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Delivering the triple wins in Uganda : budget, jobs, and growth

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ECONOMIC POLICY RESEARCH CENTRE

DELIVERING THE TRIPLE WINS IN UGANDA:

BUDGET, JOBS, AND GROWTH

Linda Nakato, Medard Kakuru, Madina M. Guloba, Hilda Namuleme

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ABSTRACT

This study examines the relationship between employment and economic growth in Uganda between 2016 and 2021. It disaggregates the job creation potential of different sectors of the economy considering the difference in sectoral productivity. Further, the study explores the budget investments required by the different sectors to generate jobs. This is critical because, despite sustained high levels of economic growth over time in Uganda, this growth is not translating into job creation as the country is grappling with high levels of unemployment. Employing the Shapley decomposition approach using the World Bank Job Generation and Decomposition (JoGGs) tool, findings indicate that economic growth for the period has been jobless. Trade and repairs had the biggest negative contribution to the per capita value added and the share of employment. Whereas the agriculture sector is still the major employer, it negatively contributed to the per capita value added for the period. Overall, output per worker had the largest contribution to the per capita value added. The water sector registered the highest productivity while the activities of households as employers registered the lowest productivity. Findings further show that there was a movement of labour from more productive (e.g. water) to less productive sectors (e.g. agriculture, forestry and fisheries). Noteworthy, the dependence rate decreased signifying an important window for poverty reduction. By highlighting the negative structural transformation, the study highlights the need to invest in less productive sectors of the economy that are attracting the movement of labour into them. In terms of budgetary requirements, about UGX 2,317 is required on average to create one more job with the most productive sectors (water and real estate) requiring the highest government expenditures.

1. INTRODUCTION

For the past decade, Uganda's economy has registered one of the highest growth rates in sub-Saharan Africa. Specifically, the country's economic growth averaged 5.7 percent, reaching a decade-highest of 9.4 percent in 2011 before dropping to 2.9 percent in 2020 owing to the COVID-19 pandemic (World Bank, 2021). Despite Uganda's positive economic outlook, the economy has not created sufficient jobs for the increasing labour force. The job creation rate has consistently remained lower than the labour force growth rate (Guloba et al., 2021) hence, creating excess labour supply. It is estimated that out of the 700,000 people that enter the labour market annually, only 238,000 (34 percent) are absorbed (NPA, 2020). Consequently, Uganda's youth unemployment is increasing – from 13 percent in 2017 to 17 percent in 2021 (UBOS, 2023)[1]. The unemployment situation even increased further owing to the COVID-19 pandemic that led to loss of jobs. The pandemic had a profound impact on micro, small, and medium enterprises (MSMEs) particularly, which constitute 90 percent of Uganda's private sector businesses (Lakuma et al., 2019).

The unemployment situation is worse than meets the eye because Uganda's youth are likely to be employed in vulnerable, precarious and non-rewarding work. UBOS (2018) reports that precarious self-employment, marked by low pay, a lack of social security, and absence of legal protection, traps about 7.7 million Ugandan youths. Findings from the National Labour Force Survey (NLFS) 2021 show that 53.7 percent of the workers are in vulnerable employment. Besides, labour productivity in most sectors of the economy is very low. According to NPA (2020), though employment has expanded in absolute numbers, it is in the lower-productivity activities such as subsistence agriculture and petty trade as well as the informal sector. The implication of movement of workers into the low-productivity sectors which are big (share of total employment) is that it reduces the national average output per worker (World Bank, 2005).

1 UBOS 2022 Statistical Abstract

Uganda's macroeconomic strategies and policies primarily focus on fostering economic growth while employment creation is secondary or consequential. This approach raises questions about the inclusivity of the growth in regard to employment creation. An inclusive economic growth should create a substantial employment. Sustainable Development Goal 8 emphasizes the need for inclusive economic growth, reflecting this concern. Uganda has one of the youngest populations in the world, with about 73 percent of its population below the age of 30 (UBOS, 2021). This population structure presents an opportunity for Uganda to harness its demographic dividend by creating meaningful employment. Inclusive economic growth could be one avenue to harness the demographic dividend. On the other hand, the structure could turn into a major development challenge if left untapped.

The NDPIII (2020/21 – 2024/25) envisaged the creation of about 2.5 million jobs, with an annual average of about 512,000 (NPA, 2020). However, the plan fails to identify the sectors that will generate these jobs. In addition, studies that have attempted to project sectoral growth and employment creation potential often consider the three traditional sectors - Agriculture, manufacturing, and services. This makes the granular sub-sectoral contribution to growth and employment creation inconspicuous. Furthermore, the job creation prospects in the NDP do not account for the effects of the COVID-19 pandemic on the labour market. In this study, by making use of post-Covid data sets, we validate NDP III's employment projections. We also attempt to further disaggregate the three sectors into 20 sub-sectors to analyse sub-sector contributions to growth and employment. This kind of disaggregation is also critical to identify other sectors, besides manufacturing, that have a high potential for creating jobs. It is no longer tenable to rely on the manufacturing sector, as was in the Asian countries, to drive both economic and job growth. Uganda's manufacturing sector's contribution to job creation has been declining in the last decade. The employment share of the manufacturing sector declined from 15.4 percent in 2012/13 (UBOS, 2015) to 4.5 percent in 2021 (UBOS, 2022).

The key innovation is this study is integrating expenditure/budget to the growth and jobs nexus. Creating economic growth and jobs requires substantial investment in terms of financing. Government has indeed made several capital and recurrent expenditures in a bid to create jobs, including the Youth Livelihood Programme (YLP), UWEP, Emyooga and recently the parish Development Model, among others. There is a dearth of evidence on how many jobs these and other investments have created. We add the budget dimension to show how much financial resources have created the current growth and jobs. In the same vein, we estimate the budget requirement to create the desired growth and jobs.

Therefore, as the Government of Uganda aspires to double the economy's growth to create productive employment for its citizens, this study contributes to evidence-based research and policy by identifying the sources of the current growth. That is, how much growth can be attributable to changes in the employment rate, output per worker, and size of the working-age population? This analysis has implications for poverty, which we shall delve into after the analysis. We further decompose the employment rate change to understand how each sub-sector contributes to employment generation. This is critical for identifying subsectors where we can refocus development interventions, like financing, on growth and job creation in Uganda. In addition, we provide evidence on how the movement of workers in and out of low-/high-productivity sectors affects economic growth. This kind of analysis provides a balanced perspective and proposes pragmatic solutions that align budgetary decisions about employment generation and sustained economic development by accelerating sustainable and productive employment for inclusive economic growth.

This study will identify sectors and sub-sectors in Uganda where refocusing development interventions can spur growth and job creation. Specifically, the study seeks to answer the following questions:

i. How is economic growth reflected in job creation and in changes in worker productivity?
ii. How are the different sectors contributing to the observed aggregate economic growth and job creation?
iii. What is causing the changes in workers' productivity?
iv. What investment is required to generate the jobs?

The rest of the paper is structured as follows: Section 2 reviews existing literature, Section 3 presents the study approach, Section 4 presents the findings and discussions, and Section 5 presents the conclusions and emerging policy actions.

2. LITERATURE REVIEW

There is growing concern among policymakers in Africa as increasing growth rates have generally not been accompanied by job creation implying that Africa's growth is jobless (WEC, 2023). This raises the question of the drivers of the observed economic growth and how each sector contributes to growth and job creation to tease out prevailing trends and make informed policy and program decisions towards job-creating growth. Several authors have sought to understand the growth-employment nexus in different countries, proving in several contexts that indeed, economic growth was jobless.

Employing the Shapley decomposition approach, Malunda (2013) shows that changes in the employment rate contribute only 0.89 per cent to the observed changes in growth in Rwanda between 2006 and 2011. In Uganda, the situation is worse with the changes in the employment rate contributing negatively (-36.09 percent) to the total growth in per capita value added for the same period, 2006-2011 (Bbaale, 2013). Similarly, Nigeria experienced jobless growth for the periods between 2005 and 2014 (Ajakaiye et al., 2015). Decomposing economic growth in the Afar region in Ethiopia between 2010 and 2018, Asmare (2022) also observes a negative contribution of the changes in employment rate to the changes in the per capita value added.

For most of the Sub-Saharan African countries, findings show that of the three components that contribute to aggregate per capita growth i.e. employment rate, output per worker and demographic transition, changes in the output per worker are the major drivers of the changes in the per capita GDP/value added. For instance, in Uganda (2003-2009) and Ethiopia (1994-2005), changes in output per worker particularly stemming from increases in the productivity within the services sector were the main drivers of economic growth (Byiers et al., 2015).

Other strands of literature seek to understand how the different sectors of the economy contribute to employment generation. Although agriculture is still the main source of employment in several countries, literature portrays an increasing importance of the services sector in the share of total employment. Ajakaiye et al. (2015) document that in Nigeria, whereas there was an increase in the absolute number of people employed in the mining & quarrying and construction sectors and the services sector, there was an increase in the share of total employment only for the services sector between 2005 and 2014. Between 2006 and 2011, Uganda saw the services and industry sectors increase their share of total employment (Bbaale, 2013). Papola and Sahu (2012) document the case for India and show how the services sector has been gaining employment share over the years from 1972 to 2010.

