# Gender, labor forces and demographic Dividend in Africa

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ABSTRACT

*The debate on population and economic development is increasingly focused on demographic dividend (DD) theories. According to the logic of this paradigm, the ongoing demographic changes could support development efforts in developing countries by creating an environment conducive to savings, productive investment, and improved human capital. The examination of the age pyramid shows that the structure of the population and in particular the ratio of the working-age population (15-65 years) and dependency population (0-15 years and 65 years and over), can constitute an opportunity or an obstacle to the development of a country, provided that the means and mechanism are taken to capitalize on the window of opportunity period. In this context, women's employment can play a major role in the production mechanism. Its contribution is an avenue to be exploited and capitalized. This article provides an analysis of the contribution of women's employment in the working age population. The analysis is based on the World Bank's Word Development Indicator (WID) macro data, decomposition, and regression methods. The results show that women's employment is an important lever to seize to benefit from the different windows of opportunity opened in African countries but faces to realties of African context which opposes its participation.*

**Keys words***: gender, demographic dividends, Labor forces, Africa.*

## INTRODUCTION

Zhuang Han et al (2023) Show that remarkable demographic transformations have been observed in the last fifty years, particularly in Africa. These changes have occurred alongside significant economic shifts, prompting inquiries into the role of demographic transitions in reshaping the developing world. The research on the consequences of demographic change for development has centered on the relationship between population size and economic progress. From Thomas Malthus's pessimistic outlook in 1798 to Julian Simon's optimistic stance 200 years later, the population-development debate has predominantly revolved around these conflicting perspectives (Zhuang Han and al 2023). In 2003, Bloom, Canning, and Sevilla introduced a new perspective, connecting population change and economic growth by proposing the concept of a demographic dividend. This notion posits that as birth rates decrease (and before life expectancy increases), countries experience a temporary period of low age-dependency, which promotes savings, investment, and economic growth.

Beninguisse and al (2018), Eloundou-Enyegue (2019), Bloom and al, (2007) show that the demographic dividend is, in its broadest sense, a socioeconomic benefit resulting from demographic change. The specific change here concerns the age structure of the populations and precisely the dependency ratio. It is also the economic gain that a country can enjoy when it

registers a relatively large proportion of its population of working age, following the decline in fertility, if it invests effectively in the areas of health, education, governance, and employment, through public action and the engagement of the private sector.

Women's work is increasingly associated with capturing the Demographic Dividend in the development research process in Africa. Several reasons are developed, including women's empowerment, gender equality, human capital development, and population well-being (SWEDD 2022, UNFPA 2022). The proponents of this thesis show that women's employment and the demographic dividend would not have been dissociated in the fight against poverty and social inequalities (UNFPA 2022, UN 2022). In this context, it develops an interlocking and joint action, targeting 5 Sustainable Development Goals: the fight against poverty (SDG 1), gender equality (SDG 5), quality education (SDG 4), decent work and economic growth (SDG 8) and the reduction of inequalities (SDG 10).

In this paper, we analyze the link between the Demographic Dividend and women's employability in Africa, and their contribution in increasing of the per capita income (Gini per pop) of the African population. For this purpose, we use the decomposition method, which is a retrospective, comparable across Africa's countries, and utilizes publicly available World Bank data. Combined with Labor force participation and Unemployment, female data of the past thirty years, this method enables us to address the three questions. We employ this decomposition approach to examine the magnitude of demographic dividends across Africa over the past 30 years, explore its contribution in Gini per capita, to make comparison with female labor force and employment in Africa.

## BACKGROUND

Africa stands out with its notable population growth, surpassing that of any other region globally. In 2020, the average fertility rate in the region was 4.5 children per woman, which is twice the global average. Specific countries within the region reported even higher TFR of 6.8 children per woman in 2019. Africa maintained a relatively stable population growth rate from 1970 to 2020, with minor fluctuations between 2.68% and 2.65%, representing a marginal decrease of 0.03% (WID 2023). Over the past 30 years, the region consistently exhibited the highest level of demographic dependence, ranging from 90% to 84%, reaching its peak at 96% in 1988. These statistics indicate that Africa has not yet reached the opportune window for attaining the demographic dividend (DD), as it has not surpassed the necessary threshold of 80% (Reference). With a population of nearly 1.308 billion in 2019, Africa is the second most populous continent in the world. Over the past century, Africa's population has grown dramatically at a very rapid pace.

The various estimates made show that before 1900, the annual rate of population growth was less than 0.1%; From 1900-1950 it rose to 1.2% and from 1980 to 1990 it reached 3.2%. Recent demographic trends in Africa are characterized not only by unprecedented growth rates, but also for a high proportion of young people. Despite this unfavorable demographic structure, the region has experienced a gradual increase in gross national income (GNI) per capita. However, the growth rate has been relatively modest, with a slight rise of 1.08% in 2020. On average, the annual growth rate of GNI stands at 0.38%. Between 1990 and 2020, the region experienced a seven-fold increase in GNI per capita, increasing from $201 to $1500, less than 1/10 of the global average. Numerous studies (Zhuang Han and al 2023, Paris, 2011; Tenikué et al., 2018; Eloundou-Enyegue et al., 2018, 2017, 2014, 2012; Gengant et al., 2017; Groth and May 2017) emphasize the persistent challenges faced by the region. These challenges include key demographic factors, broader governance challenges, limited educational expansion, low levels of women's empowerment, and cultural constraints unique to the region.

The evolution of the region's demographic dependence over the last 30 years shows different trends and levels. There are 28 countries out of the 52 that still have a demographic dependency ratio above 80% in 2020 (i.e., have not yet reached the window of opportunity to capture SD). These are Angola, Benin, Burkina Faso, Burundi, CAR, Chad, Cameroon, DRC, Cote d'Ivoire, Erithrea, Ethiopia, Gambia, Guinea, Liberia, Malawy, Mauritania, Mali, Mozambique, Nigeria, Niger, Sao Tome and Principe, Senegal, Somalia, Tanzania, Uganda, Zambia, Zimbabwe. (Chart 1), in the latter group, there are two extremes: countries with dependency ratios above 100 (Mali, Chad, Niger, Somalia) and countries whose window of opportunity is very close to 80% (Cameroon, Cote d'Ivoire, Guinea Bissau, Guinea, Liberia, Zimbabwe). In addition, there are countries whose demographic dependency rate is below the 80% threshold (Algeria, Botwana, Cape Verde, Djibouti, Egypt, Equatorial Guinea, Eswatini, Gabon, Ghana, Kenya, Libya, Lesotho, Madagascar, Mautitius, Morocco, Namibia, Rwanda, South Africa, Togo, Tunisia.). This includes the countries of North Africa whose demographic transition has been underway for several years.

