employment creation, which is done next. We may begin by looking the sub-sectoral patterns first and this is given in Tables 3.1a (for industry) and 3.1b (for services).

Table 3.1a: Growth and Employment Contribution of the Industrial Sub-Sectors

	Industrial Sector Contribution to Growth				Industrial Sector Contributing to Employment Growth			
	Mining	Manufacturing	Utilities	Construction	Mining	Manufacturing	Utilities	Construction
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

Table 3.1a shows that the major source of growth in the industrial sector has been the growth in the construction sector (its contribution in the seton being 73.2% in the last decade). This is followed by manufacturing at 23.8% contribution; utilities and mining contributing the list 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 was being 3.2 and 1.4%, respectively in the same period. This result suggests the capital-intensive nature of construction the sector while manufacturing sector is relatively labour intensive.

Table 3.1b: Growth and Employment Contribution of the Service Sub-Sectors

	Contribution to GDP Growth of Service 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 Service 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

Like that of industrial sector, the mis match between contribution of the service sector and its sub-sector to growth and employment has also been shown in Table 3.1b. 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 tables shows that the source of growth is not the source of employment.

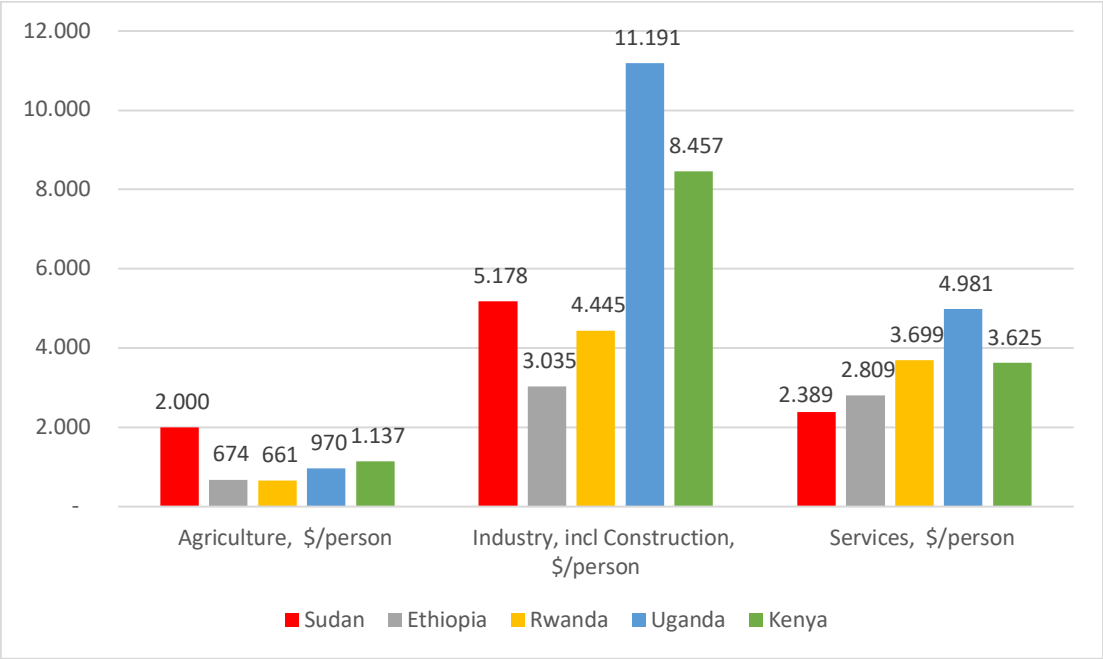
In sum, Ethiopia has registered excellent growth in the last two decades. Despite the initial focus of policy on agriculture, the main source of growth has been the non-agricultural sector, led by the services and industrial sectors – the industrial sector being dominated by the construction sector. 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 may conclude the major source of growth had not been the major source of 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.

4.2. Productivity, Structural Change and Employment Creation

We want to answer here, 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 a service sector productivity marginally below Ethiopia) (Figure 2). 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 2).

