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BANK REGULATION IN THE SELECTED SUB-SAHARAN AFRICAN COUNTRIES: DYNAMICS AND TRENDS

Retselisitsoe I. Thamae[1], Nicholas M. Odhiambo & John M. Khumalo

Abstract

This paper discusses the dynamics of bank regulation in the Sub-Saharan African (SSA) region during the period before the 1990s and post 1990s and describes the trends in bank regulatory measures between 1995 and 2017 using the updated databases of the World Bank's Bank Regulation and Supervision Surveys. Before the 1990s, bank regulation in the majority of SSA countries was inadequate and that led to multiple occurrences of banking crises. As a result, many countries introduced the financial sector reforms from the late 1980s that included major adjustments in the banking regulatory and supervisory frameworks. In both low-income and middle-income SSA economies, bank regulatory environment became more stringent over time, driven by increased restrictions on bank entry barriers and ownership structure, as well as the introduction of macroprudential policies in the case of the former, while in the case of the latter, it was influenced by more restrictions on bank ownership structure and capital regulation requirements, as well as the adoption of macroprudential policies. Overall, the bank regulatory environment was slightly more stringent in middle-income than in low-income SSA countries over the period under review.

Keywords: Bank regulation; dynamics; trends; Sub-Saharan Africa

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1. Introduction

Achieving and maintaining financial stability through bank regulation has remained one of the fundamental policies aiming to promote economic growth and development in various countries across the world. This is also true for countries in the SSA region: First, these countries have adopted various bank regulatory measures such as entry barriers, ownership structure restrictions, capital requirements, and activity restrictions, amongst others, since the introduction of the Basel accords in the late 1980s and during the aftermath of the 2007-2008 global financial crisis (Anginer, Bertay, Cull, Demirgüç-Kunt, & Mare, 2019; Barth, Caprio, & Levine, 2001, 2008, 2013; Enoch, Mathieu, Mecagni, & Kriljenko, 2015). These bank regulatory measures have been introduced to minimise financial risks borne by individual banking institutions. Second, the majority of these countries have implemented different macroprudential policies with some using them even prior to the 2007-2008 global financial crisis (Cerutti, Claessens, & Laeven, 2017). This has been done with the central purpose of managing a build-up of systemic risk arising from the financial sector, which is normally dominated by the banking industry in these developing economies (Mlachila et al., 2016).

The literature contends that one of the main goals of bank regulation is to prohibit banks to engage in excessive risk-taking behaviour, given the problems of information asymmetry that exist within the credit market (Stiglitz & Weiss, 1981). In support of this objective, Crockett (1996) presents four main arguments justifying why bank regulation matters. Firstly, the consumer protection argument suggests that bank regulation gives the depositors some measure of protection from losses that could be occurred due to banks' excessive risk-taking behaviour. Secondly, the systemic risk argument states that bank regulation limits the possibilities of bank contagion in the periods characterised by financial distress. This minimises the spread of financial risks that emanate from one bank and transmitted to other banks. Thirdly, given that some banks are deemed to be too-big-to-fail and deserve bailouts from the government (Dam & Koetter, 2012), the fiscal argument indicates that bank regulation shields the government against losses that it could incur as a lender of last resort when bank failures occur. Lastly, the efficiency argument indicates that bank regulation enhances the level of financial development within the economy by encouraging the efficient allocation of financial resources.

Given the importance of bank regulation and the fact it has been changing over time in the SSA region, it is necessary to document such developments and present their up-to-date trends.

Thus, this paper aims to discuss the dynamics of bank regulation in the SSA region during the period before 1990s and after that time and describe the trends in bank regulatory measures between 1995 and 2017 using the updated databases of the World Bank's Bank Regulation and Supervision Surveys (BRSS)[2]. The remainder of the paper is structured as follows. Section 2 highlights the dynamics of bank regulation in SSA countries. Section 3 presents trends in bank regulatory measures in the selected low-income and middle-income SSA economies and undertakes a comparison of bank regulation between these income groups of countries. The last section provides the concluding remarks.

2. Dynamics of Bank Regulation in SSA Countries

Before the 1990s, bank regulation in the majority of SSA countries was inadequate. Le Gall, Daumont, & Leroux (2004) present various factors that contributed to such deficiency. First, central banks were not given enough authority to supervise banks under the outdated legislations that were used to regulate the financial sector; both the government and the central bank shared the responsibility of banking supervision, with the former limiting enforcement of prudential requirements in favour of government-related projects or businesses. Second, the central banks lacked the capacity to adequately monitor and supervise banks, and they often relied on insufficient information due to lack of data and irregular prudential reports. Lastly, the existing bank regulations were not well-defined when it comes to issues of minimum capital requirements, exposures to risk, and prudential limits on bank lending, amongst others.