**Women's work in Africa**

This situation of capturing the Demographic Dividend is lived in a context that is still not very favorable to women's work. Many women work in precarious conditions, are poorly paid, and have very few opportunities for advancement (UN Women 2023), even though many African countries have already ratified conventions on discrimination against women. The employment situation of women is still underestimated and poorly assessed. This reality is experienced in sectors such as agriculture where women actively participate but are poorly and underpaid.

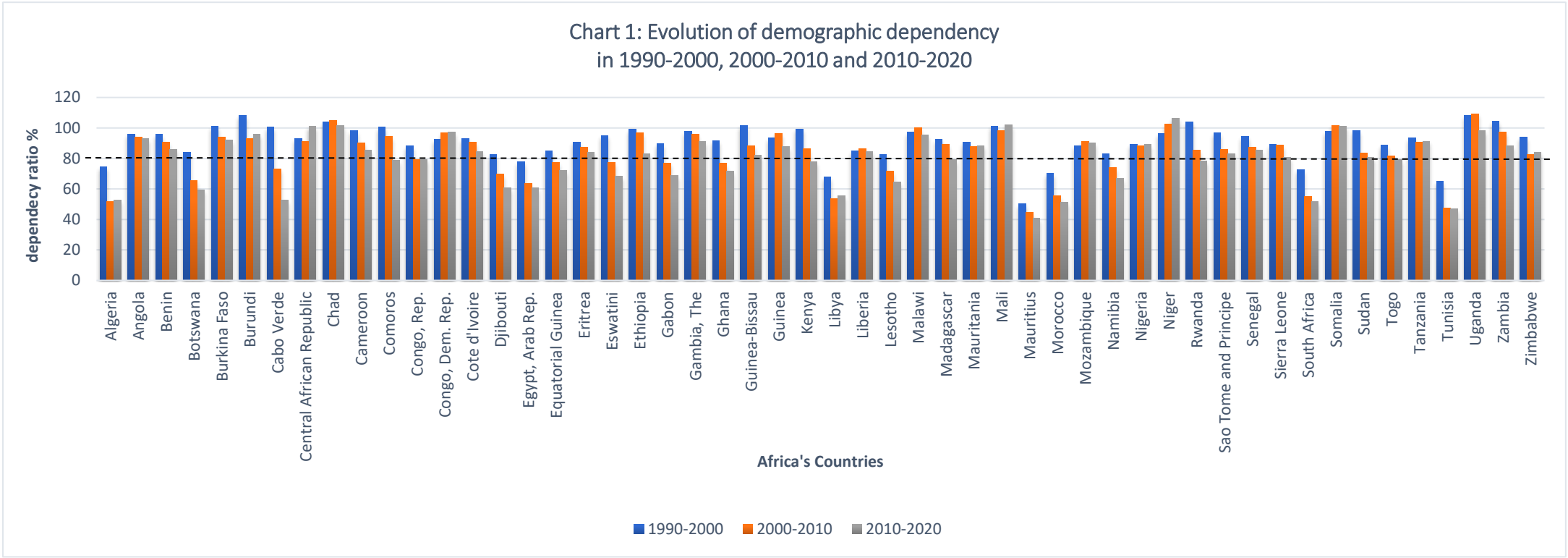


Chart 1: Evolution of demographic dependency
in 1990-2000, 2000-2010 and 2010-2020
dependecy ratio %
120
100
80
60
40
20
0
Algeria
Angola
Benin
Botswana
Burkina Faso
Burundi
Cabo Verde
Central African Republic
Chad
Cameroon
Comoros
Congo, Rep.
Congo, Dem. Rep.
Cote d'Ivoire
Djibouti
Egypt, Arab Rep.
Equatorial Guinea
Eritrea
Eswatini
Ethiopia
Gabon
Gambia, The
Ghana
Guinea-Bissau
Guinea
Kenya
Libya
Liberia
Lesotho
Malawi
Madagascar
Mauritania
Mali
Mauritius
Morocco
Mozambique
Namibia
Nigeria
Niger
Rwanda
Sao Tome and Principe
Senegal
Sierra Leone
South Africa
Somalia
Sudan
Togo
Tanzania
Tunisia
Uganda
Zambia
Zimbabwe
Africa's Countries
1990-2000
2000-2010
2010-2020

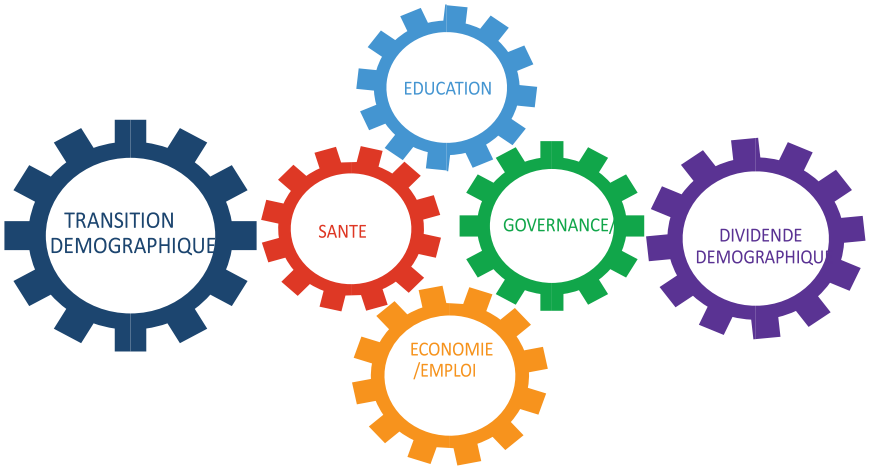
Indeed, women play a major role in Africa's agricultural economy, constituting almost two-thirds of the agricultural workforce and producing most of the Africa's food. In some countries such as Burkina Faso or Rwanda, the agricultural workforce is mainly female with peaks exceeding 90% of the total agricultural population. However, this preponderance of women does not translate into better treatment for them. Indeed, many of them are underpaid, lack access to finance and above all do not have the right to land ownership " *women represent 75% of the workforce in coffee production but receive only 34% of income* ". Overall, women have very little access to essential inputs such as land, credit, fertilizers, new technologies and extension services (AFDB 2015, UN-Women 2023). For this reason, their yields tend to be significantly lower than those of men. In Ethiopia, for example, women have 26% lower production than their male counterparts, and in Ghana, 17%. Outside agriculture, female labor force participation rates are high throughout Africa, except for North Africa. They reach 85-90% in countries such as Burundi, Tanzania, and Rwanda. In many countries (Nigeria, Togo, Burundi), the participation rates of men and women are equal or very close. However, African labor markets are marked by severe gender segregation, with women generally working in low-paid occupations. Women are much more likely to work as self-employed entrepreneurs in the informal sector than to earn a regular salary in a formal job. In the formal sector, women hold 4 out of 10 jobs and earn on average two-thirds of the salary of their male colleagues. Only 15 African countries currently have laws prohibiting gender discrimination in the recruitment of employees (AFDB 2015, UN-Women 2023).