Given the observation that output per worker is the dominant driver of the changes in the economic growth in several Sub-Saharan countries, it is crucial to understand the sources of change in the output per worker in these countries. The World Bank (2005) posits that changes in output per worker can stem from two sources. One is a change in the output per worker within sectors such that if output per worker within a sector increases, this translates into increases in average productivity commensurate with the size of the sector. The second source is changes in output per worker arising from a movement of labour between sectors. If labour moves from a less productive to a more productive sector, then average output per worker will increase and vice versa.

Analysing the growth-jobs-poverty nexus for a sample of selected African countries, the AfDB (2018) shows evidence of a positive structural transformation, i.e. labour moving away from low productivity to high-productivity sectors. However, they note that the effect of this is minimal because of the agricultural sector still being the dominant employer in Africa, labour moving to a small sector i.e. manufacturing, and labour movement away from agriculture to wholesale and retail trade often characterised by informality. Mensah et al., (2023) while examining structural change and its role in driving labour productivity in Sub-Saharan Africa makes a similar observation. They observe that labour is moving away from agriculture, albeit into relatively less productive services sectors.

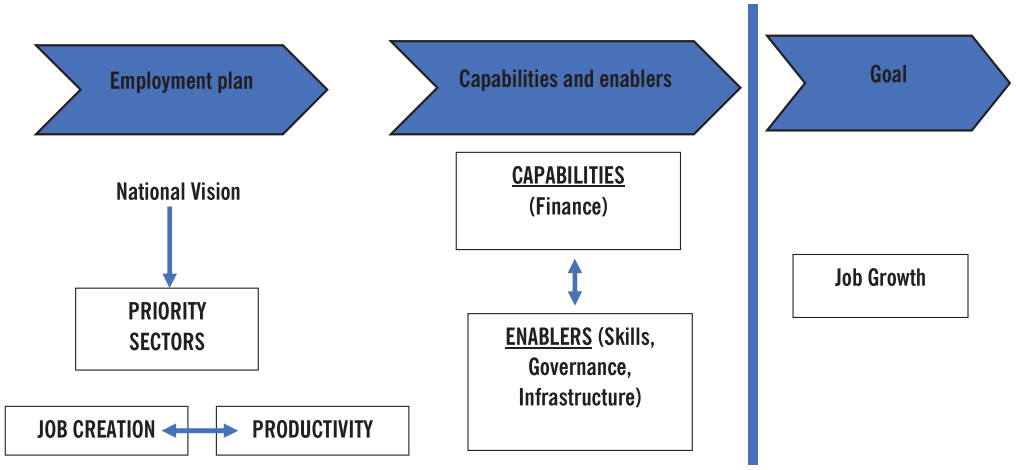
Conversely, for Uganda, Bbaale (2013) finds a movement of labour from the low-productivity agriculture sector to more productive sectors (services and industry) between 2006-2011 which ultimately increases per capita growth. Malunda (2013) observes similar patterns of movement of labour from less productive (agriculture sector) to more productive sectors (construction, services and transport) for the case of Rwanda between 2006 and 2011.

3. APPROACH

3.1 Analytical framework

While economic growth is good for job creation, growth should occur in sectors that have the potential to absorb labour at a large scale. From Figure 1, the study first analyses employment trends in sectors as identified in Vision 2040. The analysis of employment patterns and productivity levels within these sectors is then undertaken per the ISIC classification at the four-digit level. This is important, as some sectors and activities are more employment-intensive than others, hence more productive and vice versa. Second, we analyzed the most significant enabler of job growth,

Figure 1 Linking employment, finance and growth



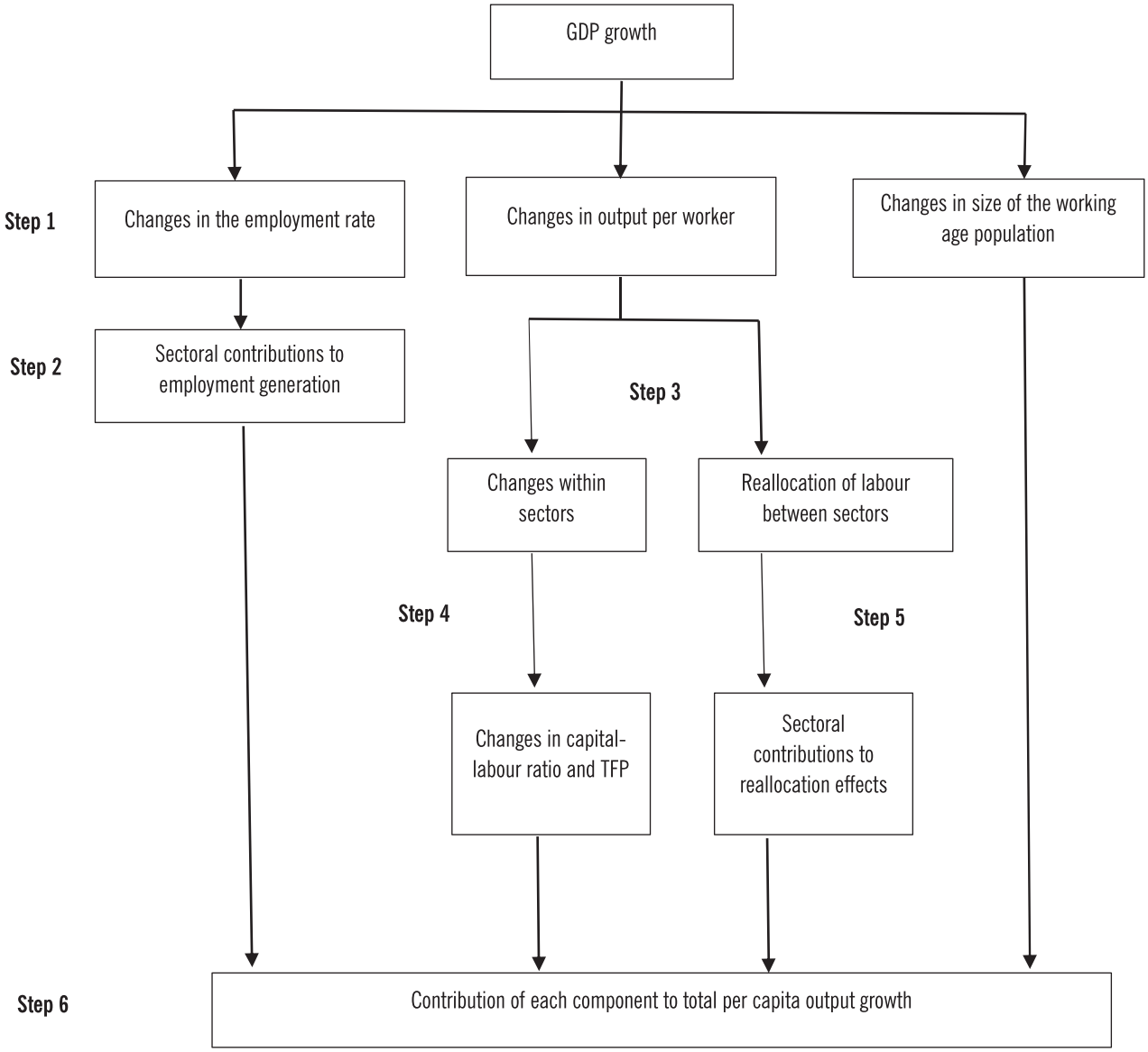
Source: Authors construction, 2024

finance (through budgetary allocation to sectors). While cognizant that other enablers, such as skills, infrastructure, and governance, are critical, this paper does not emphasise these in the empirical analyses.

3.2 The World Bank Job Generation and Growth Decomposition Tool (JoGGS)I

We adopt the JoGGS approach to investigate the jobs-growth nexus. This methodology decomposes GDP growth through six consecutive steps (Figure 2) using the Shapley decomposition. First, we analyze per capita GDP growth to determine the proportion attributable to changes in the employment rate, output per worker, and the size of the working-age population. Second, we decompose employment rate changes to understand each sector's contribution to employment generation. Third, we decomposed changes in output per worker to examine how changes within sectors and labor relocation between sectors contribute to these changes (between effects). Fourth, we further disentangle the change in output per worker at the aggregate level to understand the role of changes in the capital-labour ratio and the Total Factor Productivity (TFP). Fifth, we examine the between effects to tease out each sector's role in relocating labour between sectors. The final step combines everything to show how each component contributes to the total per capita output growth. Although analysis using the Shapley decomposition is static in nature, the method takes it into account the relative size of each component and is the most relevant given its sparse data requirements.

Figure 2 JoGGS Approach



3.3 The employment-to-expenditure ratio approach

We employ the employment-to-expenditure ratio approach to examine the jobs-budget nexus. We constructed expenditures at the sector level to link employment and GDP growth to the budget. We achieved this by examining the item and output description columns to determine the sector. As such, the same item description can appear in different sectors. For example, many sectors purchase computer supplies, so the item "computer supplies" can appear in many sectors. Only when we could not identify a sector, would we consider a programme, sub-programmme, or vote name.