Figure 2: Sectoral Labour Productivity in Ethiopia and Its Comparator Countries (2019)



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

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 timeseries 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 [1].

$$g_L = \sum_i w_{Si} g_{Li} + \sum_i w_{Li} g_{Si} + \sum_i z_i g_{Li} g_{Si} \qquad [2]$$

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 [1] 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 – is 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, which is the weight 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 [1] 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 2.3.

Table 3.2: Decomposition of Productivity Growth in Ethiopia on half-decade basis (2000-18)

Within (%)	**National**	**Agriculture**	**Ind(M+M +C+U)**	**Manufac turing**	**Constru ction**	**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)	Manufact uring	Construc tion	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	Manufact uring	Construc tion	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

Author's Computation based on Groningen University Growth & Structural Change Data
Note: * these positive growth in this column comes from "government and other services", if it is not shown among the selected service sub-sectors shown here.

The first point to note from Table 3.2 is that national productivity growth was very low between 2000-2010, 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 3.2). 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 3.2 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 service 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 3.2.).

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 percent per annum, despite its record high growth of about 5 per cent in 2015-2018. Given the average population growth of about 2.6 per cent during the same period, this shows a negative per capita output growth in the agricultural sector, as well as at national level (Table 3.2).

Second, the "between" productivity" growth shows labour is shifting primarily to the service sector at an average rate of 1.2% during the period under analysis. Withing the service sector, the "trade in services" and "financial services" at 0.61and 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 Ethiopian case, labour is rather predominantly shifting to the service sectors such as "trade in services" which are characterized by low productivity. This underscores the need to examine in detail these two service 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 give 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 per cent, which is followed by the industrial sector at 0.8 per cent.

Third, "dynamic productivity" growth in Ethiopian 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 service 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 service 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, 2018). *The dynamic re-allocation effect* on productivity growth is, however, found to be negative in all sectors (Table 3.2). 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 growth, gain full employment will not growth either. Thus, it is imperative to identify major constraints in all sector 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 per cent of GDP, and 80 per cent 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 service and industrial sector 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 service sectors being just 0.85 and 1.2 percent, respectively, Table 3.2). This result implies that *raising sectoral productivity both in the industrial and service 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 may infer the following three points. First, from Table 3.2, 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 service 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.

4.3 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 4 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 examined above to examine the existence of mis-match (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, I 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 4.1.

Table 4.1 Macro SAM for Ethiopia, 2015/16 (Millions of Birrs)

	Activities	Comm-odities	Factors	Enter prise	House holds	Govern met	Taxes	Invest-ment	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	

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

A. 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 ratio computed in this manner using the SAM are given in Table 4.2.

Table 4.2 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				
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				

Source: Authors Computation based on 2015 SAM; *= Mfg is Manufacturing
Note: See Annex A1 for details of the L/K ratio by level of skill and more detailed sub-sectors.

From Table 4.2 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 service (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 (service 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 comes next, ranking 9th out of 13 agricultural sub-sectors (Table 4.1). 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 service 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 to 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 he public sector. We note here that despite the significant share of "trade services" in total employment of the services sector (Table 3.1b) 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 4.1 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

4.2). All the industrial sub-sector, except electricity, also primarily employ unskilled labour, followed by semi-skilled one (see Annex A1 for more detailed K/L ratio from which these inferences are made).

I 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 enterprise (LMSME) survey and the Smalls Scale Manufacturing Enterprises (SSME) survey conducted in 2016/17 which is a date closer to the SAM data. Given the Ethiopian agriculture is subsistence and small-holder farmers based, the focus is on the industrial and service 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% (service being 39% and agriculture 33%) (NBE, 2020). LMSMEs are defined as those engaging 10 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 than 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.