**Theory of demographic Dividend and female labor participation.**

In 2003, Bloom, Canning and Sevilla made the case that countries with comparatively high birth rates faced barriers to development because, both at the national and household levels, earnings from the working-age population were used to support the large number of dependents, rather than being saved or invested in ways that would boost economic growth. However, they argued, as countries undergo their demographic transitions, fertility decline would create a "window of opportunity" where the share of the working-age population (ages 15 to 64) would be larger than the non-working-age share of the population (ages 0 to 14 and 65 and older). A country with a large and productive working-age population and a low dependency or support ratio (i.e., it has few elderly or young dependents), would be better positioned to spur economic growth and raise living standards. According to Bloom et al. (2017), the change in age structure results in a rise in per capita savings and is referred to as an accounting effect, or a "mechanical" dividend. They also specify the possibility of a behavioral effect, which includes a rise in female labor participation and larger spending in schooling per child (Bloom et al., 2017, Zhuang Han and al 2023). La condition de capture du Dividende Démographique et de bénéfice de la fenêtre d'opportunité

requiert que toute la population active (ou en âge de travailler), quel que soit le sexe, travaillent effectivement. Sachant la population active féminin est de 46% de la population active totale d'Afrique subsaharienne. Dans ce cadre, la capture du DD ne s'aurait se dissocier de la force de travail féminine (Alary and Lafaya 2013, CEPII 2020), elle s'intègre dans les 3 autres roues de fonctionnement du Dividende démographique que sont (la mise en œuvre de politique adéquate, de l'éducation et de la sante (Gribble & Bremmer 2012)).

**Figure 1: Demographic Dividend Wheel**




**Source** : Gribble et Bremner, 2012

DATA & METHODS.

**Data.** For the circumstance where an analyst does not have current and historical, detailed, age-specific data on economic behavior, s/he can instead turn to national statistics on age structure, the productivity of the labor force, and employment, which are typically available for each country and have data stretching back for several decades. The data for this analysis comes from the World Bank Development Indicator database– a compilation of reliable and high-quality comparable statistics for more than 1,400 development indicators, covering 217 economies and extending back more than 30 years (WDI, World Bank data base).

Specifically, we extracted decennial country-level data, from 1970-2020 on population size, TFR, labor force participation rate, age structure, and gross national income (GNI). For comparative purposes, researchers typically use GNI indicators that are converted to U.S. dollars-- these can be estimated through the Atlas or Purchasing Power Parity (PPP) methods, to address changing exchange rates. The Atlas method facilitates comparison by converting to US dollars using the exchange rates over three years, while the PPP method attempts to estimate equal purchasing power among countries. However, there is no clear rule as to whether one should use the Atlas

method vs PPP. For this project, we chose to use the Atlas method, as the data was more widely available. While most countries had data from 1990-2020, a handful did not, and were therefore excluded from select decades. This leaves 52 African's countries to our dataset (Zhuang Han and al 2023).

**Methods.** The decomposition approach here allows us to look individually at each country and show, using an accounting perspective, how the change in the country's GNI trends reflects changes in productivity, employment, and age dependency. This accounting uses a mathematical transformation that expresses GNI per capita as a product of four conceptually meaningful factors, as follows: GNI per capita = (Productivity)*(Employment)*(Labor Force Participation) *(Age Structure) The is obtained by successively expressing the GNI per capita as:

GNI/P=GNI/A *A/P=GNI/L *L/A*A/P=GNI/E *E/L *L/A*A/P (1)

Where GNI is the Gross National Income; E is the population employed out of the total labor force (L); A is the working age population, and P is the total population.

Any historical change in GNI can thus be traced to changes in these four components. A decomposition analysis thus helps identify and compare which of these components made the largest contribution to economic growth.

If rewrite equation 1 as y = pqrs we have that were barred values represent averages, and Δ marks a change between two time periods. For instance, when studying change in x between 1980 and 1990, $\bar{x}$ = (x1980) + x1990))/2 and Δx =x1990-x198

In the expression y is the GNI per capita (y=GNI/P), p is productivity or GNI per person employed (GNI/E), q is employment rate (E/L), or is labor force participation (L/A), and s is age structure (A/P). (Zhuang Han and al 2023).

The final term in Eq. 1 is the mechanical influence of age structure. The other components represent changes in theoretically important growth factors, including physical capital per person, human capital, rate of employment, and total factor productivity. Importantly, dividend theory expects national changes in age structure to affect these drivers through savings and investment in economic development.

We use the decomposition methods above to estimate the size of each country's dividends. We then use these results in an Ordinary Least Squares (OLS) regression model to better understand the contextual factors shaping the magnitude of dividends across place and time (Zhuang Han and al 2023).

RESULTS

## Dividend Share

The change in the age structure of the population reflects the contribution of the Demographic Dividend to the evolution of per capita income. Thus, over the last 3 decades, Africa has experienced a relative contribution of SD to the evolution of per capita income (see annex). Between 1990 and 2000, the Demographic Dividend contributed negatively (-0.14%) to Africa's overall per capita income growth. Within this group, some countries make a greater contribution than others. 28 of the 52 countries have a negative contribution: Algeria, Angola, Burkina Faso, Cameroon, Central African Republic, Comoros, Congo, Rep, Côte d'Ivoire, Djibouti, Eritrea, Gabon, Gambia, The, Ghana, Guinea-Bissau, Liberia, Libya, Madagascar, Mali, Mauritania, Nigeria, Rwanda, Senegal, Sierra Leone, Sudan, Togo, Zambia, Zimbabwe. Overall, these results show that African countries have not captured the Demographic Dividend during this decade and are still plagued by a dependent population structure. In the same decade, the overall change in per capita income for the region is $48.57.

Between 2000 and 2010, the overall contribution of the Demographic Dividend in the continent improved significantly to 5.27% of per capita income. Overall, fewer, and fewer countries are making a negative contribution from the Demographic Dividend. The 10 countries that still have a negative Demographic Dividend are: Central African Republic, Congo, Dem. Rep, Ivory Coast, Liberia, Mali, Mozambique, Niger, Nigeria, Somalia, Zambia.