The observed weaknesses in bank regulation in the SSA region led to multiple occurrences of banking crises. For example, the region experienced about 39 systemic banking crises between 1970s and mid-1990s, compared with 51 that occurred in the rest of the world (Laeven & Valencia, 2013). As a result, many SSA countries introduced the financial sector reforms from the late 1980s that included major adjustments in the banking regulatory and supervisory frameworks (Nyantakyi & Sy, 2015). According to Enoch et al. (2015), Mecagni, Marchettini, & Maino (2015), and Mlachila et al. (2016), almost all SSA countries implemented the Basel I accord (developed in 1988 and launched in 1992), which imposed the minimum capital required ratio of 8% (as a share of the risk-weighted assets) with the aim of minimising credit

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[2] The surveys were completed in 1999, 2003, 2007, 2011 and 2019 by Barth et al. (2001, 2004, 2008), Cihak et al. (2013), and Anginer et al. (2019), respectively. Barth et al. (2013) then provided a database from the first four surveys but addressing their observed inconsistencies and missing values.

risk. Other countries later adopted higher standards of the Basel II (launched in 2004), and the Basel III (launched in 2010), with Angola, Botswana, Malawi, and Mozambique implementing the Basel II or parts of it, while Ghana, Kenya, Mauritius, Nigeria, Rwanda, Tanzania, West African Economic and Monetary Union (WAEMU)[3], and South Africa adopting the Basel II and III or parts of them. The Basel II accord incorporated operational risk when determining the minimum capital required ratio, enhanced risk monitoring, and promoted transparency, while the Basel III accord strengthened the Basel II's capital requirements and introduced the macroprudential perspective to limit systemic risk.

Furthermore, most SSA countries have aligned themselves with the international financial reporting standards, while a few, such as Comoros, Democratic Republic of Congo, Guinea, Madagascar, and South Sudan, are still following their own national financial reporting standards. When it comes to deposit insurance schemes, they have only been implemented by the Economic and Monetary Community of Central Africa (CEMAC)[4], Ghana, Kenya, Namibia, Nigeria, Uganda, Tanzania, and Zimbabwe. Table 1 summarises these banking sector regulatory and supervisory standards in SSA countries. As a result, these banking sector reforms, coupled with other financial reforms, are believed to have promoted financial stability and development by enhancing sustainable bank lending to the domestic private sector in the SSA region (Nyantakyi & Sy, 2015).

Table 1 Banking sector regulatory and supervisory standards in SSA countries

Country	Capital adequacy standard	Accounting standard	Deposit insurance
Angola	Parts of Basel II	IFRS	No
Botswana	Basel II	IFRS	No
Burundi	Basel II in progress	IFRS Plan	No
Cabo Verde	Basel II in progress	IFRS	No
CEMAC	No Basel II yet	IFRS Plan	Implemented
Comoros	Basel II in progress	National	No
Democratic Republic of Congo	No Basel II yet	National	No
Eritrea	N/A	N/A	No
Eswatini	No Basel II yet	IFRS	No
Ethiopia	No Basel II yet	IFRS Plan	No
Gambia	No Basel II yet	IFRS Plan	No

[3] WAEMU comprises the following countries: Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo.
[4] CEMAC includes the following countries: Gabon, Cameroon, the Central African Republic, Chad, the Republic of the Congo, and Equatorial Guinea.

Country	Capital adequacy standard	Accounting standard	Deposit insurance
Ghana	Parts of Basel II/III	IFRS	Implemented
Guinea	No Basel II yet	National	No
Kenya	Parts of Basel II/III	IFRS	Implemented
Lesotho	No Basel II yet	IFRS	No
Liberia	Basel II in progress	IFRS	No
Madagascar	No Basel II yet	National	No
Malawi	Basel II	IFRS	No
Mauritius	Basel II/Parts of Basel III	IFRS	No
Mozambique	Basel II	IFRS	No
Namibia	Parts of Basel II	IFRS	Implemented
Nigeria	Parts of Basel II/III	IFRS	Implemented
Rwanda	Parts of Basel II/III	IFRS	No
São Tomé and Príncipe	Basel II in progress	IFRS Plan	No
Seychelles	No Basel II yet	IFRS Plan	No
Sierra Leone	No Basel II yet	IFRS	No
South Africa	Basel III	IFRS	No
South Sudan	No Basel II yet	National	N/A
Uganda	No Basel II yet	IFRS	Implemented
Tanzania	Parts of Basel II/III	IFRS	Implemented
WAEMU	Parts of Basel II/III	IFRS	No
Zambia	Basel II in progress	IFRS	No
Zimbabwe	Basel II in progress	IFRS	Implemented

Source(s): Updated from Enoch et al. (2015), Mecagni et al. (2015), and Mlachila et al. (2016) with new information drawn from Bank of Mauritius (2014), Republic of Zambia (2014), Bank of Botswana (2015), Mambo (2015), Republic of Ghana (2016), Republic of Namibia (2018), Global Economic Governance (2019), and The IFRS Foundation (2019).

