Scientific Research Publishing

Theoretical Economics Letters, 2026, 16(3), 535-548
https://www.scirp.org/journal/tel
ISSN Online: 2162-2086
ISSN Print: 2162-2078

Empirical Evidence of Lilien Hypothesis from African Countries

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How to cite this paper: Gbagbeu, K. S. (2026). Empirical Evidence of Lilien Hypothesis from African Countries. *Theoretical Economics Letters, 16,* 535-548.
https://doi.org/10.4236/tel.2026.163031

Received: February 13, 2026
Accepted: June 1, 2026
Published: June 4, 2026

Abstract

The aim of this study is to investigate the validity of the sectoral shift hypothesis in African countries for the period 1991-2023. It analyses the long-run relationship between unemployment and sectoral shift of labour for the countries using the panel dynamic ordinary least squared (DOLS) model. It contributes to literature on the Lilien hypothesis for African countries The results conclude to evidence of a trade-off between sectoral shift of employment and unemployment in long run. An implication for economic policies is that we can reduce unemployment rate while working toward shifting employment from low productive sector to the high-productivity sector. Consequently, it is recommended that policymakers implement strategies to expand manufacturing and other high-productivity sectors, to invest in education and skills upgrading aligned with industrial and modern needs, to create more decent work conditions in industrial and service sectors.

Keywords

Unemployment, Sectoral Shift, Panel DOLS, African Countries

1. Introduction

Achieving low level of unemployment rate or high level of structural change have been some important priorities for policymakers. Structural change matter because it affects productivity growth, unemployment and other macroeconomic variables (Campos et al, 2025). Unemployment and structural change have also been a major challenge for scholars in developing countries as well as emerging or in advanced economies. Unemployment can lead to a negative impact on economic and social welfare. Structural change, while dealing with reallocation resources between sectors, esteemed in reducing unemployment rate (Erickson, 2020).

While recommending or implementing economic policies on unemployment or structural change researchers and policymakers need to come out simultaneously with the reduction of persistent unemployment and the shift of labour from low-productivity activities toward high-productivity activities. A complex challenge appears when they must manage unemployment, structural change, inflation, economic growth simultaneously with respect to Phillips (1958), Okun (1962), Kuznets (1973) and Lilien (1982) among others.

The main concern in this paper is to deal with unemployment and sectoral shift. Linking unemployment to sectoral shift has traditionally been and is contemporarily an area of discussion and controversy. The Sectoral Shifts Hypothesis (SSH), introduced by Lilien (1982), quickly became controversial, particularly with Abraham and Katz (1986).

The aim of this study is to investigate the validity of sectoral shift hypothesis in African countries for the period 1991-2023. More objectively, it analyses the long-run relationship between unemployment and sectoral shift of labour for the countries over the time span. This study is a contribution to fill the gap of the related literature for African countries. The relationships established may serve as reference in employment and structural policy.

Our study consists of fourth sections including the introduction. The theoretical framework and the related literature are briefly presented in the following section. The next section consists of the model specification, the variable and data description, the methodology and the empirical results. And in the last section, we provide concluding remarks.

2. Theories and Literature Review

The theoretical framework of this study is the Sectoral Shifts Hypothesis proposed by Lilien (1982). It claims that there is a link between labour reallocation and unemployment. According to this theory, as labour move across sectors the unemployment rate tend to increase. The theory could be extended with insights from Parker (1992), Mills et al. (1995), Groenewold and Hagger (1998). The key insight of these studies is in favour of the validity of the Lilien hypothesis. However, there is a challenge of Lilien framework from Neelin (1987) who finds that exogenous intersectoral shifts do not significantly affect unemployment. Together, these frameworks provide a comprehensive basis for African studies. Indeed, the countries are mainly underdeveloped economies with two sectors: a traditional sector with low productivity, and a modern sector with high productivity. The countries are also overpopulated and characterized by maladaptive labour force to modern sectors and overall high employment rate.