Between 2010 and 2020, Africa has a demographic dividend contribution of 15.89%, which shows more effort on family planning and low fertility, but with a slight increase in the number of countries that show a negative demographic dividend.

The analysis of these three decades shows a clear increase in the contribution of the demographic dividend to the increase in per capita income. These results also show a decline in increasing fertility between 1990 and 2020. Moreover, the share of women's labor force participation is almost constant and is around 28% between the three decades. The same applies to the share of women who are not employed, which is around 10.8%.

These results show that African countries have significantly improved the health conditions of their populations and integrated the practice of family planning into their government policies, with the Cairo ICPD 1994, fertility decline became a concern for African countries (Alesina et al. 1996; Porteous 2003). These decisions have considerably contributed to the demographic transition of African countries, and the reduction of demographic dependence (Garenne 2017).

**Drivers of GNI per population**

The change in per capita income is determined by certain growth factors. Whether it is those of the decomposition of the change in per capita income, or those of profit of the window of opportunity. In this context, Table 1 shows that the age structure (the Demographic Dividend), the ten-year period, productivity and employment contribute considerably to the increase in per capita income of the respective values of $ 1.80, $ 717; $2.45 and $8.13. The increase in the labor force is quite small ($0.25) and is almost not significant. On the other hand, the participation of women's labor force contributes to the decline in the per capita income of the population by $77.85, while the "no" vote employs women increase the per capita income of the population by $102.09.

**Table 1: regression of GNI per Population**

| GNI per Population | Coefficient | Std. Err. | t | P >\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| **Age structure (DD)** | 1.802032 | 3.312694 | 0.54 | 0.587 | -4.743187 | 8.34725 |
| **Period** | 717.5506 | 395.2351 | 1.82 | 0.071 | -63.35442 | 1498.456 |
| **Productivity** | 2.452673 | 5.692967 | 0.43 | 0.667 | -8.795485 | 13.70083 |
| **Employment** | 8.133697 | 9.594061 | 0.85 | 0.398 | -10.82224 | 27.08963 |
| **Labor force participation** | .0255869 | 1.717615 | 0.01 | 0.988 | -3.368075 | 3.419248 |
| **Labor Force participation female** | -77.85148 | 44.86566 | -1.74 | 0.085 | -166.497 | 10.79403 |
| **Unemployment female** | 102.0925 | 47.38257 | 2.15 | 0.033 | 8.47407 | 195.7109 |
| **_cons** | 1425.1 | 1959.176 | 0.73 | 0.468 | -2445.838 | 5296.038 |

***F(7, 151)*** = *3.98* ***Prob > F*** = *0.0005* ***R-squared*** = *0.1558* ***Root MSE*** = *4017.7*

These results present the participation of women's labor force as an obstacle to the increase in per capita income in the African context. But far be it from saying that an additional increase in labor is harmful (Beckerien's disguised unemployment thesis) or that an additional unit of labor becomes harmful to overall production. It is in cultural factors that we must see this effect. Indeed, the African context of women's work (global refusal of the presence of women in certain workplaces, refusal that women work in the same position as men or next to men, inferiority complex attributes to women, injustice within professional circles, sexism within professional circles ... It is more about the social reflections of the structure of the labor market in the global African context and an expression of the social stigmatization of women's labor force, which is becoming rather a brake on global development. A sectoral analysis could help to better identify the areas that stigmatize women's work and create more obstacles to overall productivity. Solutions to such a social scourge can be provided through education, promotion of behavioral change and cultural apprehension within formal and informal professional environments (Becker 1975, Mingat 1992, Collins, 1979).

## CONCLUSION

The analysis of the Demographic Dividend presents an important place of women's labor force in the African context. The ongoing demographic transitions make it possible to obtain an age structure of the population with a low demographic dependency ratio. Knowing that the benefit of the window of opportunity of the Demographic Dividend requires the use of all labor forces and that the participation of women's labor force rather creates a troubling effect in increasing per capita income due to the reality of the local labor market, governments must take steps to better capitalize on this potential force. A more enabling environment should be created to reverse the trend of the impact of women's labor force within African society.