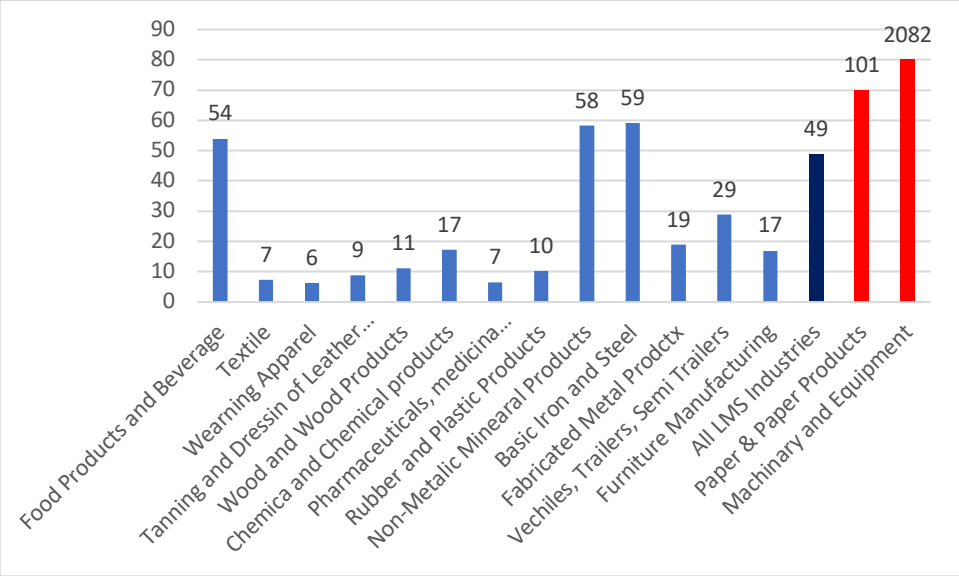
In addition to the LMSE, there were 139,982 small-scale manufacturing establishments (SSME) in Ethiopia in another SSME survey conducted in 2016/17 (Eth fiscal year 2009). Out of the total, the largest in number, 36.8%, were grain mills, manufacturing of furniture establishments numbering next at 26.7%. 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 10 SSMEs engaging 154 people. Gross value of production (GVP) in the stated period of these SSMEs amounted to Birr 64.7 billion, out of which Food product manufacturers, except grain mills, contributed 23.7 billion (37%). This amounts to Birr 32 billion 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 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 3. 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 3: The K/L Ratio in the Large and Medium Size Manufacturing Enterprises (2016/17 – 2009 Eth Cal, in '000 Birr)



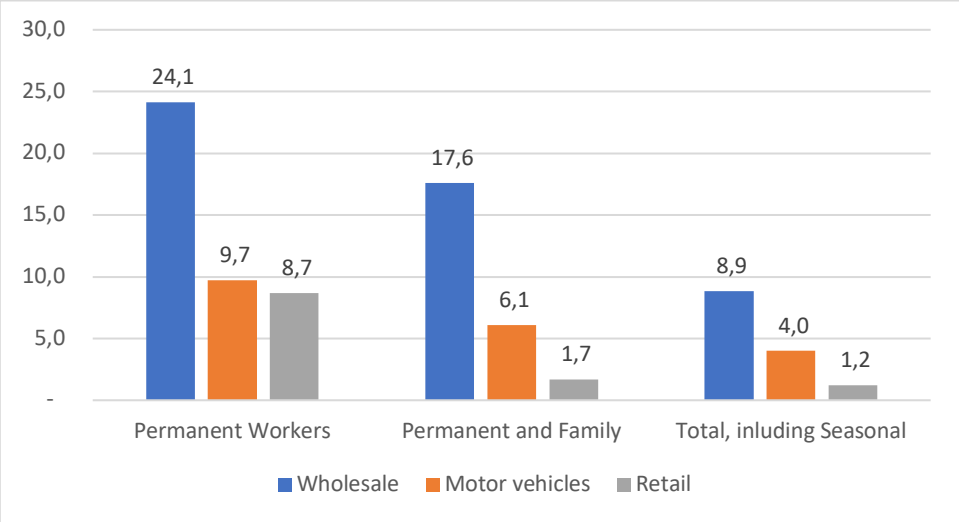
Source: Author's Computation using the CSA LMSM Industries Survey

Note: The scale is not relevant for the last two (red bars) is modified to make the other bars visible, the figures/labels on top of each bar are comparable, however.