After constructing the expenditure matrix, we used employment-to-expenditure (E2E) ratios to analyse employment creation potential from a given expense outlay (Box 1 highlights the steps followed in computing the ratios). We adopted the employment-to-value-added ratios approach suggested by Tregenna (2015) and used by Bhorat et al. (2019) to analyse employment creation potential from a unit increase in GDP.

Box 1: Computing employment-to-expenditure (E2E) ratios

Step 1: Generate an employment vector in each sector (E).

Step 2: Generate a vector of expenditure for each sector (X).

Step 3: Transform vectors in Steps 1 and 2 into diagonal matrices. The E2E ratios for each of the sectors are obtained from:

where E is the employment vector in each sector, X is the vector of expenditure for each sector, and DIAG(E) and DIAG(X) are the diagonal matrices of the employment and expenditure vectors, respectively.

Step 4: The diagonal elements of the matrix N are the E2E ratios for the sector of interest. The E2E ratios are interpreted as the expenditure required for one additional job.

We use the E2E ratios to estimate the financing needed to create the expected number of jobs. We assume that employment will grow at a constant rate of 6 percent, the same as the rate at which the economy is anticipated to grow. After obtaining the expected employment growth, we multiply it by the E2E ratios to get the expected budget.

3.4 Estimating the GDP required to create jobs

A two-step process was used to estimate the GDP growth needed to create the projected number of jobs. In the first step, we estimated labour-to-value added (LVA) ratios using baseline value-added and employment data (2021). These ratios show the number of workers needed to increase value added by one unit (UGX 1 billion). If the number of workers needed to add one billion is known, then we can estimate how many billions can be added by the projected workers. In the second step, we use the ratios generated in step one and the projected employment to get the required GDP.

3.5 Data and sources

The study uses data from two periods, i.e., 2016/2017 and 2020/2021. To conduct the growth-jobs nexus, we employ data on growth per sector measured by value-added, employment per sector, population, working age population, capital stock, and share of capital in total income. Data on value-added and population is obtained from the UBoS statistical abstract (2022), employment data is obtained from the Uganda National Household Survey (UNHS 2016/17) and the Uganda National Labour Force Survey (2021), data on the working age population comes from the UNLFS (2021), capital stock and share of capital in total income are obtained from the World Bank World Development Indicators.

Budget/Public expenditure data was obtained from the annual (2016 – 2021) sector performance data set provided by MoFPED. Expenditure data is provided by sector but further disaggregated by Vote, Programme, subprogramme, Output description, and Item, respectively. Each item has a separate column for the Government of Uganda and Donor budget. We added the two columns to get the total expenditure. Job creation and growth are functions of expenditure regardless of source.

4. FINDINGS

4.1 Growth and Jobs Nexus

4.1.1 Understanding the aggregate employment and productivity profile of growth.

Table 1 gives an overview of Uganda's employment and productivity profile over the two time periods under study. It summarises the critical data used for the decomposition, i.e. GDP, population and employment data.

Generally, Uganda registered a growth rate of 11 percent in the per capita value added, an increase in output per worker of 10 percent and an increase in the

Table 1 Employment, Output, Productivity and Population. Uganda 2016-2021.

Indicators	2016	2021	% change
GDP (value added) (Bn)	100,888	127,617	26.5
Total population (in 1000's)	37,673	42,886	13.8
Total population of working age	19,104	23,494	23.0
Total number of employed	9,059	10,410	14.9
GDP (value added) per capita	2,677,992	2,975,726	11.1
Output per worker	11,136,647	12,259,431	10.1
Employment rate	47.42%	44.31%	-6.56
Share of population of working age	50.71%	54.78%	4.07

Source: Authors' own construction using data from UBOS

working-age population of 23 percent. The increase in the output per worker implies that workers are becoming more productive, while the increase in the working-age population implies fewer dependants per adult. However, there was a decrease in the employment rate by approximately 7 percent between the two years. The increase in output per worker and the decrease in employment rate are consistent with economic theory. However, these findings are a policy concern for a country like Uganda aspiring to create employment. Output per work would be of great policy significance if it resulted in growth.

Of all the components, the share of the working-age population had the slightest change (4.1 percent) between 2016 and 2021. This small change has a large effect on total growth. The 4 percent growth resulted in approximately 4.4 million more people (23,494 – 19,104) in the labor market. Considering the 44.3 percent employment rate, 1,944,770 of these new entrants could have found employment. At the average productivity of UGX 12.3 million, these new workers could have added about UGX 23.8 trillion to GDP.

However, a 6.6 percent decline in the employment rate means that, at the average share of the working-age population, 687,000 jobs were potentially lost, contributing approximately UGX 8.4 trillion to the GDP at an average productivity of UGX 12.3 million—a much smaller contribution to output growth. Precisely, this decomposition analyses the overall impact of the percentage change and its size effect rather than only looking at the percentage change in each component.

Accordingly, we use the Shapley decomposition to calculate the per capita value added to analyse how much growth in value added is attributed to changes in the output per worker, employment rate, and share of the working-age population. Table 2 and Figure A1 in the annex show that output per worker is the dominant growth driver of the per capita value-added, accounting for 91 percent of the growth. This is consistent with findings by Bbaale (2013) for the period between 2006 and 2011 for Uganda. The finding implies that if the employment rate and the population structure (share of working age) stayed the same, a change in the out per worker alone would have created growth worth UGX 271,500 out of the UGX 297,734 overall observed growth (91 percent). Relatedly, the positive change in the share of the working-age population also contributed to the per capita value growth, accounting for 73 percent of the growth which implies a reduction in the dependence ratio. A drop in employment caused a 64.5 percent decrease in the average amount produced per person. This implies that the observed growth in Uganda between 2016 and 2021 was jobless. This is similar to Bbaale (2013) findings for the 2006 to 2011 period and highlights a widening growth-job creation gap.

Comparing and contrasting the growth attributable to output per worker and employment rate, a one percent increase in the former increased growth by UGX 26,881 (271,500/10.1), while a one percent decrease in the

latter reduced growth by UGX 29,289 (192,138/6.56). This highlights how a reduction in employment rate has a more significant impact on growth than output per worker.

Table 2 Decomposition of Growth in per capita Value Added

	UGX	Percent of total change in per capita value-added growth
Total Growth in per capita GDP (value added)	297,734	100
Growth linked to output per worker	271,500	91.19
Growth linked to changes in employment rate	-192,138	-64.53
Growth linked to changes in the share of population of working Age	218,372	73.34

Source: Authors' own construction using the JoGGS Decomposition tool

4.1.2 The role of each sector in employment generation and its effect on output growth

At the aggregate level, total employment grew by only 15 percent, while the working-age population grew higher (23 percent). At a sector level, Table 3 shows the role of each sector in employment creation. Notably, employment increased most in public administration, human health and social work, and real estate by 141, 108 and 49 percent, respectively. These sectors also had their employment shares to total working-age increase by 95.8 percent, 69.3 percent and 20.8 percent. Conversely, for the "Agriculture, forestry and fishing" sector, as employment increased in absolute numbers, the share of employment to total working-age decreased by 1.3 percent. Nonetheless, it remains the biggest sector, employing nearly 17 percent of the working-age population followed by the trade and repairs sector (9.8 percent). We can infer from the changes in shares of employment to working age population that sectors like "professional, scientific and technical activities", water, "financial and insurance activities", "arts, entertainment and recreation", and "mining and quarrying" were responsible for the overall reduction in jobs.

Table 3 Employment by Sectors of Economic Activity, Uganda 2016-2021

	Total employment			Employment/pop. of working age		
	2016	2021	% change	2016	2021	% change
Agriculture, forestry and fishing	3,231	3,924	21.4	16.9	16.7	-1.3
Mining & quarrying	90	66	-26.6	0.5	0.3	-40.3
Manufacturing	716	842	17.7	3.7	3.6	-4.3
Electricity	11	12	5.3	0.1	0.1	-14.4
Water	19	5	-71.5	0.1	0.0	-76.8
Construction	417	483	15.8	2.2	2.1	-5.8
Trade and Repairs	2,072	2,309	11.4	10.8	9.8	-9.4
Transportation and Storage	500	625	25.2	2.6	2.7	1.8
Accommodation and Food Service Activities	332	415	25.2	1.7	1.8	1.8
Information and Communication	39	41	5.1	0.2	0.2	-14.5
Financial and Insurance Activities	66	34	-48.9	0.3	0.1	-58.4
Real Estate Activities	14	21	48.6	0.1	0.1	20.8
Professional, Scientific and Technical Activities	207	59	-71.7	1.1	0.2	-77.0
Administrative and Support Service Activities	146	153	4.7	0.8	0.7	-14.8
Public Administration	93	224	140.8	0.49	0.95	95.80
Education	399	406	1.7	2.09	1.73	-17.30
Human Health and Social Work Activities	107	223	108.2	0.56	0.95	69.32

	Total employment			Employment/pop. of working age		
	2016	**2021**	**% change**	**2016**	**2021**	**% change**
Arts, Entertainment and Recreation	26	18	-31.3	0.14	0.08	-44.12
Other Service Activities	387	304	-21.3	2.02	1.30	-36.01
Activities of Households as Employers	188	247	31.3	0.98	1.05	6.73
Total	**9,059**	**10,410**	**14.91**	**47.42**	**44.31**	**-6.56**

Source: Authors' own construction using the JoGGS Decomposition tool

The fact that employment grew less than the working-age population explains the decline in the employment rate by 3.11 percent points (6.6 percent). Table 4 and Figure A2 in the annex show a decomposition to understand each sector's role in the observed negative change in the employment rate. "Trade and repairs" and "professional, scientific and technical activities" account for most of the decline, contributing 1.02 and 0.83 percentage points, respectively. The decline in agriculture, the largest sector, accounts for 0.21.