Note(s): CEMAC=Economic and Monetary Community of Central Africa (Gabon, Cameroon, the Central African Republic, Chad, the Republic of the Congo, and Equatorial Guinea); IFRS=International Financial Reporting Standards; N/A=Not Available; WAEMU=West African Economic and Monetary Union (Benin, Burkina Faso, Côte d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, and Togo).

3. Trends in Bank Regulation in the Selected SSA Countries

The trends in bank regulation in the selected SSA countries[5] are captured by the entry barrier, ownership structure, activity restriction, capital regulation, and macroprudential indices over the period 1995-2017. The entry barrier index measures the degree of restrictions on bank licensing and foreign ownership, while the ownership structure index captures the extent to which banks, non-financial firms, and non-bank financial firms can own and control each other. Moreover, the activity restriction index measures the degree of restrictions on engagement in securities, insurance, and real estate activities by banks, whereas the capital regulation index captures the stringency of bank regulatory requirements regarding bank capital. Finally, the macroprudential index measures the degree of macroprudential regulation using a simple sum

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[5] The selection is based on countries that have data from at least three out of five surveys, including the last one completed in 2019, from the World Bank's BRSS.

of scores on relevant macroprudential policies. Table A1 in the appendix shows the sub-components, the qualification criteria, and the range for each index.

In the case of the microprudential indices (entry barrier, ownership structure, activity restriction, and capital regulation indices), Table A2 in the appendix presents their available surveys from the BRSS for each of the selected SSA countries. Time series values for the periods 1995-1999, 2000-2003, 2004-2007, 2008-2011, and 2012-2017 are given by the indices from the Survey I to V, respectively. For instances where data is unavailable on one of the surveys, the previous or subsequent available survey data is used.

When it comes to the macroprudential index, the time series data for each of the selected SSA countries, covering the period 2000-2017, is derived from Cerutti et al. (2017). But due to the unavailability of banking acts in many of the selected SSA countries during the period prior to 2000, the state of the macroprudential policies observed in 2000 under Cerutti et al. (2017) is assumed to have prevailed from 1995. Given that Eswatini is missing in the data compiled by Cerutti et al. (2017), the Financial Institutions' Legal Notices No. 157 and 159 of 2001 by the Government of Eswatini (Swaziland Government, 2001), which introduced the concentration limits and limits to foreign currency loans, respectively, are used as sources.

3.1. Trends in Bank Regulation in the Selected Low-Income SSA Countries

The selected low-income SSA group is composed of the following economies: Benin, Burkina Faso, Burundi, Guinea-Bissau, Madagascar, Malawi, Mali, Niger, Senegal, Tanzania, Togo, and Uganda. Despite reductions in bank activity restrictions and capital regulation requirements, the bank regulatory environment in these low-income SSA economies became more stringent during the review period, driven by increased restrictions on bank entry barriers and ownership structure, as well as the introduction of macroprudential policies. Figure 1 presents the trends in the bank regulatory indices for the selected low-income SSA countries over the period 1995-2017, while Table 2 provides the averages of such indices.