The other sector missing in Figure 3 is the K/L condition in the service 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 persons, of which 822,000 are seasonal workers. The non-seasonal are composed of 1.52

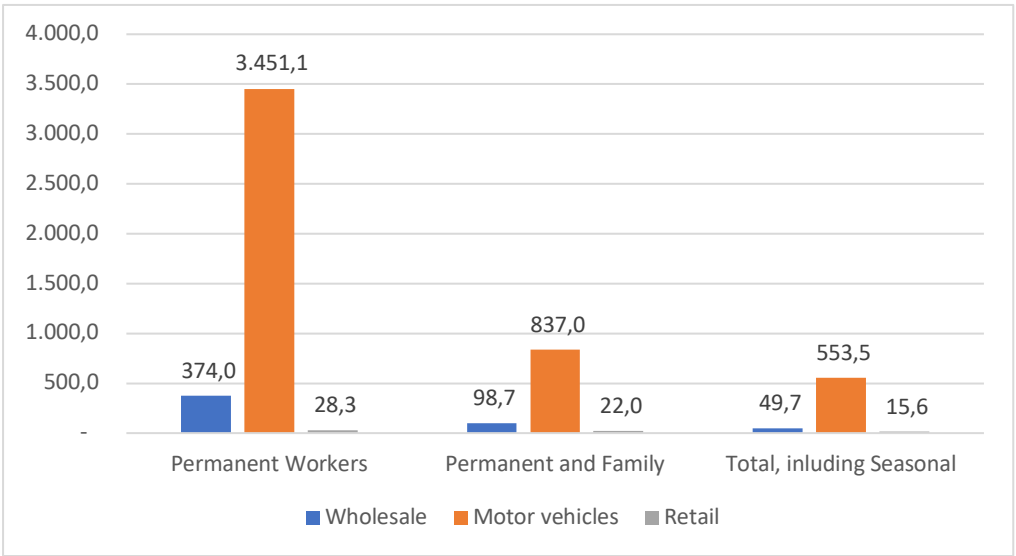
million and 972,000 unpaid family workers. The three groups also contributed about 20% to national GDP (70% of this being from wholesale while 27% from retail trade) at the time, which was just 11% five years ago in 2008/2009. Figure 4 shows the K/L ratio of this sector using two version of fixed asset: Machines and Equipment as well as total fixed assets. The latter including 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 4.2.

Figure 4: K/L Ratio in the Service 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

Figure 4: 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

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 3. The later 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 4.2. 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.

The second group with potential for job-creation among the industries given in Figure 3 is found to includes 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 3). This ranking also fairly corresponds to the SAM data-based ranking given in Table 4.2

The rest of the sectors given in Figure 3 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 3 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 growth, especially after 2005. The latter year was a year of failed democratic election that 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 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 service sector 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 job, it did not manage to create significant job comparable to the manufacturing sector that has contributed, relatively low to economic growth. 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 job-intensive as that of these service sectors. With these major conclusions, we examined this finding from economy wide-multiplier analysis perspective so as to have a comprehensive macro-level perspective about our conclusion, next.

B. The SAM-based Multiplier Analysis of Employment and Sectoral Growth

We have used equation 1 to capture the 70 sector SAM as summarized in Table 4.1 to compute a SAM-based multipliers. Thus, our SAM is represented with a coefficient matrix of A, output X and final demand, FD, is given by