Conversely, public administration, human health and social work positively affected the overall employment rate. Note that although the share of working age employed in these sectors grew by 95.8 percent and 69.3 percent respectively (while that of agriculture and trade declined marginally), their contribution is less than that of trade and repairs" and Agriculture. This is explained by the fact that the trade and repairs and Agriculture sectors are big (in terms of percentage employed – Table 3). This highlights how small percent changes in a sector can have big impacts if its relative size is large.

Table 4 **Contribution of employment changes to the overall change in the employment rate**

Industry of employment	Contribution to change in total employment rate (percent points)	Percent contribution of the sector to total employment rate growth
Agriculture, forestry and fishing	-0.21	6.88
Mining & quarrying	-0.19	6.10
Manufacturing	-0.16	5.20
Electricity	-0.01	0.28
Water	-0.07	2.40
Construction	-0.13	4.08
Trade and Repairs	-1.02	32.81
Transportation and Storage	0.05	-1.52
Accommodation and Food Service Activities	0.03	-1.01
Information and Communication	-0.03	0.95
Financial and Insurance Activities	-0.20	6.52
Real Estate Activities	0.02	-0.50
Professional, Scientific and Technical Activities	-0.83	26.79
Administrative and Support Service Activities	-0.11	3.65
Public Administration	0.47	-14.97
Education	-0.36	11.60
Human Health and Social Work Activities	0.39	-12.46
Arts, Entertainment and Recreation	-0.06	1.92
Other Service Activities	-0.73	23.43
Activities of Households as Employers	0.07	-2.13
Total employment rate	**-3.11**	**100.00**

Source: Authors' own construction using the JoGGS Decomposition tool

We further illustrate how the changes to sectoral contribution to employment affect per capita output. Of the UGX 192,138 contraction registered in per capita output due to changes in employment rate, "trade and repairs" and "professional, scientific and technical activities" contributed the most (UGX 63,039 and UGX51,467 respectively) (Table 5 and Figure A3 in the annex). On the contrary, public administration, human health, and social work sectors expanded by UGX 28,763 and 23,950. However, this was not enough to offset the contraction, given that other big agricultural sectors contracted.

Table 5 **Contribution of employment changes to overall change in per capita GDP (value added)**

Industry of employment	Contribution to change in per capita GDP (value added)	Percent of total change in per capita GDP (value added)
Agriculture, forestry and fishing	-13,228.0	-4.4
Mining & quarrying	-11,715.8	-3.9
Manufacturing	-9,991.0	-3.4
Electricity	-530.8	-0.2
Water	-4,618.4	-1.6
Construction	-7,831.7	-2.6
Trade and Repairs	-63,039.3	-21.2
Transportation and Storage	2,921.6	1.0
Accommodation and Food Service Activities	1,944.7	0.7
Information and Communication	-1,829.6	-0.6
Financial and Insurance Activities	-12,518.3	-4.2
Real Estate Activities	970.0	0.3
Professional, Scientific and Technical Activities	-51,466.8	-17.3
Administrative and Support Service Activities	-7,015.6	-2.4
Public Administration	28,763.4	9.7
Education	-22,290.0	-7.5
Human Health and Social Work Activities	23,949.7	8.0
Arts, Entertainment and Recreation	-3,692.7	-1.2
Other Service Activities	-45,012.6	-15.1
Activities of Households as Employers	4,093.2	1.4
Total contribution	**-192,137.8**	**-64.5**

Source: Authors' own construction using the JoGGS Decomposition tool

4.1.3. Changes in output per work within sectors and labour movements between sectors

The increase in output per worker within a sector increases the average output per worker (World Bank, 2009). The effect depends on the sector's size (share of total employment). On the other hand, worker movement between sectors may increase average output per worker if the final relocation implies that a larger proportion of workers are moving to high-productivity sectors.

At the aggregate level, output per worker (productivity) grew by UGX 1,122,784 (10 percent) between 2016 and 2021. Going down to sectors, the water, "Professional, Scientific and Technical Activities", and "financial and insurance activities" sectors experienced the sharpest increases in output per worker (Table A1 in the Annex). Agriculture, manufacturing and trade, the largest sectors, registered only a slight increase of 3 percent each in the output per worker.

Table 6 and Figure A4 in the annex show how each sector contributed to the total output per worker growth and inter-

sectoral employment shifts. The absolute increase in output per worker for the period resulted primarily from water (UGX 609,255 – 54 percent), professional, scientific, and technical activities (UGX 541,450 – 48.2 percent), and financial and insurance activities (UGX 400,706 – 35.7 percent). The largest sectors (agriculture, manufacturing and trade) trade contributed only 9 percent, 5 percent and 3 percent respectively to the observed output per worker growth. Conversely, public administration and human health and social work activities contributed negatively to output per worker by decreasing it by 14.6 percent and 13.7 percent respectively. Had it not been for these and the other negative contributors, the water, professional, Scientific and Technical Activities, and Financial and insurance activities jointly would have increased output per worker by 38 percent (100 – (54 + 35.7 + 48.2)) more than what was observed.

The inter-sectoral labour relocation also reduced the average output per worker by UGX 796,849, contributing 71 percent to the observed output per worker. This implies that, on average, labour moved from the above-average to below-average productivity sectors.

Table 3 shows significant decreases in employment shares in the "*professional, scientific, and technical activities*", "*water*", and "*Financial and insurance activities*" sectors. These sectors have above-average productivity (Annex Table A1). Thus, we can conclude that labour force movements out of these sectors caused an important contraction in output per worker due to inter-sectoral shifts.

Table 6 **Decomposition of Output per Worker into Within Sector Changes in Output per Worker and Inter-sectoral Shifts.**

Sector contributions	Contribution to Change in Total Output per Worker	Contribution to Change in Total Output per Worker (%)
Agriculture, forestry and fishing	95,981	9
Mining & quarrying	152,258	13.6
Manufacturing	54,701	4.9
Electricity	45,453	4.0
Water	609,255	54
Construction	135,282	12
Trade and Repairs	28,182	2.5
Transportation and Storage	-65,372	-5.8
Accommodation and Food Service Activities	-78,828	-7.0
Information and Communication	91,160	8.1
Financial and Insurance Activities	400,706	35.7
Real Estate Activities	-9,455	-0.8
Professional, Scientific and Technical Activities	541,450	48.2
Administrative and Support Service Activities	68,228	6.1
Public Administration	-163,797.7	-14.6
Education	45,781.8	4.1
Human Health and Social Work Activities	-154,030.6	-13.7
Arts, Entertainment and Recreation	14,883.6	1.3
Other Service Activities	121,082.3	10.8
Activities of Households as Employers	-13,289.3	-1.2
Inter-sectoral shift	-796,848.9	-71.0
Total change in output per worker	**1,122,784.0**	100.0

Source: Authors' own construction using the JoGGS Decomposition tool

When we consider the joint effect of within- and between-sector contributions to the observed change in the per capita value added, we see that the inter-sector shifts reduced the value added by 64.7 percent (Table 7). Within sectors, we again see that the water, professional, scientific, Technical Activities, and Financial and insurance sectors contribute the biggest percentage to the change in per capita value added.