| Contries | productivity | employ -ment | LF parti- cipation | age structure | Period | Gini per pop | Decenal Change Gini | average Labor force participation, female (% total population 15-65) | average Unemployment, female (% of female labor force) (modeled ILO estimate) |
|---|---|---|---|---|---|---|---|---|---|
| **AFRICA** | **92.32** | **3.16** | **4.62** | **-0.14** | **1990-2000** | **1286.228** | **48.577** | **28.14869057** | **10.53317885** |
| Algeria | 101.85 | 31.17 | 2.70 | -36.64 | 1990-2000 | 1980.305 | ***-772.262*** | 6.009650354 | 25.7134 |
| Angola | 100.20 | -0.25 | 0.77 | -0.72 | 1990-2000 | 568.620 | ***-417.179*** | 39.16243455 | 3.6046 |
| Benin | 91.02 | 2.42 | -1.91 | 8.46 | 1990-2000 | 422.564 | ***111.904*** | 31.10607575 | 0.5229 |
| Botswana | 68.05 | -15.85 | -27.88 | 75.49 | 1990-2000 | 2949.326 | ***450.679*** | 25.97352267 | 21.2783 |
| Burkina Faso | 74.22 | 0.15 | 35.38 | -9.80 | 1990-2000 | 300.924 | ***-61.585*** | 40.07440804 | 2.7011 |
| Burundi | 75.07 | 0.17 | 16.62 | 8.27 | 1990-2000 | 176.500 | ***-83.566*** | 45.31124348 | 2.3383 |
| Cabo Verde | 94.38 | 0.74 | -5.64 | 10.47 | 1990-2000 | 1151.852 | ***507.943*** | 24.44489098 | 11.9927 |
| Cameroon | 105.36 | 0.32 | 4.20 | -9.91 | 1990-2000 | 833.730 | ***-265.263*** | 31.71016108 | 5.9121 |
| Central African Republic | 101.96 | -0.01 | 0.97 | -2.92 | 1990-2000 | 369.341 | ***-222.995*** | 32.19389337 | 0.3324 |
| Chad | 94.80 | 0.34 | -0.54 | 5.39 | 1990-2000 | 223.603 | ***-86.488*** | 39.86870608 | 6.5281 |
| Comoros | 112.87 | -1.51 | 2.22 | -13.58 | 1990-2000 | 852.476 | ***-252.128*** | 16.60783503 | 5.3267 |
| Congo, Dem. Rep. | 101.65 | -0.09 | -3.97 | 2.41 | 1990-2000 | 162.603 | ***-55.506*** | 34.38238336 | 21.4556 |
| Congo, Rep. | 110.02 | -0.45 | 0.72 | -10.30 | 1990-2000 | 746.117 | ***-361.542*** | 36.66690204 | 2.4819 |
| Cote d'Ivoire | 105.13 | -12.32 | 21.36 | -14.23 | 1990-2000 | 713.569 | ***-124.670*** | 23.99484997 | 5.2345 |
| Djibouti | 136.24 | -7.32 | 5.53 | -34.44 | 1990-2000 | 308.737 | ***-60.042*** | 7.972750894 | 37.9443 |
| Egypt, Arab Rep. | 90.24 | 0.72 | -1.34 | 10.36 | 1990-2000 | 1085.612 | ***659.825*** | 11.5213733 | 20.6481 |
| Equatorial Guinea | 96.75 | -0.36 | -1.80 | 5.36 | 1990-2000 | 516.537 | ***507.066*** | 25.95795144 | 8.4147 |
| Eritrea | 144.30 | -4.48 | -16.04 | -23.71 | 1990-2000 | 284.792 | ***37.699*** | 37.8690911 | 5.9543 |
| Eswatini | 84.14 | -12.50 | -12.60 | 40.75 | 1990-2000 | 1482.221 | ***376.079*** | 24.4576504 | 24.7659 |
| Ethiopia | 103.92 | 0.64 | -4.87 | 0.30 | 1990-2000 | 190.902 | ***-131.661*** | 35.12476459 | 3.9351 |
| Gabon | 106.59 | -1.22 | -0.37 | -4.99 | 1990-2000 | 3958.392 | ***-1723.791*** | 20.39108622 | 17.6804 |
| Gambia, The | 107.55 | -0.40 | 2.54 | -9.74 | 1990-2000 | 464.639 | ***317.362*** | 24.10970246 | 10.7429 |
| Ghana | 73.19 | 45.14 | 0.48 | -18.90 | 1990-2000 | 365.667 | ***-60.587*** | 38.9162268 | 7.546 |
| Guinea | -209.56 | 10.92 | 17.39 | 281.25 | 1990-2000 | 405.438 | ***-3.890*** | 25.95058873 | 2.8794 |
| Guinea-Bissau | 117.28 | 0.92 | 24.64 | -42.86 | 1990-2000 | 216.915 | ***-14.580*** | 33.90102819 | 3.6766 |
| Kenya | 54.04 | 1.00 | -35.71 | 80.59 | 1990-2000 | 392.466 | ***39.282*** | 36.07099888 | 3.4549 |
| Lesotho | -35.26 | 15.55 | -35.61 | 155.32 | 1990-2000 | 564.585 | ***37.309*** | 14.37206621 | 26.8546 |
| Liberia | 108.47 | -0.52 | 5.43 | -13.42 | 1990-2000 | 290.577 | ***-84.158*** | 37.33984689 | 2.326 |

| Contries | productivity | employ -ment | LF parti- cipation | age structure | Period | Gini per pop | Decenal Change Gini | average Labor force participation, female (% total population 15-65) | average Unemployment, female (% of female labor force) (modeled ILO estimate) |
|---|---|---|---|---|---|---|---|---|---|
| Libya | 191.29 | -1.17 | -23.85 | -65.72 | 1990-2000 | 5917.612 | ***-1120.381*** | 34.85548201 | 18.7195 |
| Madagascar | 100.85 | 12.47 | -0.63 | -12.69 | 1990-2000 | 297.392 | ***-21.322*** | 40.82525781 | 5.6157 |
| Malawi | 82.65 | 1.21 | -0.25 | 16.39 | 1990-2000 | 170.070 | ***-26.314*** | 42.75336264 | 5.5422 |
| Mali | 21.36 | 143.97 | 24.48 | -89.82 | 1990-2000 | 285.982 | ***-4.382*** | 13.71449644 | 12.4427 |
| Mauritania | 326.95 | -17.72 | 208.86 | -418.13 | 1990-2000 | 727.160 | ***-3.871*** | 31.1156833 | 1.3308 |
| Mauritius | 93.16 | 1.08 | 0.03 | 5.73 | 1990-2000 | 3165.648 | ***1473.891*** | 20.78525906 | 13.0906 |
| Morocco | 52.13 | -6.09 | 9.67 | 44.29 | 1990-2000 | 1285.245 | ***237.293*** | 12.66721136 | 13.2636 |
| Mozambique | 84.59 | -0.47 | 0.64 | 15.24 | 1990-2000 | 276.681 | ***85.783*** | 45.40224755 | 1.6825 |
| Namibia | 91.65 | -12.19 | -19.58 | 40.06 | 1990-2000 | 2118.947 | ***251.328*** | 25.52635704 | 22.1688 |
| Niger | 100.27 | 0.35 | -0.74 | 0.13 | 1990-2000 | 280.030 | ***-112.319*** | 28.23248362 | 3.9863 |
| Nigeria | 105.73 | -0.99 | 10.68 | -15.44 | 1990-2000 | 511.350 | ***-89.985*** | 35.22292454 | 1.054 |
| Rwanda | 103.88 | 2.13 | 24.95 | -31.18 | 1990-2000 | 311.673 | ***-71.665*** | 28.34902683 | 12.7511 |
| Sao Tome and Principe | 92.07 | -0.03 | -5.23 | 13.05 | 1990-2000 | 438.769 | ***299.537*** | 20.01413118 | 17.7661 |
| Senegal | 99.05 | 0.11 | 12.25 | -11.49 | 1990-2000 | 794.318 | ***-256.944*** | 17.23394265 | 7.4954 |
| Sierra Leone | 99.17 | -0.13 | 1.43 | -0.47 | 1990-2000 | 164.743 | ***-41.965*** | 34.23743886 | 2.5588 |
| Somalia | 80.49 | -0.45 | 6.38 | 13.62 | 1990-2000 | 111.465 | ***-42.593*** | 28.55407925 | 22.9959 |
| South Africa | 51.11 | 0.64 | -9.81 | 58.02 | 1990-2000 | 22880.355 | ***3823.213*** | 11.28727738 | 23.6014 |
| Sudan | 107.70 | -0.46 | -3.50 | -3.67 | 1990-2000 | 707.389 | ***-584.077*** | 14.06581801 | 19.7833 |
| Tanzania | 97.22 | 0.80 | -0.75 | 2.72 | 1990-2000 | 292.896 | ***202.059*** | 27.96281736 | 3.9597 |
| Togo | 112.66 | 1.27 | 7.34 | -21.34 | 1990-2000 | 355.165 | ***-93.020*** | 43.93377248 | 3.7419 |
| Tunisia | 80.78 | 1.79 | -2.83 | 20.24 | 1990-2000 | 1843.738 | ***861.043*** | 12.42457945 | 17.2589 |
| Uganda | 75.96 | 11.65 | -2.85 | 15.26 | 1990-2000 | 297.712 | ***-54.334*** | 33.19918255 | 4.2071 |
| Zambia | 132.14 | -27.72 | 3.26 | -7.63 | 1990-2000 | 384.282 | ***-99.004*** | 27.37624225 | 16.506 |
| Zimbabwe | 103.23 | 1.56 | 7.55 | -12.48 | 1990-2000 | 689.428 | ***-349.216*** | 32.53075335 | 3.9572 |
| **AFRICA** | **94.84** | **0.96** | **-1.06** | **5.27** | **2000-2010** | **2035.244** | **1472** | **28.11689514** | **10.84125192** |
| Algeria | 68.06 | 24.90 | -1.94 | 9.53 | 2000-2010 | 3034.211 | ***2880*** | 6.917352362 | 20.496 |
| Angola | 103.43 | -3.71 | -0.18 | 0.45 | 2000-2010 | 1788.153 | ***2856*** | 39.21524758 | 3.8494 |
| Benin | 99.14 | -0.25 | -2.16 | 3.25 | 2000-2010 | 780.2754 | ***604*** | 34.56919317 | 0.7482 |
| Botswana | 87.41 | -4.31 | 6.05 | 10.84 | 2000-2010 | 4390.787 | ***2432*** | 27.86366112 | 22.0646 |
| Burkina Faso | 111.68 | -1.31 | -12.42 | 2.01 | 2000-2010 | 459.0379 | ***378*** | 32.58117021 | 3.8202 |