As well as the extension of the theoretical framework, empirical evidence on the relation between sectoral shift and unemployment, even not so large, remains controversial in the literature. Recent research highlight that temporal dynamics is a main source of divergence in evidence. Sakata (2002) found there is significant short-term effects of sectoral shifts on unemployment while in long-term there is

no evidence of relationship between unemployment and sectoral shifts. Similarly, Seo (2020) highlights that changes in industrial structure has a short run positive and significant effect on the level of unemployment. Despite the consensus around the short-term friction, the long-term relationship remains contested. Indeed, Erickson (2020) came out that sectorial employment, can raise unemployment in the short-run and long run. In same fashion, Beladel and Raouf (2022) argue that in the short run, job reallocation raises unemployment but in the long-run, job reallocation reduces unemployment as emerging sectors develop and the workforce adapts.

A second raison of mixed results when checking the validity of sectoral shift hypothesis lies is related to the methodological approaches. Indeed, econometric specifications substantially influence results of studies. The studies using ADRL model like Beladel and Raouf (2022) or VECM model like Chiarini and Piselli (2000) emphasize that an important source of the persistence of unemployment comes from sectoral shifts. In panel framework the use of panel unit root and dynamic panel data regression approach (Bakas et al., 2017; Bakas et al., 2023) concludes that impact of sectoral shift depends on whether the level of unemployment is low or higher. The results also consider the aggregate level, the state levels, the heterogeneity and cross-sectional dependence.

Another explanation of non-consensual evidence about the sectoral shift hypothesis lies on regional group or level of development of countries. Evidence from Bakas et al. (2016, 2017) finds a positive and significant relationship between employment dispersion and unemployment for 15 European countries and across U.S. states. This aligns with Hogrefe and Sachs (2014) who identity through EU countries comparison that the relationship between sectoral reallocation and unemployment is strong in Spain but weak in Italy. However, they found no significant relationship in France, Ireland or Portugal. Overall, for OECD countries there is solid evidence of sectoral shift hypothesis, but these effects seem to be country-specific. As regards developing regions, Jobe and Ricciuti (2023) using data from 18 sub-Saharan African countries shows that sectoral shifts generally increase unemployment. Overall, for developing countries, there are supports of the sectoral shift hypothesis. However, evidence for African countries remains scarce and mainly underexplored in the literature. Hence, recent research covering almost all African countries could provide a clear-cut view of evidence of the sectoral shift hypothesis from Africa. Indeed, without the data limitations constraints, a rigorous empirical assessment focusing on the full panel of African would not only contribute to the debate on sectoral shift hypothesis but also would help understanding the labour market implication on structural transformation in developing countries.

3. Empirical Analysis and Results

3.1. Model Specification

Our empirical model to check the evidence of Lilien hypothesis for the selected

countries in Africa is the following equation

$$y_{it} = a_i + x_{it}\beta + \sum_{j=-q_1}^{q_2} c_{ij}\Delta x_{i,t+j} + v_{it} \quad (1)$$

where $i = 1,\cdots,N$ for each country in the panel, $t = 1,\cdots,T$ denotes the time period, q_1 represents the maximum lag length, q_2 represents the maximum lead length and vit denotes the Gaussian vector error terms process.

3.2. Variables and Data

To carry our empirical analysis, data from 50 African countries (see Appendix) out of 54 over 1991 to 2023 are used. The variables with their short description and the data sources are presented in Table 1. The variable *mli* measuring the sectoral shifts is constructed as follows:

$$MLI = \sqrt{\sum_{t=1}^{n} x_{it} \cdot x_{is} \left(\ln \frac{x_{it}}{x_{is}} \right)^2}$$

where x is the broad sectoral shares of employment for the sector i at two points in time s and t.

Table 1. Variables and sources.

Variable	Description	Source
une	Unemployment rate (age 15+)	International Labour Organization (ILO)
mli	Modified Lilien index (using sectoral employment share)	International Labour Organization (ILO)
inf	Inflation rate, average consumer prices (annual percent change)	International Monetary Fund (IMF)
gdp	Gross Domestic Product per capita (annual growth rate)	United Nations Statistics Division (UNSD)

Table 2 presents descriptive statistics for the data. The statistics reveal substantial heterogeneity across the variables in the sample. While unemployment and sectoral shift show moderate dispersion, inflation and economic growth exhibit strong volatility and the presence of extreme values. Such outliers are retained as they reflect genuine observed values rather than measurement errors.