Table 7 **Contribution of within Sector Changes in Output per Worker and Inter-sectoral Shifts to Change in GDP (value added) per capita**

	Contribution to change in GDP (value added) per capita	Percent of total change in GDP (value added) per capita
Agriculture, forestry and fishing	23,209	7.8
Mining & quarrying	36,817	12.4
Manufacturing	13,227	4.4
Electricity	10,991	3.7
Water	147,324	49
Construction	32,712	11
Trade and Repairs	6,815	2.3
Transportation and Storage	-15,807	-5.3
Accommodation and Food Service Activities	-19,061	-6.4
Financial and Insurance Activities	96,895	32.5
Real Estate Activities	-2,286	-0.8
Professional, Scientific and Technical Activities	130,928	44.0
Administrative and Support Service Activities	16,498	5.5
Public Administration	-39,607.8	-13.3
Education	11,070.5	3.7
Human Health and Social Work Activities	-37,246.0	-12.5
Arts, Entertainment and Recreation	3,599.0	1.2
Other Service Activities	29,278.8	9.8
Activities of Households as Employers	-3,213.5	-1.1
Inter-sectoral shift	-192,685.5	-64.7
Total contribution to change in per capita GDP (value added)	**249,456**	**91.2**

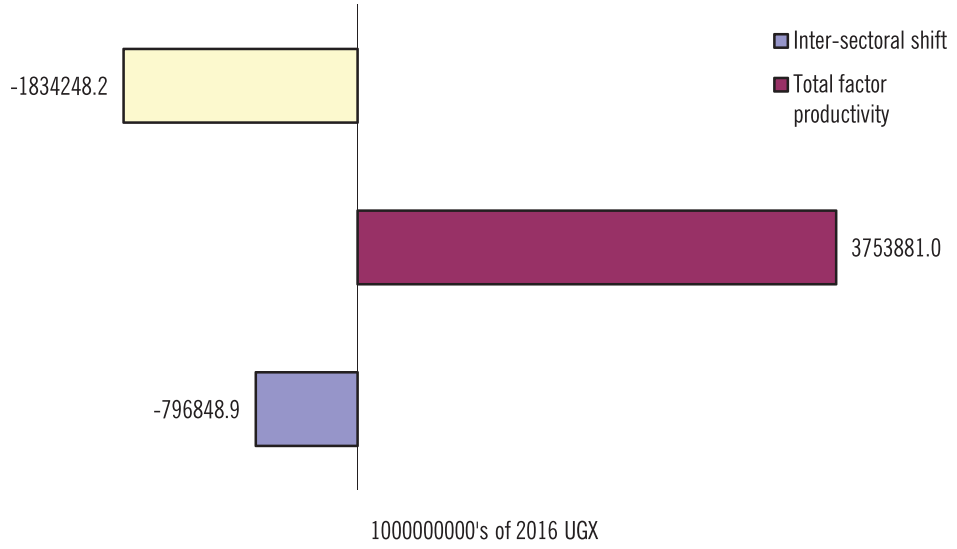
Source: Authors' own construction using the JoGGS Decomposition tool

4.1.4 Sources of changes in total output per worker (net of inter-sectoral shifts) at the aggregate level

In the previous section, we tracked changes in output per worker attributable to changes in output per worker within sectors and changes in output per worker due to labour shifts between sectors with different productivity levels. However, this tracking approach is more complex. The straightforward approach is one where the changes in output per worker are attributed to three sources: i) changes in the total factor productivity (TFP), ii) changes in the capital-labour ratio, and iii) movement of labour between sectors (the labour relocation effect). Table A2 (in Annex) presents the data used to understand how each source contributes to the output per worker, and the importance of each component is shown in Figure 6.

Total output per worker increased 10.1 percent. A decomposition of the changes in output per worker shows that TFP contributed positively to the observed change with UGX 3,753,881. The capital-labour ratio and the inter-sectoral shift both decreased output per worker. However, the decrease was not so big as to offset the increases brought about by total factor productivity. So, the increase in TFP explains the aggregate increase in output per worker.

Figure 3 Decomposition of Changes in Output per Worker



Source: Authors' own construction using the JoGGS Decomposition tool

4.1.5 Role of inter-sectoral employment shifts.

Changes in the share of employment in the different sectors help to explain how inter-sectoral shifts change per capita growth or output per worker. Notably, if the share of jobs in a sector with above-average productivity increases, the overall productivity will also increase, contributing positively to the inter-sectoral shift. On the contrary, if the share of employment in a sector with above-average productivity decreases (movement out of the sector), productivity will decrease, and the effect on the inter-sectoral shift will be negative. Conversely, the movement of workers into a sector with below-average productivity should reduce growth, while the movement of workers out of the sector should contribute positively to growth.

Table 8 shows how each sector contributed to the UGX -796,848.9 attributable to the inter-sectoral employment shift component to the total growth in output per worker. Seven of the sectors had below-average output per worker. These include "agriculture, forestry and fishing", "trade and repairs", "transportation and storage", "accommodation and food service activities", "arts, entertainment and recreation", other service activities, and activities of households as employers. The movement of labour into these sectors negatively affects productivity, as observed by movements of labour into the "agriculture, forestry and fishing", "transportation and storage", "accommodation and food service activities", and activities of households as employers' sectors. On the other hand, the movement of labour out of the below-average sectors positively influences productivity, as observed in the trade and repairs and "arts, entertainment and recreation" sectors.

Conversely, labour movement into sectors with higher-than-average productivity (manufacturing, construction, real estate activities, public administration, "human health and social work activities") positively influences productivity.

Table 8 Understanding the Role of Inter-Sectoral Employment Shifts.

	Average Output per Worker	Change in employment share (percent points)	Sectoral contribution to inter-sectoral shift component
Agriculture, forestry and fishing	8,009,090	0.020	-74,580
Mining & quarrying	24,205,387	-0.004	-44,838
Manufacturing	23,885,160	0.002	23,096
Electricity	139,815,789	0.000	-13,533
Water	376,376,547	-0.002	-563,080
Construction	16,117,337	0.000	1,632
Trade and Repairs	4,807,272	-0.007	48,084
Transportation and Storage	6,681,868	0.005	-24,783
Accommodation and Food Service Activities	8,655,805	0.003	-9,984
Financial and Insurance Activities	81,194,357	-0.004	-282,296
Real Estate Activities	449,836,773	0.000	204,266
Professional, Scientific and Technical Activities	30,280,910	-0.017	-319,803
Administrative and Support Service Activities	15,214,627	-0.001	-5,032
Public Administration	23,666,812	0.011	134,465.46
Education	12,533,260	-0.005	-4,223.66
Human Health and Social Work Activities	26,321,831	0.010	140,148.75
Arts, Entertainment and Recreation	8,315,474	-0.001	3,886.77
Other Service Activities	9,397,698	-0.013	30,952.11
Activities of Households as Employers	4,438,085	0.003	-21,450.34
Aggregate	**11,698,039**		**-796,848.90**

Source: Authors' own construction using the JoGGS Decomposition tool

In terms of the percentage contribution of each sector to the inter-sector shift component of productivity changes, Table 9 shows that the water sector contributed 70.8 percent to the negative value, followed by professional services (40.2 percent) and Financial and Insurance activities (35.5 percent). This is consistent with what is observed in Table 8, as these are above-average productivity sectors, but there were labour movements out of these sectors. On the other hand, real estate activities, Human health and social work activities, and public administration sectors had a significant opposite effect.

Table 9 Decomposition of Inter-sectoral shifts: Uganda 2016-2021

Sectoral contributions	Direction of Employment Share shift	Contribution to Inter-sectoral Shifts (%)
Agriculture, forestry and fishing	+	9.36
Mining & quarrying	-	5.64
Manufacturing	+	-2.92
Electricity	-	1.70
Water	-	70.78
Construction	+	-0.21
Trade and Repairs	-	-6.01
Transportation and Storage	+	3.11
Accommodation and Food Service Activities	+	1.25
Information and Communication	-	2.48
Financial and Insurance Activities	-	35.49

Sectoral contributions	Direction of Employment Share shift	Contribution to Inter-sectoral Shifts (%)
Real Estate Activities	+	-25.69
Professional, Scientific and Technical Activities	-	40.23
Administrative and Support Service Activities	-	0.63
Public Administration	+	-16.93
Education	-	0.54
Human Health and Social Work Activities	+	-17.64
Arts, Entertainment and Recreation	-	-0.49
Other Service Activities	-	-3.87
Activities of Households as Employers	+	2.69
Total Contribution of inter-sectoral shifts		*100*

Source: Authors' own construction using the JoGGS Decomposition tool

4.1.6 Percentage contribution of employment to the changes in GDP per capita

Throughout this analysis, we have independently analysed changes in the three components (changes in output per worker, growth associated with changes in employment rates, and growth associated with changes in the demographic component) of GDP per capita. However, the goal is to analyse the contribution of each component to total changes in GDP per capita.

Table 10 shows that the demographic component explains almost three-quarters (73.3 percent) of the change in per capita value added. The remaining 26.7 percent is due to the output per worker, both within and arising due to a labour movement between sectors and the change in the employment rate. Specifically, the within-sector productivity contributed 155.91 percent, while the between-sector component contributed negatively, at -64.6 percent. This highlights that, on average, labour moved from more productive to less productive sectors. The employment rate of 64.6 percent negatively impacted the results, indicating fewer working-age people held jobs then.

A breakdown of the sectoral contributions shows that the most significant contribution to the per capita value added was from the real estate activities sector (16.2 percent), followed by construction (8.5 percent) and Public Administration (7.3 percent). The positive contribution of the real estate and public administration sectors was primarily attributable to inter-sectoral employment shifts (16.6 percent and 10.9 percent, respectively). The positive contribution of the construction sector was primarily attributable to changes in output per worker (11.0 percent). Generally, "agriculture, forestry and fishing", "trade and repairs", "transportation and storage", "accommodation and food service activities", education, other service activities, and activities of households as employers contributed negatively to the per capita growth. For example, the negative contribution in the agriculture sector was mainly due to inter-sectoral shifts (6.1 percent). In contrast, the negative contribution in the trade and repairs sector was mainly due to a decline in employment (21.1 percent).