| Contries | productivity | employ -ment | LF parti- cipation | age structure | Period | Gini per pop | Decenal Change Gini | average Labor force participation, female (% total population 15-65) | average Unemployment, female (% of female labor force) (modeled ILO estimate) |
|---|---|---|---|---|---|---|---|---|---|
| Burundi | 90.77 | -0.04 | -13.00 | 21.98 | 2000-2010 | 176.591 | ***84*** | 42.25520519 | 1.9405 |
| Cabo Verde | 78.71 | 0.42 | -0.29 | 21.16 | 2000-2010 | 2400.888 | ***1990*** | 25.52910384 | 11.4561 |
| Cameroon | 101.46 | 5.51 | -12.04 | 4.85 | 2000-2010 | 1052.118 | ***702*** | 31.97779231 | 6.1461 |
| Central African Republic | 100.64 | -0.09 | 0.25 | -0.79 | 2000-2010 | 382.4831 | ***249*** | 28.70372304 | 0.5075 |
| Chad | 100.42 | -0.12 | -0.94 | 0.63 | 2000-2010 | 544.8373 | ***729*** | 39.056348 | 4.9025 |
| Comoros | 87.71 | -3.44 | 6.89 | 8.85 | 2000-2010 | 1053.384 | ***654*** | 17.27291715 | 6.077 |
| Congo, Dem. Rep. | 112.79 | -1.43 | -9.70 | -1.55 | 2000-2010 | 225.6456 | ***182*** | 34.19331861 | 21.2194 |
| Congo, Rep. | 97.63 | -0.16 | 1.55 | 0.98 | 2000-2010 | 1659.819 | ***2189*** | 35.64390823 | 2.5334 |
| Cote d'Ivoire | 119.54 | -3.91 | -15.43 | -0.06 | 2000-2010 | 939.0583 | ***576*** | 25.75489808 | 6.0208 |
| Djibouti | 90.70 | 1.31 | -1.07 | 9.06 | 2000-2010 | 853.4787 | ***1150*** | 8.602699043 | 37.1608 |
| Egypt, Arab Rep. | 73.43 | 0.48 | 11.89 | 14.38 | 2000-2010 | 1893.655 | ***956*** | 11.07666703 | 22.5154 |
| Equatorial Guinea | 95.12 | -0.23 | 2.30 | 2.89 | 2000-2010 | 5372.218 | ***9204*** | 24.79749458 | 9.1608 |
| Eritrea | 80.50 | 0.78 | -3.03 | 21.69 | 2000-2010 | 409.2405 | ***211*** | 38.32184669 | 6.4566 |
| Eswatini | 97.25 | -4.17 | 1.74 | 5.12 | 2000-2010 | 2566.503 | ***1792*** | 25.04326998 | 29.6849 |
| Ethiopia | 94.56 | 1.19 | 1.73 | 2.57 | 2000-2010 | 252.2191 | ***254*** | 37.92124658 | 3.523 |
| Gabon | 90.07 | -4.36 | 4.74 | 9.49 | 2000-2010 | 5475.047 | ***4757*** | 20.21719767 | 24.3294 |
| Gambia, The | 87.72 | -0.86 | 3.01 | 10.14 | 2000-2010 | 756.2492 | ***266*** | 25.63604763 | 11.9031 |
| Ghana | 95.49 | 4.74 | -5.30 | 4.89 | 2000-2010 | 785.6817 | ***901*** | 36.09495851 | 6.5393 |
| Guinea | 101.63 | -0.44 | -3.63 | 2.43 | 2000-2010 | 546.9626 | ***287*** | 25.68475434 | 2.8105 |
| Guinea-Bissau | 95.81 | 0.19 | -0.93 | 4.92 | 2000-2010 | 397.221 | ***375*** | 31.80266342 | 3.8474 |
| Kenya | 96.09 | 0.25 | -1.56 | 5.21 | 2000-2010 | 666.9684 | ***510*** | 35.98995185 | 3.2026 |
| Lesotho | 82.60 | 16.10 | -9.22 | 10.32 | 2000-2010 | 927.9366 | ***689*** | 17.11631657 | 25.6817 |
| Liberia | 98.45 | -0.33 | 2.54 | -0.67 | 2000-2010 | 353.0439 | ***209*** | 37.53867269 | 2.2929 |
| Libya | 79.84 | 0.64 | 10.64 | 9.15 | 2000-2010 | 8792.977 | ***6871*** | 33.03521212 | 18.8274 |
| Madagascar | 84.33 | 3.28 | 5.63 | 6.83 | 2000-2010 | 378.9638 | ***184*** | 39.56628959 | 5.7434 |
| Malawi | 98.68 | -0.12 | 1.04 | 0.40 | 2000-2010 | 303.4819 | ***293*** | 42.81696646 | 4.9298 |
| Mali | 102.35 | -3.13 | 1.64 | -0.87 | 2000-2010 | 489.9301 | ***412*** | 14.52649458 | 12.4375 |
| Mauritania | 107.14 | -0.02 | -13.54 | 6.21 | 2000-2010 | 1113.761 | ***777*** | 30.74907489 | 1.3114 |
| Mauritius | 92.58 | 2.39 | 0.27 | 4.79 | 2000-2010 | 5990.027 | ***4175*** | 22.09520391 | 13.3611 |
| Morocco | 83.43 | 6.99 | 0.82 | 8.92 | 2000-2010 | 2190.578 | ***1573*** | 13.5039379 | 10.8643 |