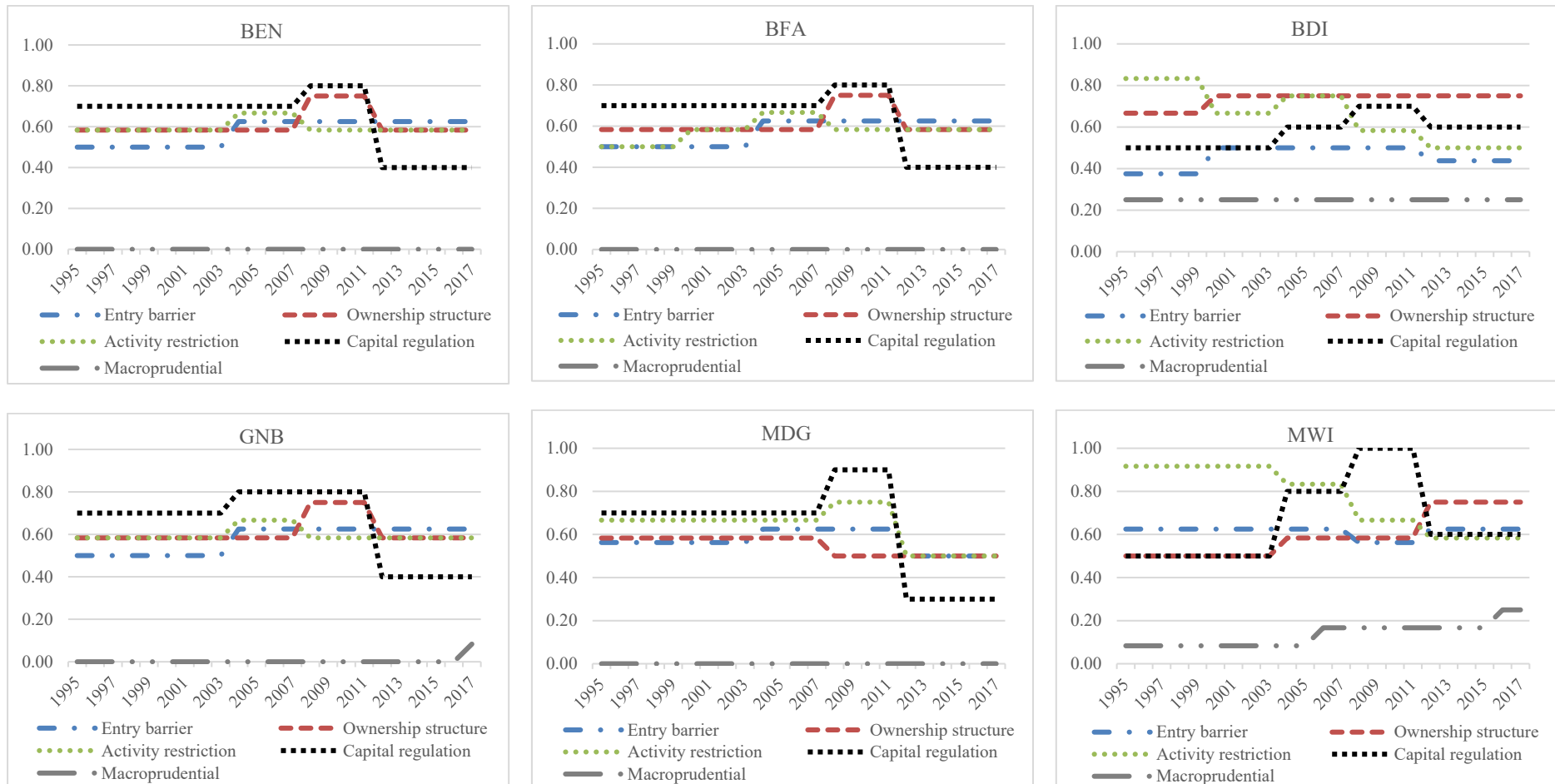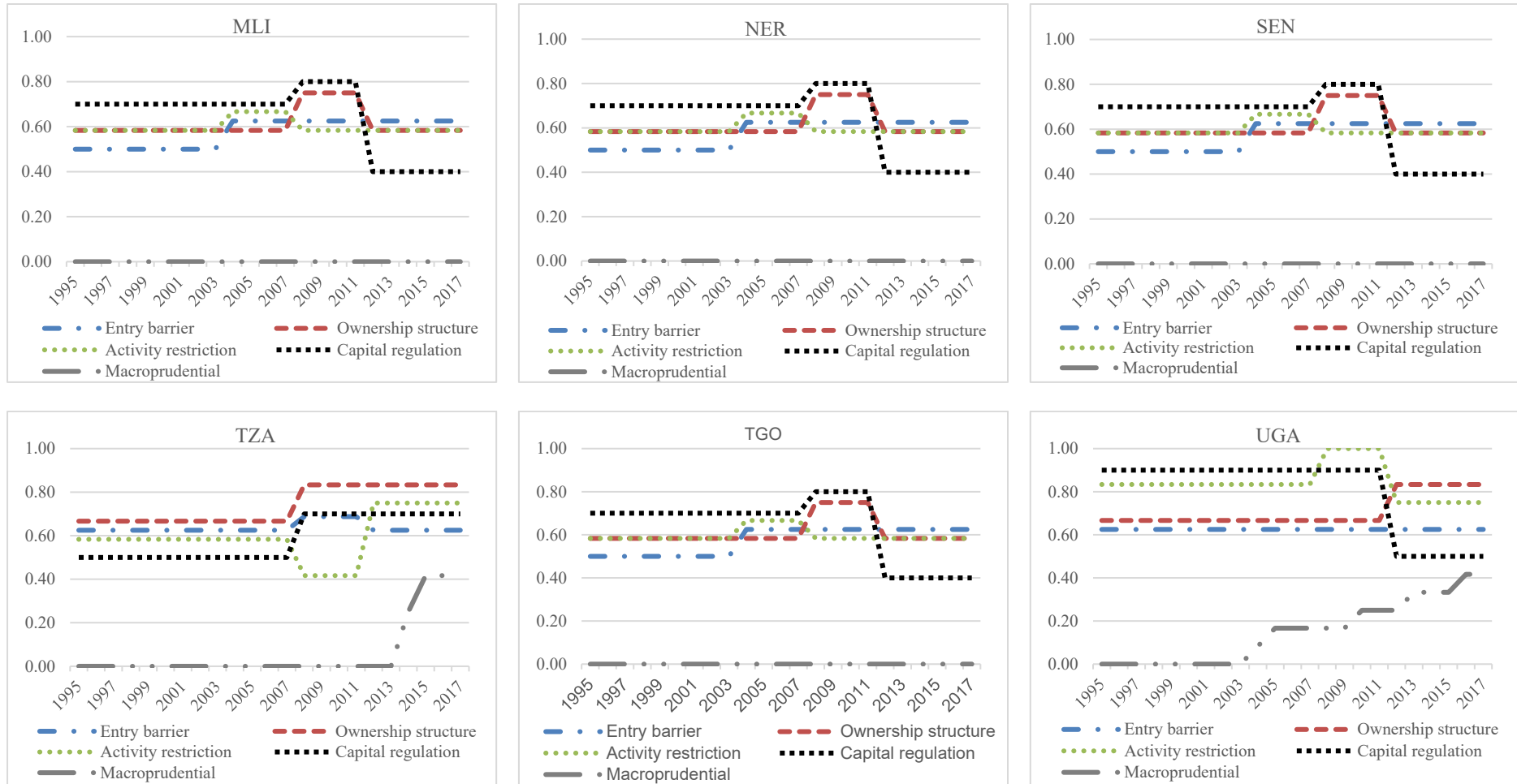**Figure 1 Trends in bank regulatory indices in the selected low-income SSA countries**