$$AX + FD = X \qquad [1]$$

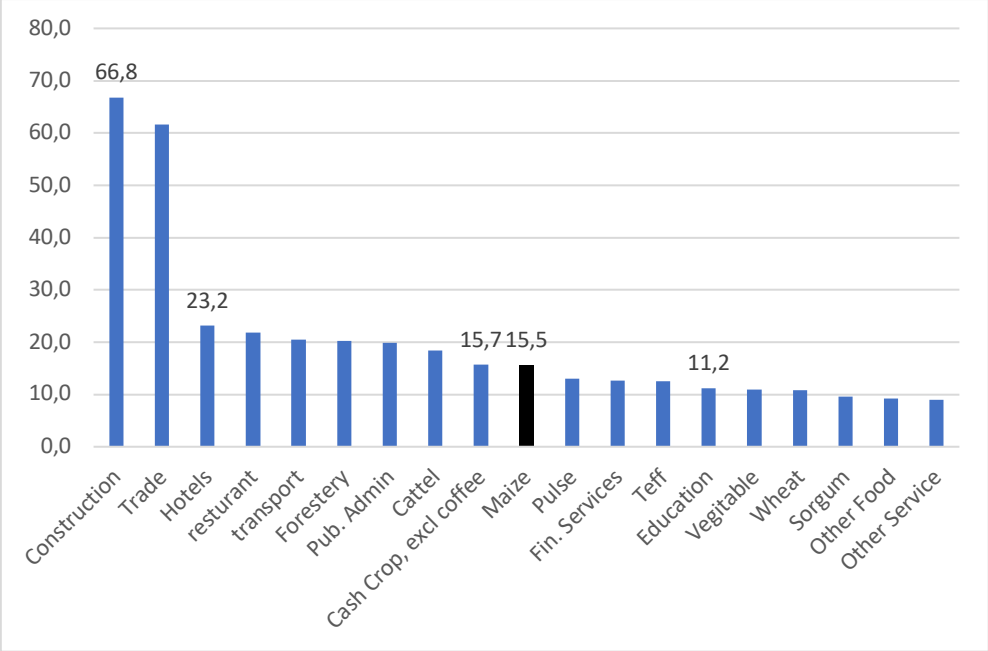
$$(I - A)X = FD \qquad [2]$$

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

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

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 3 which is a summary of detailed multipliers for the 70 sub-sectors (see Annex A2 for detail).

Figure 3" Top 20 Sectors with the Highest Multiplier Effect, in Millions of Birrs (with 1Million Birr demand injection in all commodity Sectors)



Source: Authors Computation based on 2015 SAM; Details given in Annex A2.
Note: The Exogenous account used for this simulation is the "rest of the world" account

Figure 3 shows the sectoral response (incorporating the multiplier effect) for one unit (1 million Birr) demand injection (or stimulation) in each of the commodity sectors. The major point 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 3). 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 3.

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 service sector either.

Third, although this demand stimulus also stimulated the some of the agricultural sector 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 includes supply factors that needs 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 (i), in terms of different categories of factor income, the demand injection is

found to favours primarily the income to 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 these first group (unskilled labour and non-agricultural capital) is found to be more than 4 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 4.3

Table 4.3 Factor Distribution of Income Effect of a Demand Increase (by 1 million Br 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 (ii), 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 4.4). 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 Abeba (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 others 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 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 Abeba and Dire Dawa cities leading it at significant distance, which are beneficiaries than the rural areas (see values in square bracket in Table 4.4).

Table 4.4 Regional Distribution of Income Effect of Demand Increase (by 1 million Br in each Commodity 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 [2.17]	Tigray Rural	11.5	Dire Dawa (Urban)	2.0 [5.85]
SNNP Rural	32.6 [1.86]	Oromia Small Towns	8.3	Tigray Small Towns	1.6
Addis Abeba (Urban)	29.7 [7.8]	Somali Rural	7.9 [1.4]	Somali Urban	1.3 [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 miss-match 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 2 and Annex A2, are not sectors with significant job creation potential as can inferred form the L/K ratio as given in Table 4.2. From Table 4.2 we have saw that the top five L-intensive sectors are related to animal husbandry (with 23 to 62 score in the L/K 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 3. The top sectors with significant potential for employment (animal husbandry is) is found the eighth top sector (cattle) in terms of potential for expansion. However.

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-sector. Among these sub-sectors, only the construction sector (ranking top) is found to have a potential to expand fast.