| Contries | productivity | employ -ment | LF parti- cipation | age structure | Period | Gini per pop | Decenal Change Gini | average Labor force participation, female (% total population 15-65) | average Unemployment, female (% of female labor force) (modeled ILO estimate) |
|---|---|---|---|---|---|---|---|---|---|
| Mozambique | 111.61 | -0.78 | -7.12 | -3.67 | 2000-2010 | 420.4514 | ***202*** | 43.65133883 | 2.5213 |
| Namibia | 86.19 | -3.47 | 7.56 | 9.74 | 2000-2010 | 3371.665 | ***2254*** | 26.59446661 | 24.3407 |
| Niger | 103.15 | 0.91 | 0.72 | -4.80 | 2000-2010 | 370.3594 | ***293*** | 28.33602172 | 3.7652 |
| Nigeria | 100.49 | 0.14 | -0.12 | -0.51 | 2000-2010 | 1307.579 | ***1682*** | 34.61812414 | 1.6726 |
| Rwanda | 94.21 | -0.39 | -3.50 | 9.59 | 2000-2010 | 439.6945 | ***328*** | 29.47617876 | 12.7131 |
| Sao Tome and Principe | 87.15 | -0.38 | 9.56 | 3.72 | 2000-2010 | 859.0406 | ***541*** | 20.05451941 | 25.0382 |
| Senegal | 113.27 | -7.64 | -9.13 | 3.54 | 2000-2010 | 999.8197 | ***668*** | 17.88380979 | 11.6142 |
| Sierra Leone | 104.56 | -0.78 | -6.46 | 2.61 | 2000-2010 | 281.325 | ***275*** | 33.33282703 | 2.6382 |
| Somalia | 105.41 | 0.10 | -3.58 | -1.89 | 2000-2010 | 202.8408 | ***225*** | 28.89127972 | 22.3355 |
| South Africa | 79.29 | 17.91 | -12.92 | 15.60 | 2000-2010 | 30928.68 | ***12273*** | 10.78800691 | 23.972 |
| Sudan | 101.26 | 0.03 | -2.20 | 0.90 | 2000-2010 | 1110.102 | ***1390*** | 14.66150451 | 20.5847 |
| Tanzania | 101.23 | 0.14 | -1.37 | 0.00 | 2000-2010 | 548.8157 | ***310*** | 28.18484809 | 3.6332 |
| Togo | 90.09 | 2.77 | 5.29 | 1.89 | 2000-2010 | 433.9915 | ***251*** | 44.53196691 | 3.5652 |
| Tunisia | 81.94 | 3.69 | 0.77 | 13.70 | 2000-2010 | 3234.505 | ***1920*** | 13.20720411 | 16.2791 |
| Uganda | 97.36 | -0.68 | 0.96 | 2.35 | 2000-2010 | 473.4832 | ***406*** | 33.80060103 | 3.6673 |
| Zambia | 103.63 | -0.25 | -2.42 | -0.93 | 2000-2010 | 839.0678 | ***1009*** | 26.81511159 | 12.0357 |
| Zimbabwe | 83.63 | 1.65 | 12.53 | 2.21 | 2000-2010 | 607.8329 | ***186*** | 33.57993337 | 5.0039 |
| **AFRICA** | **135.43** | **-25.18** | **-26.17** | **15.89** | **2010-2020** | **2703.194** | **-137** | **27.40421762** | **10.84818077** |
| Algeria | 64.44 | 12.98 | -10.22 | 32.78 | 2010-2020 | 4022.678 | ***-903*** | 8.467075761 | 17.7772 |
| Angola | 105.08 | -2.09 | -0.20 | -2.78 | 2010-2020 | 2495.947 | ***-1441*** | 38.70157183 | 8.9467 |
| Benin | 84.66 | -3.31 | -2.01 | 20.65 | 2010-2020 | 1180.244 | ***196*** | 31.48722769 | 2.206 |
| Botswana | 42.53 | -61.04 | 114.14 | 4.03 | 2010-2020 | 6055.463 | ***897*** | 29.74077101 | 21.904 |
| Burkina Faso | 117.78 | -7.44 | -31.22 | 20.78 | 2010-2020 | 710.3365 | ***125*** | 30.10981204 | 4.4732 |
| Burundi | 99.82 | -1.86 | 13.67 | -11.64 | 2010-2020 | 224.5433 | ***12*** | 41.5002124 | 1.0512 |
| Cabo Verde | 142.86 | 50.82 | -23.31 | -70.57 | 2010-2020 | 3226.908 | ***-338*** | 26.94944429 | 12.1886 |
| Cameroon | 54.05 | 3.55 | 2.11 | 40.29 | 2010-2020 | 1461.672 | ***117*** | 32.03155592 | 6.536 |
| Central African Republic | 1030.91 | -921.47 | -1751.57 | 1742.12 | 2010-2020 | 507.3253 | ***0*** | 25.34198465 | 0.7454 |
| Chad | 107.23 | 2.21 | 3.70 | -13.19 | 2010-2020 | 771.7332 | ***-275*** | 34.32802105 | 4.2413 |
| Comoros | -150.76 | -130.72 | 225.59 | 155.84 | 2010-2020 | 1395.045 | ***29*** | 17.10242511 | 10.1486 |
| Congo, Dem. Rep. | 108.86 | -2.39 | -7.59 | 1.13 | 2010-2020 | 436.6996 | ***241*** | 33.9762481 | 21.8864 |