Figure 1 Trends in bank regulatory indices in the selected low-income SSA countries (continuation)

Source(s): Own graphs using data from Barth et al. (2001, 2004, 2008, 2013), Cihak et al. (2013), Anginer et al. (2019), and Cerutti et al. (2017).

Note(s): All indices are normalised to one; Benin=BEN; Burkina Faso=BFA; Burundi=BDI; Guinea-Bissau=GNB; Madagascar=MDG; Malawi=MWI; Mali=MLI; Niger=NER; Senegal=SEN; Tanzania=TZA; Togo=TGO; Uganda=UGA.

Table 2 Bank regulatory indices in the selected low-income SSA countries

Countries	Entry barrier			Ownership structure			Activity restriction			Capital regulation			Macroprudential		
	1995-2007	2008-2017	1995-2017	1995-2007	2008-2017	1995-2017	1995-2007	2008-2017	1995-2017	1995-2007	2008-2017	1995-2017	1995-2007	2008-2017	1995-2017
Benin	0.54	0.63	0.58	0.58	0.65	0.61	0.61	0.58	0.60	0.70	0.56	0.64	0.00	0.00	0.00
Burkina Faso	0.54	0.63	0.58	0.58	0.65	0.61	0.58	0.58	0.58	0.70	0.56	0.64	0.00	0.00	0.00
Burundi	0.45	0.46	0.46	0.72	0.75	0.73	0.76	0.53	0.66	0.53	0.64	0.58	0.25	0.25	0.25
Guinea-Bissau	0.54	0.63	0.58	0.58	0.65	0.61	0.61	0.58	0.60	0.73	0.56	0.66	0.00	0.01	0.00
Madagascar	0.58	0.55	0.57	0.58	0.50	0.55	0.67	0.60	0.64	0.70	0.54	0.63	0.00	0.00	0.00
Malawi	0.63	0.60	0.61	0.53	0.68	0.59	0.89	0.62	0.77	0.59	0.76	0.67	0.10	0.18	0.13
Mali	0.54	0.63	0.58	0.58	0.65	0.61	0.61	0.58	0.60	0.70	0.56	0.64	0.00	0.00	0.00
Niger	0.54	0.63	0.58	0.58	0.65	0.61	0.61	0.58	0.60	0.70	0.56	0.64	0.00	0.00	0.00
Senegal	0.54	0.63	0.58	0.58	0.65	0.61	0.61	0.58	0.60	0.70	0.56	0.64	0.00	0.00	0.00
Tanzania	0.63	0.65	0.64	0.67	0.83	0.74	0.58	0.62	0.60	0.50	0.70	0.59	0.00	0.15	0.07
Togo	0.54	0.63	0.58	0.58	0.65	0.61	0.61	0.58	0.60	0.70	0.56	0.64	0.00	0.00	0.00
Uganda	0.63	0.63	0.63	0.67	0.77	0.71	0.83	0.85	0.84	0.90	0.66	0.80	0.04	0.29	0.15
Average	*0.56*	*0.61*	*0.58*	*0.60*	*0.67*	*0.63*	*0.66*	*0.61*	*0.64*	*0.68*	*0.60*	*0.65*	*0.03*	*0.07*	*0.05*

Source(s): Own calculations using data from Barth et al. (2001, 2004, 2008, 2013), Cihak et al. (2013), Anginer et al. (2019), and Cerutti et al. (2017).

Note(s): All indices are normalised to one.

Starting with the entry barrier index, it generally increased over time in most of the low-income SSA countries (Benin, Burkina Faso, Burundi, Guinea-Bissau, Madagascar, Mali, Niger, Senegal, and Togo). While the index only increased between 2008 and 2010 in Tanzania, it remained the same over time in Uganda, and it had a slight decline in Malawi between 2008 and 2010. Overall, the entry barrier index recorded the group's average score of 0.61 in the period 2008-2017, compared to that of 0.56 during the period 1995-2007. Over the entire period, only three countries registered the entry barrier mean scores that were above the group's average score of 0.58, namely, Tanzania (0.64), Uganda (0.63), and Malawi (0.61). However, the index experienced a little variation relative to other bank regulatory indices during the period under consideration.