Table 10 Growth Decomposition. Percent Contribution to Total Growth in GDP (value added) per capita

Sectoral contributions	Contribution of within-sector changes in output per worker (%)	Contribution of changes in Employment (%)	Contributions of Inter-sectoral Shifts (%)	Total (%)
Agriculture, forestry and fishing	7.80	-4.44	-6.05	-2.69
Mining & quarrying	12.37	-3.93	-3.64	4.79
Manufacturing	4.44	-3.35	1.89	2.98
Electricity	3.69	-0.18	-1.10	2.42
Water	49.48	-1.55	-45.73	2.20
Construction	10.99	-2.63	0.13	8.49
Trade and Repairs	2.29	-21.15	3.88	-14.98
Transportation and Storage	-5.31	0.98	-2.01	-6.34
Accommodation and Food Service Activities	-6.40	0.65	-0.81	-6.56
Information and Communication	7.40	-0.61	-1.60	5.19
Financial and Insurance Activities	32.54	-4.20	-22.93	5.42
Real Estate Activities	-0.77	0.33	16.60	16.16
Professional, Scientific and Technical Activities	43.97	-17.27	-25.99	0.72
Administrative and Support Service Activities	5.54	-2.35	-0.41	2.78
Public Administration	-13.30	9.65	10.94	7.28
Education	3.72	-7.48	-0.35	-4.11
Human Health and Social Work Activities	-12.51	8.03	11.40	6.92
Arts, Entertainment and Recreation	1.21	-1.24	0.31	0.28
Other Service Activities	9.83	-15.10	2.50	-2.77
Activities of Households as Employers	-1.08	1.37	-1.74	-1.45
Subtotals	*155.90*	*-64.64*	*-64.60*	*26.66*
Demographic component	-	-		73.34
Total				100
Total % change in value added per capita 2016-2021				**11.12**

Source: Authors' own construction using the JoGGS Decomposition tool

Table 11 Growth decomposition. Contribution to total growth in GDP (value added) per capita

Sectoral contributions	Contribution of within-sector changes in output per worker	Contribution of Changes in Employment	Contributions of Inter-sectoral Shifts	Total
Agriculture, forestry and fishing	86,9190	-1,627,547	315,752	-442,605
Mining & quarrying	36,347	-9316	2,324	29,355
Manufacturing	-19,681	1,783	179,334	161,436
Electricity	11,653	-470	16,629	27,812
Water	104,757	-2,740	-57,665	44,352
Construction	29,710	-4,739	43,026	67,998
Trade and Repairs	4,148	-52,319	-128,573	-176,744
Transportation and Storage	-16,855	210	-24,351	-40,997
Accommodation and Food Service Activities	-20,378	107	-4,848	-25,119
Information and Communication	5,032	816	40,892	46,740
Financial and Insurance Activities	68,449	-6,437	-4,262	57,751
Real Estate Activities	-5,609	785	159,422	154,597
Professional, Scientific and Technical Activities	125,418	-45,143	-58,665	21,610
Administrative and Support Service Activities	10,997	-2,147	12,595	21,445
Public Administration	-37,314	20,947	62,875	46,507
Education	15,581	-22,631	10,813	3,763
Human Health and Social Work Activities	-44,277	19,284	78,981	53,988

Sectoral contributions	Contribution of within-sector changes in output per worker	Contribution of Changes in Employment	Contributions of Inter-sectoral Shifts	Total
Arts, Entertainment and Recreation	3,653	-3,131	10	532
Other Service Activities	29,090	-36,739	-59	-7,708
Activities of Households as Employers	-1,916	-471	-17,492	-19,878
Subtotals	*1,167,995*	*-1,769,896*	*626,738*	*24,836*
Demographic component	-	-		276,944
Total change in value added per capita.				301,780

Source: Authors' own construction using the JoGGS Decomposition tool

What do we make out of this decomposition?

We have analysed the different sectors and factors that explain the observed growth in per capita GDP. This analysis gives insight into the understanding of poverty reduction. From this study, it emerges that there are two critical drivers of poverty changes. First, demographic changes present the biggest opportunity to raise GDP per capita and thus reduce poverty. This means there are now fewer dependents per working-age adult compared to 2016. If these less-burdened adults can engage in productive activities and sectors, this demographic shift will have a poverty-reducing effect. However, Uganda's share of the working-age population (55 percent) is still low, implying that only 6 out of 10 people can work. In other words, Uganda's labour force is still narrow.

Second, output per worker (productivity) is another window of opportunity for increasing GDP per capita. A caveat here is that productivity should increase for large sectors (within sector contributions), and workers should relocate from below-average to above-average productivity sectors (inter-sectoral shift). In our case, the effects of labour relocation on GDP per capita were negative, but the positive within-sector effects offset these. The employment rate also affected the net effect of the within-sector contributions. Thus, attempts to increase GDP per capita and reduce poverty require attracting workers to high-productivity sectors and/or rising employment rates. Specifically, there was an influx of workers into public administration, human health, and real estate sectors, which are above-average productivity sectors, thus contributing positively to per capita growth and, as such, may decrease poverty. However, these sectors also decreased worker output, implying a trade-off between productivity and employment. The critical policy question is balancing the two to bring about positive change. Notably, it is critical to understand what is driving the influx. Are workers responding to better working opportunities? How well-paying are these new jobs? Do people experiencing poverty have access to the new jobs?

4.2. Linking employment and public expenditure

The previous analysis highlighted the need to create jobs, especially in high-productivity sectors, and/or increase employment. In this section, we analyse the budget implications for achieving this. We use employment-to-expenditure (E2E) ratios to analyse employment creation potential from a given expense outlay. We interpret the E2E ratios to show the expenditure needed for one more job. We adopted the employment-to-value-added ratios approach suggested by Tregenna (2015) and used by Bhorat et al. (2019) to analyse employment creation potential from a unit increase in GDP.

It takes about UGX 2,317, on average, to create one more job (Table 12). This amount increased by 8.7 percent from 2016, meaning that creating an additional job requires more expenditure than needed in 2016. Water and real estate sectors require the largest government expenditure to create additional jobs. Incidentally, the two are the highest productivity sectors (Table 8). The largest sectors (Agriculture, trade, and repairs) require much less expenditure than the aggregate. These sectors are also among the below-average productivity sectors.

Table 12 Employment-to-expenditure ratios

Expenditure/worker	2016	2021	% change
Agriculture, forestry and fishing	1,248	311	-75.1
Mining & quarrying	6,977	10,946	56.9
Manufacturing	1,263	1,648	30.5
Electricity	41,410	66,316	60.1
Water	43,865	577,286	216.1
Construction	7,448	5,208	-30.1
Trade and Repairs	75	138	83.7
Transportation and Storage	2,246	2,419	7.7
Accommodation and Food Service Activities	415	313	-24.5
Information and Communication	15,682	6,577	-58.1
Financial and Insurance Activities	1,269	2,867	125.8
Real Estate Activities	243,303	154,346	-36.6
Professional, Scientific and Technical Activities	896	1,931	115.5
Administrative and Support Service Activities	498	419	-15.8
Public Administration	2,509	1,977	-21.2
Education	6,629	5,575	-15.9
Human Health and Social Work Activities	5,356	3,171	-40.8
Arts, Entertainment and Recreation	1,662	2,801	68.6
Total	2,131	2,317	8.7

Source: Authors' own construction

We use the E2E ratios to estimate the financing needed to create the expected number of jobs. We project 6 percent employment growth, the same rate projected for the economy. After obtaining the expected employment growth, we multiply it by the E2E ratios to get the predicted budget (Table 13).

Table 13 GDP, employment and expenditure projections

	Proj. employment in 2024 (000s)	Proj. employment in 2030 (000s)	Proj. budget in 2024 (millions)	Proj. budget in 2030 (millions)
Agriculture, forestry and fishing	5,251	6,629	1,634	2,062
Mining & quarrying	88	112	968	1,222
Manufacturing	1,127	1,422	1,857	2,344
Electricity	16	20	1,065	1,344
Water	7	9	4,094	5,169
Construction	646	816	3,366	4,249
Trade and Repairs	3,089	3,900	426	538
Transportation and Storage	837	1,057	2,025	2,556
Accommodation and Food Service Activities	556	701	174	220
Information and Communication	55	69	361	456
Financial and Insurance Activities	45	57	130	164
Real Estate Activities	29	36	4,420	5,580

	Proj. employment in 2024 (000s)	Proj. employment in 2030 (000s)	Proj. budget in 2024 (millions)	Proj. budget in 2030 (millions)
Professional, Scientific and Technical Activities	78	99	151	191
Administrative and Support Service Activities	205	259	86	108
Public Administration	299	378	592	747
Education	543	685	3,025	3,819
Human Health and Social Work Activities	298	376	944	1,192
Arts, Entertainment and Recreation	24	30	67	84
Total	**11,013**	**18,663**	**32,314**	**43,243**

Source: Authors' own construction

4.3 The Triple Win

The previous section discussed job projections, and the corresponding expenditure needed to produce those jobs. In this section, we bring in the dimension of GDP growth. In other words, how much should GDP grow to create the number of jobs? We achieve this by estimating labour-to-value-added (LVA) ratios using baseline value-added and employment data (2021). We interpret the ratios as the number of workers needed to increase value added by one unit (UGX 1 billion). We divide the projected jobs by the LVA ratios for the required GDP growth.
Table 14 shows that if the economy is to create the projected jobs, GDP should grow from the current level of UGX 123 trillion to UGX 215.5 trillion by 2030.