Table 2. Descriptive statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
une	1,650	9.02	7.46	0.20	37.94
mli	1,650	1.08	1.04	0.00	8.64
inf	1,650	36.90	612.45	−72.70	23773.10
gdp	1,650	1.82	7.49	−50.79	91.78

Figure 1 displays the relation between sectoral shift and unemployment for region under the study. The graphical analysis reveals that increases in sectoral shift of employment were associated with a decline in unemployment.

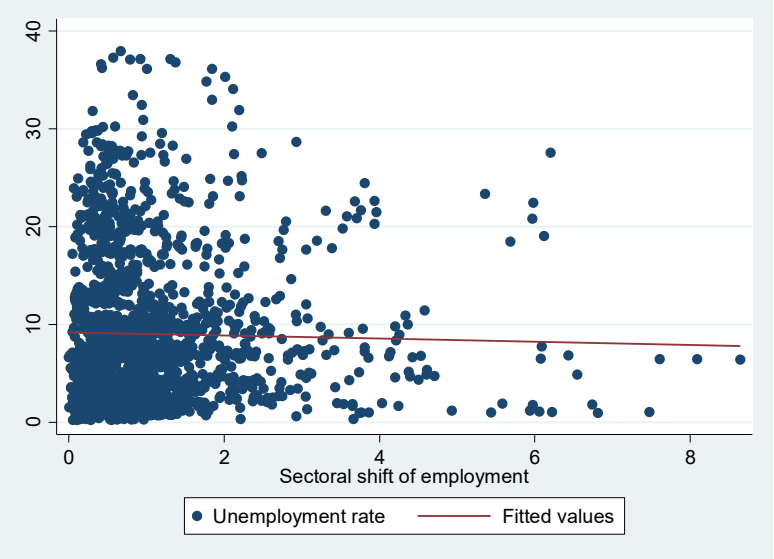

Figure 1. Relation between unemployment and sectoral shift.

To make sure that we can specify a linear relationship with the variables used in this study, we check for multicollinearity within the dataset. The result from the variance inflation (VIF) test for multicollinearity is presented in Table 3. The mean VIF less here than 5 denotes that the variables do not have problems of multicollinearity between them, and they can specify econometric models.

Table 3. Multicollinearity test.

Variable	VIF	1/VIF
mli	1.01	0.99
inf	1.00	1.00
gdp	1.01	0.99
Mean VIF	1.01	

3.3. Methodology and Results

3.3.1. Cross-Sectional Dependence

Given the nature of our dataset, it is important to test the presence of cross-sectional dependence in the series. Ignoring interconnectedness between countries can lead to biased and inconsistent results. Therefore, this study employed the Pesaran (2004) CD test to check for potential cross-sectional dependence problem. Table 4 provides the results of such diagnostics test. It shows that the Pesaran statistic for all variables are significant at 1% level, meaning that there is cross-sectional dependence across countries in the panel.

Table 4. Cross-sectional dependence test.

Variable	CD-test	p-value
une	24.56	0.000
mli	41.71	0.000
inf	50.87	0.000
gdp	24.50	0.000

3.3.2. Slope Homogeneity

Following the above test, it is also essential to examine the existence of homogeneity of the slopes of the countries. In practice, assuming that slope coefficients across cross-sectional units is highly restrictive. Therefore, this study used the homogeneity test of Pesaran and Yamagata (2008) to evaluate the homogeneity of slope coefficients. **Table 5** provides the results of such diagnostics test. It shows that the Delta statistics are significant at 1% level, meaning that there are heterogeneous country-specific effects across African countries.

Table 5. Slope Homogeneity test.