When it comes to the ownership structure index, it increased over time in Burundi, Malawi, Tanzania, and Uganda, while it only increased between 2008 and 2010 in Benin, Burkina Faso, Guinea-Bissau, Malawi, Niger, Senegal, and Togo, and declined in Madagascar in 2008. The index group's average score rose from 0.60 to 0.67 between the periods 1995-2007 and 2008-2017, respectively. From 1995 to 2017, all the selected low-income SSA countries recorded the group's mean score of 0.63 in the ownership structure index, with Tanzania, Burundi, and Uganda being the only countries with the following above-average mean scores, respectively: 0.74, 0.73, and 0.71. In comparison with other bank regulatory measures, the index exhibited moderate variation over time.

Furthermore, the activity restriction index experienced a downward trend over time in Burundi and Malawi, but an upward trend in Burkina Faso before falling to the 2003 levels in 2008. In Benin, Guinea Bissau, Mali, Niger, Senegal, and Togo, the index only increased between 2004 and 2007. Additionally, it increased in Madagascar and Uganda in 2008 and declined sharply in 2012, while it fell in Tanzania in 2008 but increased sharply in 2012. In general, the group's mean score of the activity restriction index fell from 0.66 in the period 1995-2007 to 0.61 during the period 2008-2017. Uganda (0.84), Malawi (0.77), and Burundi (0.66) are the only economies with the mean scores that were higher than the group's average of 0.64 over the entire period. Thus, the index exhibited a relatively higher variation in relation to other bank regulatory indices.

On the contrary, the capital regulation index generally increased before 2011 in almost all the low-income SSA countries but fell sharply thereafter, except in Tanzania, where it increased in 2008 and remained the same afterwards. The group's mean score of the index declined from 0.68 in the period 1995-2007 to 0.60 during the period 2008-2017. Between 1995 and 2017, all the selected low-income SSA countries recorded the capital regulation mean score of 0.65, and the countries that recorded the above-average mean scores are Uganda (0.80), Malawi (0.67), and Guinea-Bissau (0.66). Hence, the variation of the index over time was relatively high when compared to other bank regulatory measures.

Lastly, the macroprudential index remained the same over time in the majority of low-income SSA economies (Benin, Burkina Faso, Burundi, Madagascar, Mali, Niger, Senegal, and Togo). However, the index trended upwards in the following countries: Malawi, which, on top of the already existing limits on foreign currency loans, introduced concentration limits in 2006 and capital surcharges on Systemically Important Financial Institutions (SIFIs) in 2016; Uganda, which adopted limits to interbank exposures, limits on foreign currency loans, leverage ratios, and capital surcharges on SIFIs in 2004, 2010, 2013 and 2016, respectively; Guinea-Bissau, which implemented concentration limits in 2017; and Tanzania, which introduced concentration limits, time-varying or dynamic loan-loss provisions, and limits on foreign currency loans in 2014 as well as loan-to-value ratio caps in 2015.

The average score of the macroprudential index for all the selected low-income SSA countries increased from 0.03 in the period 1995-2007 to 0.07 during the period 2008-2017. Overall, the index registered the group's mean score of 0.05 from 1995 to 2017, with Burundi, Uganda, Malawi, and Tanzania recording the above-average mean scores of 0.25, 0.15, 0.13, and 0.05, respectively. The former already had time-varying or dynamic loan-loss provisions, concentration limits, and foreign exchange and/or countercyclical reserve requirements from the beginning of the period under review. In comparison with other indices, the degree of the macroprudential index was very low, and the index experienced very little variation over time.

3.2. Trends in Bank Regulation in the Selected Middle-Income SSA Countries

The selected middle-income SSA group is made up of the following countries: Angola, Botswana, Côte d'Ivoire, Eswatini, Ghana, Kenya, Lesotho, Mauritius, Namibia, Nigeria, and South Africa. Although the restrictions on bank activities fell over time while the entry barriers

remained relatively the same, the bank regulatory environment in these middle-income SSA economies became more stringent during the period under consideration, driven by increased restrictions on bank ownership structure and capital regulation requirements, as well as the adoption of macroprudential policies. The trends in the bank regulatory indices for the selected middle-income SSA countries over the period from 1995 to 2017 are depicted in Figure 2, while Table 3 gives the averages of such indices.