Table 14 Current and projected employment, budget and value added

	Current 2021			Projected 2030		
	Employment (000s)	Budget (millions)	Value Added (billions)	Employment (000s)	Budget (millions)	Value Added (billions)
Agriculture, forestry and fishing	3,924	1,221	31,937	6,629	2,062	53,957
Mining and quarrying	66	724	2,218	112	1,222	3,747
Manufacturing	842	1,387	20,397	1,422	2,344	34,460
Electricity generation	12	796	1,904	20	1,344	3,217
Water generation	5	3,060	3,255	9	5,169	5,499
Construction	483	2,515	8,490	816	4,249	14,344
Trade	2,309	319	11,242	3,900	538	18,993
Transport and storage	625	1,513	3,824	1,057	2,556	6,461
Hotels, restaurant eating places	415	130	3,166	701	220	5,349
Information and communications	41	270	3,146	69	456	5,315
Financial and Insurance activities	34	97	4,037	57	164	6,820
Real estate activities	21	3,303	9,571	36	5,580	16,170
Professional, scientific and technical	59	113	2,889	99	191	4,881
Administrative and support activities	153	64	2,668	259	108	4,508
Public administration	224	442	4,140	378	747	6,994
Education	406	2,261	5,306	685	3,819	8,964
Human health and social work activities	223	706	4,826	376	1,192	8,153
Arts, entertainment and recreation	18	50	206	30	84	348
Total	**9,858**	**24,149**	**123,222**	**18,663**	**43,243**	**215,545**

Source: Authors' own construction

5. CONCLUSION AND EMERGING POLICY ACTIONS

5.1 Conclusion

The study analyses the sectoral contributions to the observed per capita GDP and employment growth. The results reveal that output per worker and changes in the share of the working-age population are the key contributors to the observed growth in the per capita value added. The analysis gives insight into the understanding of poverty reduction. First, demographic changes present the biggest opportunity to raise GDP per capita and thus reduce poverty. This means there are now fewer dependents per working-age adult compared to 2016. If these less-burdened adults can engage in productive activities and sectors, this demographic shift will have a poverty-reducing effect. However, Uganda's share of the working-age population (55 percent) is still low, implying that only 6 out of 10 people can work. In other words, Uganda's labour force is still narrow.

Second, output per worker (productivity) is another window of opportunity for increasing GDP per capita. A caveat here is that productivity should increase for large sectors (within sector contributions), and workers should relocate from below-average to above-average productivity sectors (inter-sectoral shift). In this study, the effects of labour relocation on GDP per capita were negative, but the positive within-sector effects offset these. The employment rate also affected the net effect of the within-sector contributions. Thus, attempts to increase GDP per capita and reduce poverty require attracting workers to high-productivity sectors and/or increasing the employment rate. Specifically, there was an influx of workers into public administration, human health, and real estate sectors, which are above-average productivity sectors, thus contributing positively to per capita growth and, as such, may decrease poverty. However, these sectors also decreased worker output, implying a trade-off between productivity and employment. The key policy question is balancing the two to bring about positive change. Notably, it is critical to understand what is driving the influx. Are workers responding to better working opportunities? How well-paying are these new jobs? Do the poor have access to them?

The required investment to create more jobs in the economy requires more investment than it did in 2016 to create one more job in 2020. Specifically, it requires UGX 2,317 million. On average, it takes about UGX 2,317 million to create one more job. This amount increased by 8.7 percent from 2016, meaning that creating an additional job requires more expenditure than needed in 2016. Considering sectors, water and real estate sectors require the largest government expenditure to create an additional job. Incidentally, the two are the highest productivity sectors. The largest sectors (Agriculture, trade, and repairs) require much less expenditure than the aggregate. These sectors are also among the below-average productivity sectors.

5.2 Emerging Policy Actions

a) Increase investment in agriculture, trade, and manufacturing, which is the order of priority. Specifically, more investment should be jeered towards such sectors, as they are employment creators often experiencing labour movement into them.

b) Additionally, investment in the above priority sectors should be accompanied by investment in the key human capital development sectors of education, "human health and social work activities" for the economy to have a productive and sustainable workforce.

c) Modernise the agriculture sector to enhance its productivity. As observed, the agriculture sector is the largest employer of the working-age population, yet it has below-average productivity, affecting overall value added. The government should increase investment in the sector to facilitate technology adoption, enhance value addition, and improve output per worker.

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ANNEX

Table A1: Changes in Output per Worker by Sectors.

	2016	2021	% *change*
Agriculture, forestry and fishing	7,878,253	8,139,926	3
Mining & quarrying	14,855,556	33,555,219	126
Manufacturing	23,542,977	24,227,343	3
Electricity	120,964,912	158,666,667	31
Water	138,602,151	614,150,943	343
Construction	14,653,394	17,581,280	20
Trade and Repairs	4,744,716	4,869,829	3
Transportation and Storage	7,249,249	6,114,487	-16
Accommodation and Food Service Activities	9,686,369	7,625,241	-21
Information and Communication	54,615,385	76,731,707	40
Financial and Insurance Activities	43,303,167	119,085,546	175
Real Estate Activities	452,430,556	447,242,991	-1
Professional, Scientific and Technical Activities	11,261,479	49,300,341	338
Administrative and Support Service Activities	13,002,736	17,426,519	34
Public Administration	28,826,695	18,506,929	-36
Education	11,981,440	13,085,080	9
Human Health and Social Work Activities	30,963,517	21,680,144	-30
Arts, Entertainment and Recreation	5,057,915	11,573,034	129
Other Service Activities	7,714,581	11,080,815	44
Activities of Households as Employers	4,736,842	4,139,328	-13
Total output per worker	**11,136,647**	**12,259,431**	**10.08**

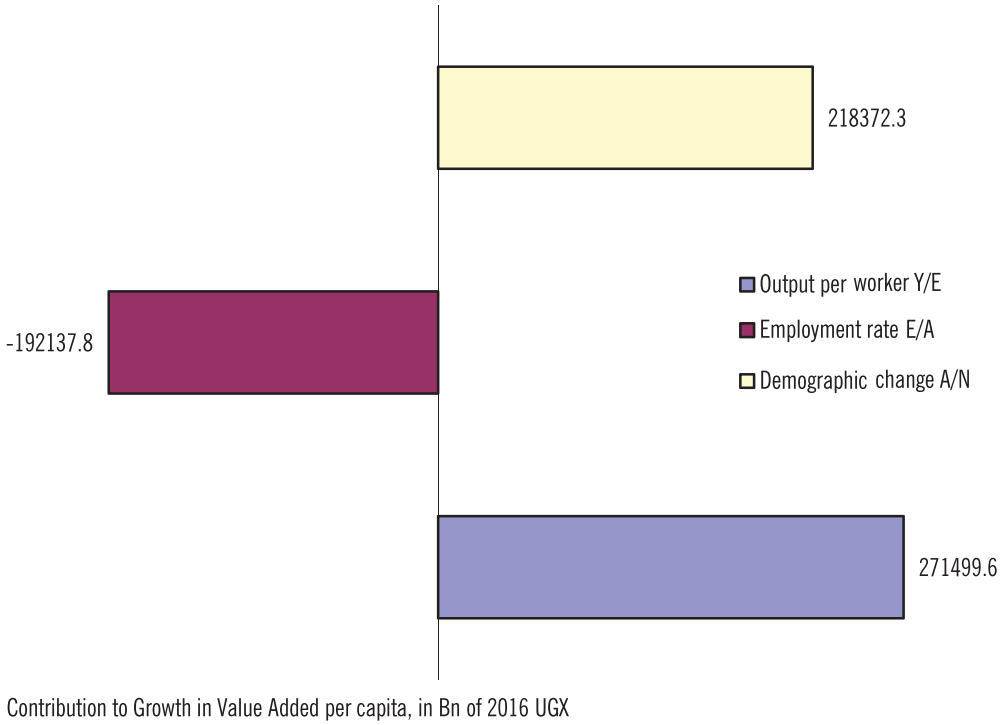
Source: Authors' own construction using the JoGGS Decomposition tool

Table A2: Data used for Decomposition of Output per Worker, Capital Stocks, Capital Labor Ratio and Share of Capital in Total Income. Uganda 2016-2021