Delta	p-value
31.82	0.000
35.30	0.000

3.3.3. Panel Unit Root

Before moving forward with the econometric analysis is essential to examine the stationarity properties of the variables. Series containing a unit root (non-stationary series) can lead to spurious and misleading findings. Therefore, this study used the second-generation Pesaran (2007) unit root test to account for the cross-sectional dependence across countries in the panel. **Table 6** presents the results of such stationarity test. It shows that only the statistic for unemployment rate in not significant at level. However, all statistics are significant at the 1% significance level in the first difference. Hence, the series are, at most, integrated of order one I(1), meaning that there could exist a long run relationship among the variables.

Table 6. Panel unit root tests.

		CIPS statistic			
	lags	*une*	*mli*	*inf*	*gdp*
no constant nor trend	1	−1.15	−3.49***	−2.78***	−4.46***
with constant only	1	−1.71	−3.73***	−3.67***	−4.62***
with constant and trend	1	−1.86	−3.73***	−3.87***	−4.96***
	lags	Δ*une*	Δ*mli*	Δ*inf*	Δ*gdp*
no constant nor trend	1	−4.04***	−5.85***	−5.65***	−6.08***
with constant only	1	−4.16***	−5.86***	−5.69***	−6.14***
with constant and trend	1	−4.19***	−5.96***	−5.88***	−6.33***

Note: *, **and *** indicate 10%, 5% and 1% significance level respectively.

3.3.4. Panel Cointegration

To check a potential long run equilibrium relationship among the variables, this study uses the panel error correction cointegration test of Westerlund (2007) which assumes cross-sectional dependence. **Table 7** presents the results from the Westerlund Panel cointegration test. It shows that the Variance ratio statistic is significant at 1% significance level. Hence, we found existence of a cointegration relationship between unemployment and sectoral shift employment. Thus, the overall result implies that these variables move together in the long run.

Table 7. Panel Cointegration test.

	Statistic	p-value
Variance ratio	17.67	0.000

3.3.5. Panel Dynamic Ordinary Least Squared (DOLS)

Considering the results of the cross-section dependence test, homogeneity test of the slope coefficients, unit root test, and cointegration test, the study uses the panel Dynamic Ordinary Least Squared method (Kao & Chiang, 2001; Pedroni, 2001; Mark & Sul, 2003) for estimating cointegrating relationships between unemployment and sectoral shift of employment. This method eliminates the asymptotic endogeneity and serial correlation, provides consistent estimates is also preferred Common Correlated Effects (CCEMG) or Augmented Mean Group (AMG) estimators. **Table 8** presents the results of estimations. It shows that there is a negative long-run relationship between unemployment and sectoral shift of employment for the full model. These results deviate from the typical interpretation of Lilien's Hypothesis. Indeed, an increase in sectoral shift of employment of 1 point will decrease unemployment by 0.47% in long run for the full sample. It is also what reflect sub-Saharan countries. While confirming the impact of labour shift unemployment in long run, these results show divergence with Bakas et al., (2023) and Jobe and Ricciuti (2023) about the sign of the impact.

Table 8. Panel DOLS - panel sample.

une	*Full Model*	*North Africa*	*Sub−Saharan Africa*
mli	−0.47***	−0.01	−0.47***
	(−3.54)	(−0.04)	(−3.54)
inf	0.00	0.03	0.00
	(1.47)	(0.42)	(1.47)
gdp	0.01	−0.41***	0.01
	(1.49)	(−8.26)	(1.49)
cons	5.82***	15.87***	5.82***
	(32.88)	(41.81)	(32.88)
R-squared	0.43	0.43	0.43

Note: *, **and *** indicate 10%, 5% and 1% significance level respectively.

3.3.6. Robustness Check

As regards of region in Africa, the results of estimations are summarized in Table 9. There is a significant negative long-run relationship between unemployment and employment for Eastern and Southern Africa. Indeed, an increase in sectoral shift of employment of 1 point will decrease unemployment by 0.47% and 2.22% in long run for Eastern Africa and Southern Africa, respectively.