Figure 2 Trends in bank regulatory indices in the selected middle-income SSA countries
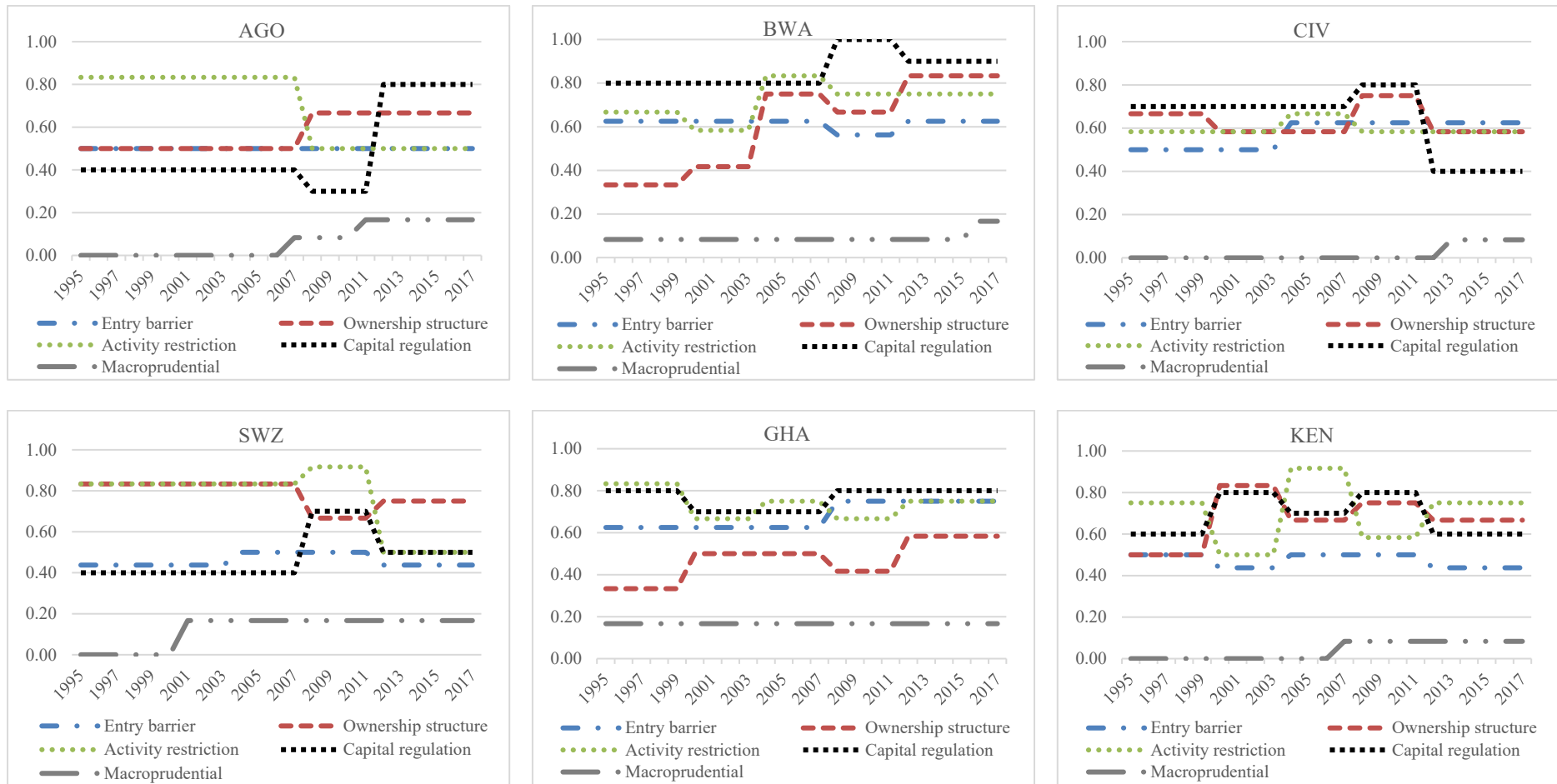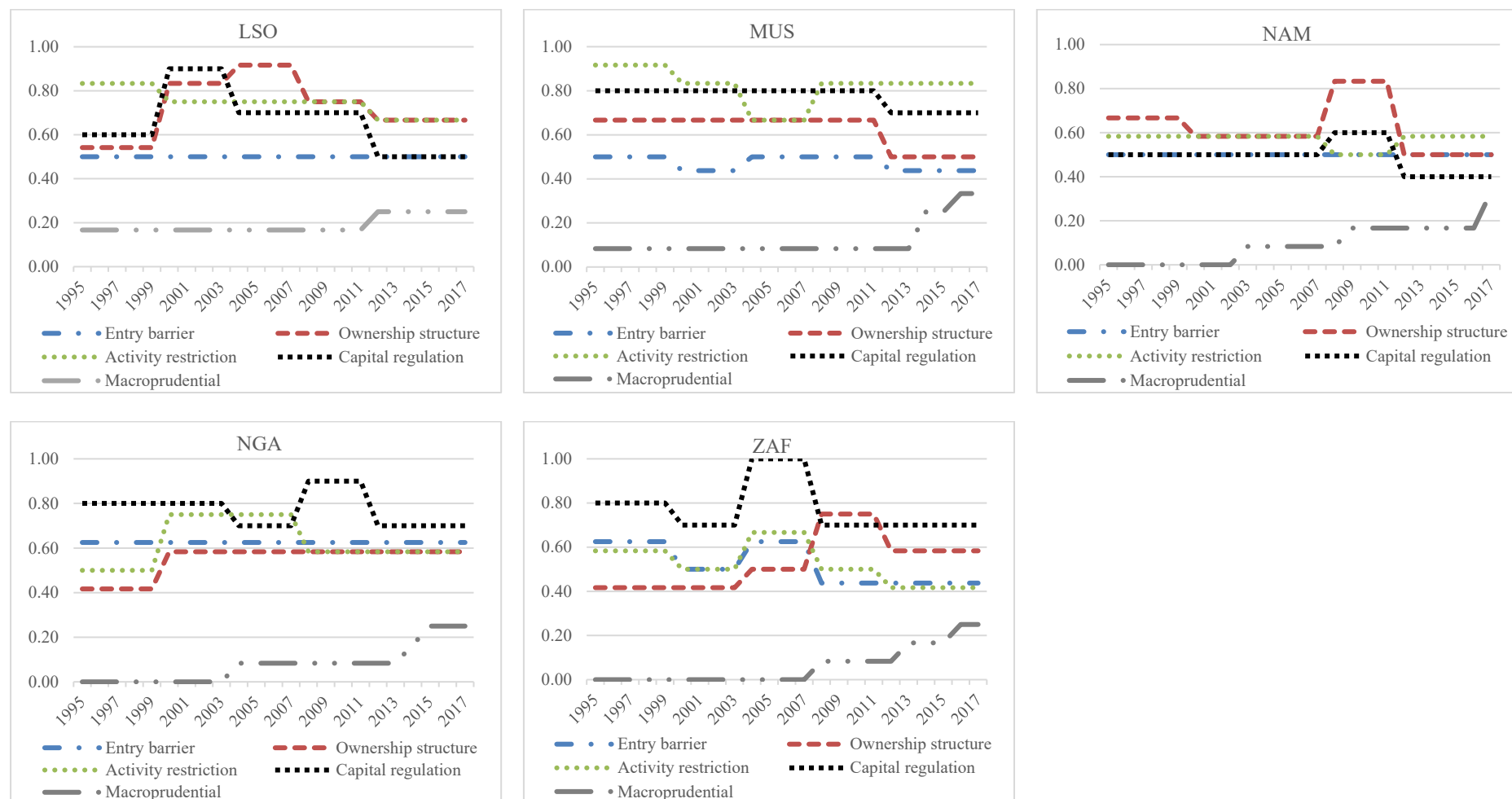
Figure 2 Trends in bank regulatory indices in the selected middle-income SSA countries (continuation)