	2016	2021	% change
Share of Capital in Total Income (%)	25%	24%	-5.23
Capital	25,555	35,722	39.79
Total output per worker	11,136,647	12,259,431	10.08
Output per worker net of inter-sectoral shifts	11,136,647	13,056,280	17.24
Capital Labor Ratio	2,820,876	3,431,607	21.65
TFP residual net of inter-sectoral shifts	255,488	348,061	36.23
Monetary values are UGX			

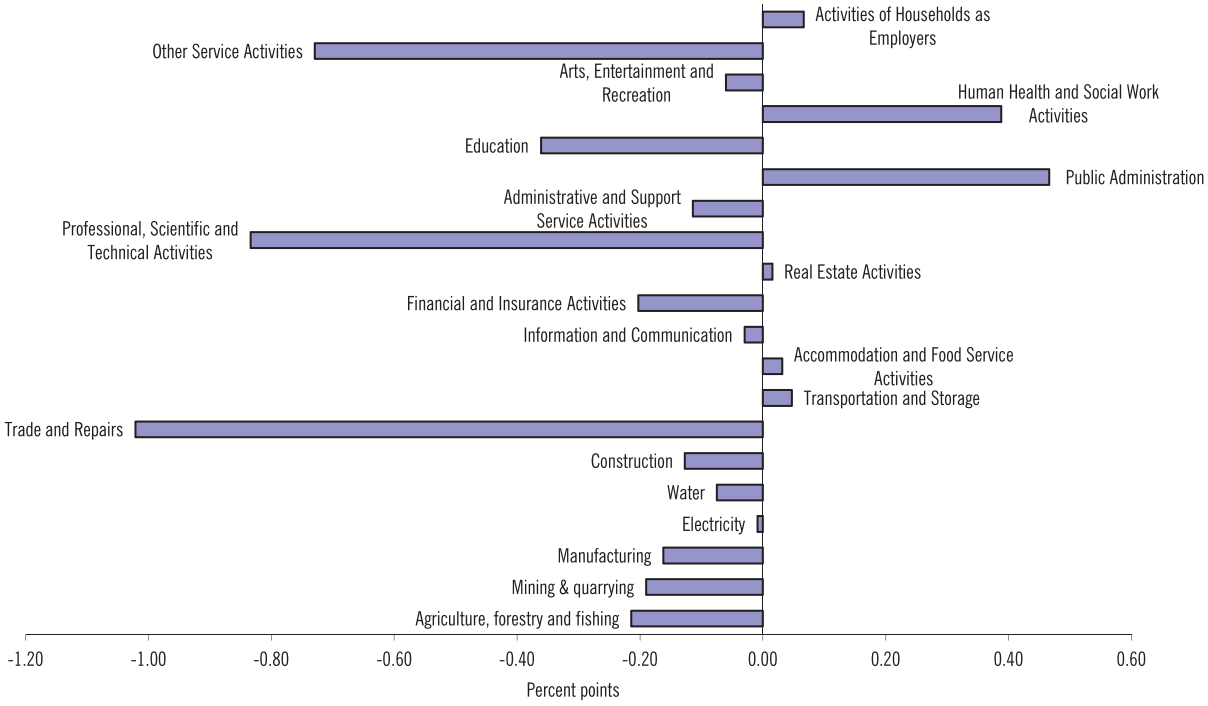
Source: Authors' own construction using the JoGGS Decomposition tool

Figure A1: Aggregate Employment, Productivity and Demographic Profile of Growth Uganda 2016 to 2021



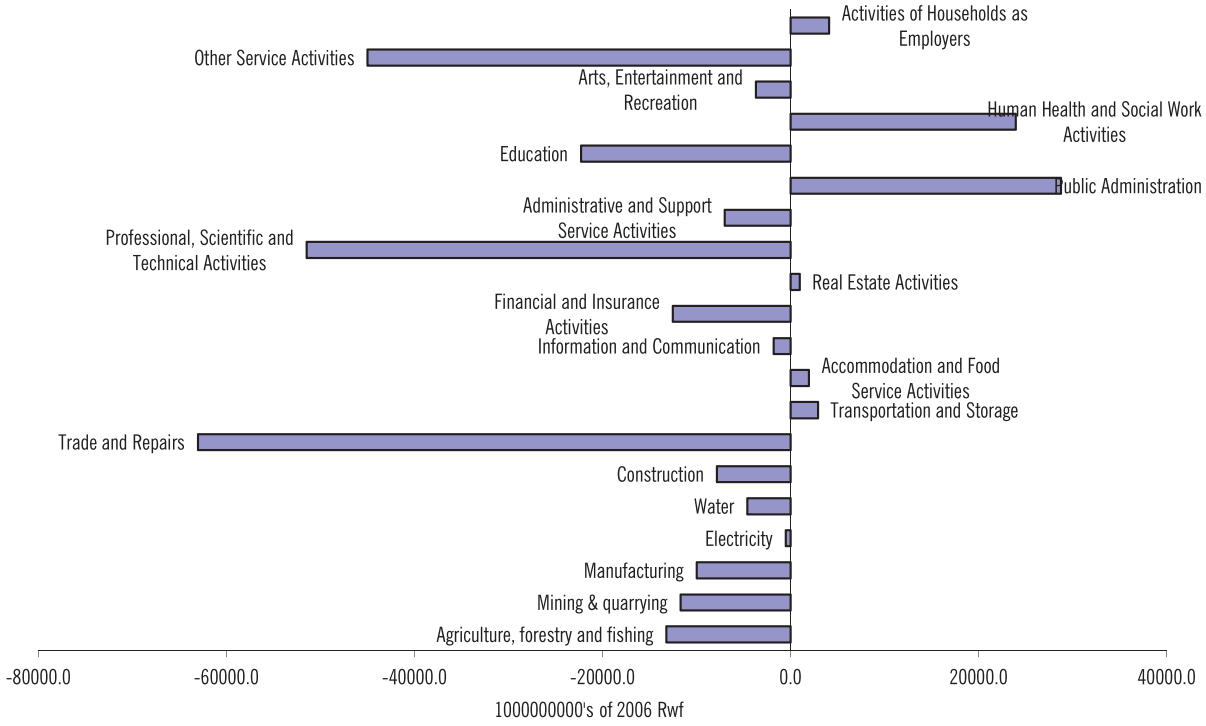
Source: Authors' own construction using the JoGGS Decomposition tool

Figure A2: Contribution of each Sector to Changes in Employment to Population Ratio.



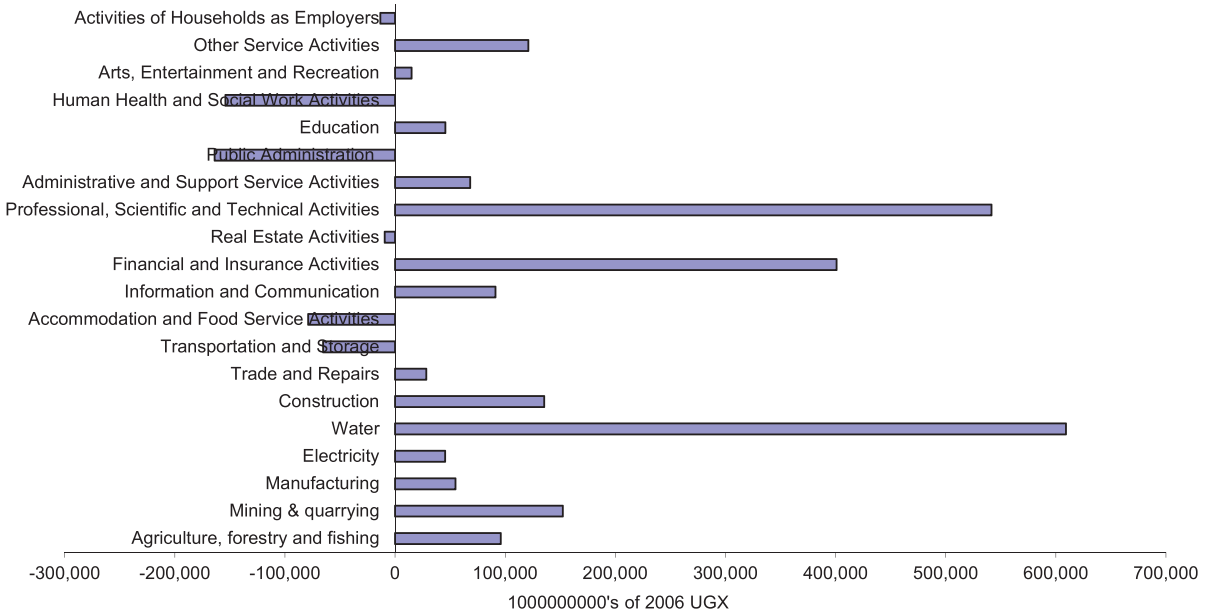
Source: Authors' own construction using the JoGGS Decomposition tool

Figure A3: Contribution of Change in Employment-to-Population Ratio to Change in GDP (Value Added) per capita by Sector.



Source: Authors' own construction using the JoGGS Decomposition tool

Figure A4: Decomposition of Growth in Output per Worker: Inter-Sectoral Shifts and Within Sectoral Output Growth



Source: Authors' own construction using the JoGGS Decomposition toolv

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