In the service sector, the health sector (8.7) followed by Education (3.3), Other service (2.5), Transport (2.5) and Public Administration (1.6) are found to be the most L-intensive ones. 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 3)

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, skilled work force, 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.

V. Determinants of Youth Unemployment

5.1 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,

$$y^* = \beta' X + \varepsilon \qquad [1]$$

$$\begin{aligned} &Y^* \text{ is unobservable but we can observe,} \\ &y = 1 \quad \text{if the staus of th indivual is un} employed, \text{ and} \\ &y = 0 \quad \text{otherwise} \end{aligned} \qquad [2]$$

The status of unemployment deepens on measurable factors **X** that depicts socio-economic 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,

$$\begin{aligned} \Pr ob(y = 1\ ) &= \Phi(\beta'X), \\ \Pr ob(y = 0) &= \quad 1\text{-}\Phi(\beta'X), \end{aligned} \qquad [3]$$

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.

5.2 Data and Estimation Results

The latest national labour force survey (2021) is not officially released in electronic form yet. Thu, the econometrics model is estimated using the latest available electron data, which is for the year 2013. In the official LFS data youth unemployment is defined for the youth group age 15 to 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, I have estimated the model for the total unemployment by including the youth as an additional dummy variable where an observation is given the value one, if the unemployed individual is in the age group 15-29 (youth) and zero otherwise. The result of this is given as Table 5 (the model that is estimated the dependent variable "youth unemployment" instead in given in Annex B.

Table 5: 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 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 modes, except completion from the technical and vocational training is found to have statistically significant coefficients. Despite the government's attempt to tackle the unemployment problem through the expansion of the TVT, 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 is 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 5 further shows that residing in urban areas, migrating with the family, being older and married are found to be positively associated with likelihood 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 itself increase the probability being unemployment significantly. Thus, in addition to being affected by all factors that increase the likelihood being unemployed like any other adult, being a youth will furth aggravate the likelihood of being unemployed (Table 5)

VI. Conclusion

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

This study attempted to examine this paradox of high unemployment amides 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 of the study 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 growth, especially after 2005. A policy attention that focused on agriculture since 2005 would have significant impact on job creation. Second, since 2005, and especially after 2010, the industrial and the service sector 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 reaming 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 job, it did not manage to create significant job comparable to the manufacturing sector that has contributed, 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 service 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 job-intensive as that of these service 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-based multiplier analysis. The miss-match 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-sector's 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 economywide 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's) 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, 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 service sector either.

Second, although this demand stimulus also stimulated some of the agricultural sector 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, that includes supply factors that limit agriculture production and productivity that 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 type of labours and factor incomes as well as different regions of the country – has distributional implication. In relation to this, first (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 these first group (unskilled labour and non-agricultural capital) is found to be more than 4 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. Second (ii), in terms of the regional dimension of the distribution of income, generally those regions and specific geographic part of regions with the largest population are found to benefit more than the others.

In sum, the miss-match that we have discovered in the decomposition analysis also seems to appear in relation to the potential job creation of a sector form 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 inferred form their capital-labour ratio.

Finally, since the end result of the mis-match between sourced 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 furth the other possible factors behind both adults and youth unemployment using micro-level data. Our unemployment model results revealed the following major findings: first (i) that, despite the government's attempt to tackle the unemployment problem through the expansion of the TVT, the result shows that this endeavour doesn't 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 unemployment significantly being reduced when one holds a master degree better. Similarly (iii), those who have received some kinds of training are also found to be less likely to be unemployed. Finally (iii) all factors that affect total adult unemployment are found to affect youth unemployment in a similar direction and magnitudes. However, being young itself increase the probability being unemployment significantly. We may conclude by stating that all these findings have implications for employment creation that can inform such policy objective.