| Contries | productivity | employ -ment | LF parti- cipation | age structure | Period | Gini per pop | Decenal Change Gini | average Labor force participation, female (% total population 15-65) | average Unemployment, female (% of female labor force) (modeled ILO estimate) |
|---|---|---|---|---|---|---|---|---|---|
| Congo, Rep. | 91.45 | 8.58 | 0.52 | -0.54 | 2010-2020 | 2284.849 | ***-939*** | 32.06425404 | 3.7112 |
| Cote d'Ivoire | 103.08 | 5.85 | -15.56 | 6.34 | 2010-2020 | 1753.353 | ***1053*** | 27.77176968 | 4.3307 |
| Djibouti | 96.99 | -2.49 | -0.23 | 5.69 | 2010-2020 | 2273.402 | ***1690*** | 9.43839497 | 36.2749 |
| Egypt, Arab Rep. | 150.64 | -1.90 | -35.38 | -13.14 | 2010-2020 | 2688.075 | ***633*** | 10.93281446 | 22.5766 |
| Equatorial Guinea | 104.72 | 2.26 | 0.09 | -7.09 | 2010-2020 | 7888.609 | ***-4172*** | 23.99574464 | 9.38 |
| Eritrea | 102.16 | -3.32 | 2.95 | -1.81 | 2010-2020 | 836.817 | ***644*** | 37.9107773 | 6.6962 |
| Eswatini | 541.63 | -59.29 | -176.75 | -204.98 | 2010-2020 | 3427.723 | ***-70*** | 24.83335552 | 25.8562 |
| Ethiopia | 92.88 | -1.15 | -2.60 | 10.76 | 2010-2020 | 636.1012 | ***513*** | 38.30449078 | 3.6661 |
| Gabon | 150.78 | 18.12 | -57.71 | -11.24 | 2010-2020 | 7441.665 | ***-824*** | 19.85275154 | 28.6976 |
| Gambia, The | 109.94 | 10.71 | -6.68 | -13.98 | 2010-2020 | 816.1023 | ***-146*** | 27.91539569 | 7.5968 |
| Ghana | 98.19 | 1.26 | -4.67 | 5.17 | 2010-2020 | 1774.358 | ***1077*** | 33.86248256 | 4.1093 |
| Guinea | 93.59 | -4.27 | -7.96 | 18.54 | 2010-2020 | 826.7351 | ***273*** | 25.51450039 | 2.7614 |
| Guinea-Bissau | 92.91 | -2.67 | 2.52 | 7.24 | 2010-2020 | 673.0892 | ***177*** | 24.9124998 | 4.7773 |
| Kenya | 85.90 | -4.58 | 7.43 | 11.24 | 2010-2020 | 1378.446 | ***913*** | 36.20529126 | 3.7263 |
| Lesotho | 245.81 | -68.43 | 0.87 | -78.09 | 2010-2020 | 1241.838 | ***-62*** | 17.95099754 | 25.4904 |
| Liberia | 86.93 | -6.50 | 1.62 | 17.91 | 2010-2020 | 529.6341 | ***144*** | 37.24756022 | 2.2344 |
| Libya | 105.86 | 2.21 | -6.04 | -2.04 | 2010-2020 | 9983.967 | ***-4489*** | 30.09871468 | 19.1454 |
| Madagascar | 888.93 | -363.52 | 699.21 | -1124.98 | 2010-2020 | 469.988 | ***-2*** | 34.40171821 | 5.9102 |
| Malawi | 83.18 | -3.29 | -4.33 | 24.39 | 2010-2020 | 517.8035 | ***136*** | 42.31387361 | 1.7606 |
| Mali | 101.09 | 2.27 | -11.70 | 8.33 | 2010-2020 | 764.5605 | ***137*** | 14.41781963 | 12.0262 |
| Mauritania | 104.09 | -14.95 | -14.98 | 25.82 | 2010-2020 | 1585.815 | ***167*** | 29.84550666 | 1.5978 |
| Mauritius | 80.72 | 1.12 | 16.56 | 1.61 | 2010-2020 | 9152.544 | ***2150*** | 25.31389803 | 10.623 |
| Morocco | 438.83 | -86.96 | -265.74 | 14.25 | 2010-2020 | 3023.077 | ***92*** | 12.58777629 | 10.6104 |
| Mozambique | 77.15 | 5.61 | 49.11 | -31.95 | 2010-2020 | 494.2825 | ***-54*** | 40.91332209 | 3.5996 |
| Namibia | -314.41 | 69.83 | 192.19 | 152.28 | 2010-2020 | 4526.647 | ***56*** | 29.66620401 | 20.8221 |
| Niger | 249.47 | 2.55 | -161.42 | 9.31 | 2010-2020 | 533.1724 | ***33*** | 26.05980212 | 4.1785 |
| Nigeria | -56.67 | 90.33 | 80.78 | -14.54 | 2010-2020 | 2075.677 | ***-146*** | 31.79152251 | 0.8522 |
| Rwanda | 95.62 | -1.67 | -4.79 | 10.82 | 2010-2020 | 688.6077 | ***170*** | 28.3896123 | 12.9376 |
| Sao Tome and Principe | 100.05 | -2.25 | -2.86 | 5.02 | 2010-2020 | 1611.969 | ***965*** | 19.81521515 | 20.5679 |
| Senegal | 60.69 | 102.46 | -89.02 | 25.68 | 2010-2020 | 1381.92 | ***96*** | 19.04140252 | 7.2356 |

| Contries | productivity | employ -ment | LF parti- cipation | age structure | Period | Gini per pop | Decenal Change Gini | average Labor force participation, female (% total population 15-65) | average Unemployment, female (% of female labor force) (modeled ILO estimate) |
|---|---|---|---|---|---|---|---|---|---|
| Sierra Leone | 105.62 | -5.53 | -26.41 | 26.19 | 2010-2020 | 464.017 | ***90*** | 28.1526537 | 3.0037 |
| Somalia | 90.35 | -3.23 | 0.55 | 12.32 | 2010-2020 | 369.755 | ***108*** | 28.15183142 | 24.9172 |
| South Africa | 109.45 | 41.05 | -49.62 | -1.13 | 2010-2020 | 34460.65 | ***-5210*** | 10.85385937 | 24.3749 |
| Sudan | 98.10 | 5.60 | 1.55 | -5.39 | 2010-2020 | 1223.52 | ***-1163*** | 14.81989639 | 29.4407 |
| Tanzania | 102.67 | 1.19 | -938.06 | 5.48 | 2010-2020 | 877.7015 | ***348*** | 28.20629153 | 2.1857 |
| Togo | 97.31 | -3.20 | -139.48 | 7.25 | 2010-2020 | 740.3631 | ***362*** | 42.1487039 | 3.23 |
| Tunisia | 75.62 | 17.48 | -759.67 | 14.49 | 2010-2020 | 3749.652 | ***-890*** | 14.62779303 | 23.4072 |
| Uganda | 67.23 | 5.10 | -770.15 | 35.35 | 2010-2020 | 737.4828 | ***122*** | 34.52180606 | 3.8026 |
| Zambia | 126.95 | -2.73 | 1869.66 | -43.01 | 2010-2020 | 1253.21 | ***-180*** | 26.60015195 | 7.7959 |
| Zimbabwe | 99.46 | -0.31 | 177.84 | -0.93 | 2010-2020 | 920.3106 | ***439*** | 33.83051061 | 6.0904 |

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