Table 9. Panel DOLS - region.

une	*Full Model*	*Eastern Africa*	*Middle Africa*	*Northern Africa*	*Southern Africa*	*Western Africa*
mli	−0.47***	−0.47***	0.04	−0.01	−2.22***	0.06
	(−3.54)	(−3.54)	(0.05)	(−0.04)	(−5.29)	(0.86)
inf	0.00	0.00	−0.12***	0.03	−0.20	0.02
	(1.47)	(1.47)	(−3.16)	(0.42)	(−1.22)	(1.37)
gdp	0.01	0.01	−0.05	−0.41***	0.01	−0.08***
	(1.49)	(1.49)	(−1.05)	(−8.26)	(0.07)	(−2.67)
cons	5.82***	5.82***	2.13***	15.87***	32.05***	1.91***
	(32.88)	(32.88)	(4.28)	(41.81)	(22.39)	(18.89)
R-squared	0.43	0.43	0.61	0.43	0.70	0.77

Note: *, ** and *** indicate 10%, 5% and 1% significance level respectively.

When focusing on income level in Africa, the results of estimations are summarized in Table 10. There is a significant negative long-run relationship between unemployment and sectoral shift of employment for all middle-income countries. Indeed, an increase in sectoral shift of employment of 1 point will decrease unemployment by 0.47% and 2.22% in long run for lower middle-income countries and upper middle-income countries, respectively.

Table 10. Panel DOLS - income level.

une	*Full Model*	*Low-income countries*	*Lower middle-income countries*	*Upper middle-income countries*
mli	−0.47***	−0.08	−0.47***	−2.22***
	(−3.54)	(−0.76)	(−3.54)	(−5.29)
inf	0.00	−0.08*	0.00	−0.20
	(1.47)	(−1.81)	(1.47)	(−1.22)
gdp	0.01	0.25***	0.01	0.01
	(1.49)	(3.01)	(1.49)	(0.07)
cons	5.82***	2.21***	5.82***	32.05***
	(32.88)	(5.98)	(32.88)	(22.39)
R-squared	0.43	0.59	0.43	0.70

Note: *, ** and *** indicate 10%, 5% and 1% significance level respectively.

The results of estimations according to the industrial level of counties in Africa are summarized in Table 11. There is a significant negative long-run relationship between unemployment and sectoral shift of employment for all industrializing and industrial countries. Indeed, an increase in sectoral shift of employment of 1 point will decrease unemployment by 0.47% and 2.22% in long run for middle-income industrializing economies and middle-income industrial economies, respectively. These results are identical to those obtained for the income-level classification, indicating the robustness of the findings across different classifications.

Table 11. Panel DOLS - industrial level.

une	*Full Model*	*Low-income economies*	*Middle-income industrializing economies*	*Middle-income industrial economies*
mli	−0.47***	−0.08	−0.47***	−2.22***
	(−3.54)	(−0.76)	(−3.54)	(−5.29)
inf	0.00	−0.08*	0.00	−0.20
	(1.47)	(−1.81)	(1.47)	(−1.22)
gdp	0.01	0.25***	0.01	0.01
	(1.49)	(3.01)	(1.49)	(0.07)
cons	5.82***	2.21***	5.82***	32.05***
	(32.88)	(5.98)	(32.88)	(22.39)
R-squared	0.43	0.59	0.43	0.70

Note: *, ** and *** indicate 10%, 5% and 1% significance level respectively.

The profiles of countries in the sample are provided in Table 12. There is a significant negative long-run relationship between unemployment and sectoral shift for some countries (see country list in appendix). There is also positive long-run relationship for other countries. This latter result aligns with the work of Bakas et al. (2023) and Jobe and Ricciuti (2023).

Table 12. Countries profiles.