Reference

ACBF (2017) 'Youth Employment in Africa: Capacity Building and Innovative. Strategies from Botswana, Namibia, South Africa, and Swaziland, ACBF Occasional Paper No. 30, 2017, Harare

Alemayehu Geda (2008) '*The Political Economy of Growth in Ethiopia' in Benno Ndulu, Stephen A. O'connell, Jean_PaulAzam, RoberH.Bates, Augustin K. Fosu, Jan Willem Gunning and Dominique Njinkeu (eds). The Political Economy of Growth in Africa: 1960-2000. Cambridge: Cambridge University Press).*

Alemayehu Geda and Addis Yimer (2017), 'Political and Development Imperative of Growth, Poverty and Inequality in Ethiopia in the last Decade (2000-2013): *Desalegne Rahameto (ed), Rethinking Development Strategy in Ethiopia, Publisher: FSS and GTZ.*

Alemayehu Geda (2018). Towards a National Minimum Wage in Ethiopia an Exploratory Study (A Background Study for ILO Regional Office in Ethiopia, Eritrean and Djibouti).

Alemayehu Geda (2020) The Economic and Social Impact of COVID-19 on Ethiopia and Suggested Direction for Policy Response (Unpublished, Addis Abeba University & found at www.researchgate.net/profile/Alemayehu_Geda)

Alemayehu Geda (2020), 'The COVID-19 Damage on the Ethiopian Service Sector: A Supplement Using Google Search Trend "Big data (Unpublished, Addis Abeba University & found at www.researchgate.net/profile/Alemayehu_Geda)

Alemayehu Geda (2020). *Advanced Macroeconomics for Africa: The Shot-Run* (Unprocessed, Department of Economics, Addis Abeba University).

Alemayehu Geda, John Weeks and Herryman Moono (2018), 'Impact of Macroeconomic Reform on Labour Markets and Income in Zambia: Assessing ZAMMOD'', A Study for the International Labour Organization and Ministry of Finance, Zambia.

Alemayehu Geda, Ndung'u and Daniel Zerfu. (2012, reprinted, 2015). *Applied Time series Econometrics: A Practical Guide for Macroeconomics Researches with a Focus on Africa. Nairobi*: University of Nairobi Press.

CSA (various year). Urban Employment and Unemployment Survey. Addis Abeba: CSA.

CSA, Central Statistical Authority (2021). Labour Force and Migration Survey: Key Findings. Addis Abeba: CSA.

Fields, G. S. (2007), '*Modelling labour market policy in developing countries: A selective review of the literature and needs for the future',* IPC Working Paper Series Number 3. Ann Arbor, MI: International Policy Centre. http://digitalcommons.ilr.cornell.edu/workingpapers/103/

Green, W. 2000. *Econometric Analysis*, 4th edn. New Jersey: Prentice-Hall.

Harris, John R. and Todaro, Michael P. (1970). "'Migration, Unemployment and Development: A Two-Sector Analysis," American Economic Review, March, 1970, pp. 126-142.

Jennissen, R. P. W. (2004). Macro-economic determinants of international migration in Europe. University of Groningen, The Netherlands

Lewis, A. 1957), 'Economic Growth with Unlimited Supply of Labour'

Marta Kibru (2017),'Employment and Incidence of Poverty in Urban Ethiopia', in Heshmati, Amas (ed.). *Economic Transformation for Poverty Reduction in Africa: A Multidimensional Approach.* London: Routledge.

Todaro, Michael P. 1997. "Urbanization, unemployment and migration in Africa: Theory and policy," Policy Research Division Working Paper no. 104. New York: Population Council.

Andualem T. Mengistu, Firew Bekele Woldeyes, Alfredo J. Mainar Causapé and Emanuele Ferrari (2019), Ethiopia Social Accounting Matrix 2015/16, JRC Technical Report, The European Union, EUR 29902 EN, Publications Office of the European Union, Luxembourg, 2019, ISBN 978-92-76-12389-7, doi:10.2760/974668, JRC118413.

Annex

Annex A1
SAM based Labour-Capital Ratio (L/K)

	General L/K Ratio	L_USK/K Ration	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 Ration	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 Service 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 1 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	Agriculture	Industry	Services	Total Employment	Agriculture	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) Completer	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 Observation (		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.