AGO	BDI	BEN	BFA	BWA	CAF	CIV	CMR	COD	COG
(−)***	(−)	(+)***	(−)	(−)	(−)**	(−)***	(−)	(+)	(−)
COM	CPV	DJI	DZA	EGY	ERI	ETH	GAB	GHA	GIN
(−)	(+)*	(−)	(−)***	(−)	(+)***	(−)***	(+)	(−)	(−)
GMB	GNB	GNQ	KEN	LBR	LBY	LSO	MAR	MDG	MLI
(−)	(+)	(+)	(+)	(−)***	(−)*	(+)	(−)	(−)*	(+)
MOZ	MRT	MUS	MWI	NAM	NER	NGA	RWA	SEN	SLE
(+)**	(−)**	(+)**	(+)	(−)	(+)	(−)	(+)***	(+)	(+)***
STP	SWZ	TCD	TGO	TUN	TZA	UGA	ZAF	ZMB	ZWE
(+)***	(−)**	(+)	(+)	(−)	(+)***	(−)	(−)***	(−)	(−)***

Notes: (+) and (−) indicate positive, negative relation respectively; *, **and *** indicate 10%, 5% and 1% significance level respectively.

4. Conclusions

Achieving low level of unemployment rate or high level of structural change have been some important priorities for policymakers. Unemployment and structural change have also been a major challenge for scholars in developing countries as well as emerging or in advanced economies. While recommending or implementing economic policies on unemployment or structural change researchers and policymakers need to come out simultaneously with the reduction of persistent unemployment and the shift of labour from low-productivity activities toward high-productivity activities.

The main concern in this paper is to deal with unemployment and sectoral shift with regards of the sectoral shift hypothesis. The aim of this study is to investigate the validity of sectoral shift hypothesis in African countries for the period 1991-2023. It analyses the long-run relationship between unemployment and sectoral shift of labour for the countries over the time span. The results conclude to evidence of a trade-off between sectoral shift of employment and unemployment in long run. These results deviate from the typical interpretation of Lilien's Hypothesis. An implication for economic policies is that we can reduce unemployment rate while working toward shifting employment from low productive sector to high productive sectors. Consequently, it is recommended that policymakers implement strategies to expand manufacturing and other high-productivity sectors, to invest in education and skills upgrading aligned with industrial and modern needs, to create more decent work conditions in industrial and service sectors.

While this research has produced important findings, there are still limitations that can be addressed in future research. First, the unavailability of data for 4 African countries from labour statistics lead use to ignore them in the analysis. As soon available, the sectoral shift hypothesis could be check. Second, the study focuses only on Africa countries and compare them according to regional and economic classification. Furthermore, expand country group analysis to other countries in the world could enrich the overall findings. Third, regarding the variables in this study, and rather to check only the labour shift hypothesis, other studies could explore the relationship between the variables aligned Philipps curve and Okun's law.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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Appendix

Code	Country	Classification			
AGO	Angola	Sub-Saharan Africa	Middle Africa	Lower middle-income	Middle-income industrializing
AGO	Angola	Sub-Saharan Africa	Middle Africa	Lower middle-income	Middle-income industrializing
BDI	Burundi	Sub-Saharan Africa	Eastern Africa	Low-income	Low-income
BEN	Benin	Sub-Saharan Africa	Western Africa	Lower middle-income	Middle-income industrializing
BFA	Burkina Faso	Sub-Saharan Africa	Western Africa	Low-income	Low-income
BWA	Botswana	Sub-Saharan Africa	Southern Africa	Upper middle-income	Middle-income industrializing
CAF	Central African Republic	Sub-Saharan Africa	Middle Africa	Low-income	Low-income
CIV	Côte d'Ivoire	Sub-Saharan Africa	Western Africa	Lower middle-income	Middle-income industrializing
CMR	Cameroon	Sub-Saharan Africa	Middle Africa	Lower middle-income	Middle-income industrializing
COD	Congo, Dem. Rep. of the	Sub-Saharan Africa	Middle Africa	Low-income	Low-income
COG	Congo, Republic of	Sub-Saharan Africa	Middle Africa	Lower middle-income	Middle-income industrializing
COM	Comoros	Sub-Saharan Africa	Eastern Africa	Lower middle-income	Middle-income industrializing
CPV	Cabo Verde	Sub-Saharan Africa	Western Africa	Lower middle-income	Middle-income industrializing
DJI	Djibouti	Sub-Saharan Africa	Eastern Africa	Lower middle-income	Middle-income industrializing
DZA	Algeria	North Africa	Northern Africa	Upper middle-income	Middle-income industrializing
EGY	Egypt	North Africa	Northern Africa	Lower middle-income	Middle-income industrializing
ERI	Eritrea	Sub-Saharan Africa	Eastern Africa	Low-income	Low-income
ETH	Ethiopia	Sub-Saharan Africa	Eastern Africa	Low-income	Low-income
GAB	Gabon	Sub-Saharan Africa	Middle Africa	Upper middle-income	Middle-income industrializing
GHA	Ghana	Sub-Saharan Africa	Western Africa	Lower middle-income	Middle-income industrializing
GIN	Guinea	Sub-Saharan Africa	Western Africa	Lower middle-income	Middle-income industrializing
GMB	Gambia, The	Sub-Saharan Africa	Western Africa	Low-income	Low-income
GNB	Guinea-Bissau	Sub-Saharan Africa	Western Africa	Low-income	Low-income
GNQ	Equatorial Guinea	Sub-Saharan Africa	Middle Africa	Upper middle-income	Middle-income industrializing
KEN	Kenya	Sub-Saharan Africa	Eastern Africa	Lower middle-income	Middle-income industrializing
LBR	Liberia	Sub-Saharan Africa	Western Africa	Low-income	Low-income
LBY	Libya	North Africa	Northern Africa	Upper middle-income	Middle-income industrializing
LSO	Lesotho	Sub-Saharan Africa	Southern Africa	Lower middle-income	Middle-income industrializing
MAR	Morocco	North Africa	Northern Africa	Lower middle-income	Middle-income industrializing
MDG	Madagascar	Sub-Saharan Africa	Eastern Africa	Low-income	Low-income
MLI	Mali	Sub-Saharan Africa	Western Africa	Low-income	Low-income
MOZ	Mozambique	Sub-Saharan Africa	Eastern Africa	Low-income	Low-income
MRT	Mauritania	Sub-Saharan Africa	Western Africa	Lower middle-income	Middle-income industrializing
MUS	Mauritius	Sub-Saharan Africa	Eastern Africa	Upper middle-income	Middle-income industrial
MWI	Malawi	Sub-Saharan Africa	Eastern Africa	Low-income	Low-income

Continued

NAM	Namibia	Sub-Saharan Africa	Southern Africa	Upper middle-income	Middle-income industrializing
NER	Niger	Sub-Saharan Africa	Western Africa	Low-income	Low-income
NGA	Nigeria	Sub-Saharan Africa	Western Africa	Lower middle-income	Middle-income industrializing
RWA	Rwanda	Sub-Saharan Africa	Eastern Africa	Low-income	Low-income
SEN	Senegal	Sub-Saharan Africa	Western Africa	Lower middle-income	Middle-income industrializing
SLE	Sierra Leone	Sub-Saharan Africa	Western Africa	Low-income	Low-income
STP	São Tomé and Príncipe	Sub-Saharan Africa	Middle Africa	Lower middle-income	Middle-income industrializing
SWZ	Eswatini	Sub-Saharan Africa	Southern Africa	Lower middle-income	Middle-income industrial
TCD	Chad	Sub-Saharan Africa	Middle Africa	Low-income	Low-income
TGO	Togo	Sub-Saharan Africa	Western Africa	Low-income	Low-income
TUN	Tunisia	North Africa	Northern Africa	Lower middle-income	Middle-income industrializing
TZA	Tanzania	Sub-Saharan Africa	Eastern Africa	Lower middle-income	Middle-income industrializing
UGA	Uganda	Sub-Saharan Africa	Eastern Africa	Low-income	Low-income
ZAF	South Africa	Sub-Saharan Africa	Southern Africa	Upper middle-income	Middle-income industrial
ZMB	Zambia	Sub-Saharan Africa	Eastern Africa	Lower middle-income	Middle-income industrializing
ZWE	Zimbabwe	Sub-Saharan Africa	Eastern Africa	Lower middle-income	Middle-income industrializing