Source(s): Own graphs using data from Barth et al. (2001, 2004, 2008, 2013), Cihak et al. (2013), Anginer et al. (2019), Cerutti et al. (2017), and Swaziland Government (2001).

Note(s): All indices are normalised to one; Angola=AGO; Botswana=BWA; Côte d'Ivoire=CIV; Eswatini=SWZ; Ghana=GHA; Kenya KEN; Lesotho=LSO; Mauritius=MUS; Namibia=NAM; Nigeria=NGA; South Africa=ZAF.

Table 3 Bank regulatory indices in the selected middle-income SSA countries

Countries	Entry barrier			Ownership structure			Activity restriction			Capital regulation			Macroprudential		
	1995-2007	2008-2017	1995-2017	1995-2007	2008-2017	1995-2017	1995-2007	2008-2017	1995-2017	1995-2007	2008-2017	1995-2017	1995-2007	2008-2017	1995-2017
Angola	0.50	0.50	0.50	0.50	0.67	0.57	0.83	0.50	0.69	0.40	0.60	0.49	0.01	0.14	0.07
Botswana	0.63	0.60	0.61	0.49	0.77	0.61	0.69	0.75	0.72	0.80	0.94	0.86	0.08	0.10	0.09
Côte d'Ivoire	0.54	0.63	0.58	0.62	0.65	0.63	0.61	0.58	0.60	0.70	0.56	0.64	0.00	0.04	0.02
Eswatini	0.46	0.46	0.46	0.83	0.72	0.78	0.83	0.67	0.76	0.40	0.58	0.48	0.09	0.17	0.12
Ghana	0.63	0.75	0.68	0.44	0.52	0.47	0.76	0.72	0.74	0.74	0.80	0.77	0.17	0.17	0.17
Kenya	0.48	0.46	0.47	0.65	0.70	0.67	0.72	0.68	0.71	0.69	0.68	0.69	0.01	0.08	0.04
Lesotho	0.50	0.50	0.50	0.75	0.70	0.73	0.78	0.70	0.75	0.72	0.58	0.66	0.17	0.22	0.19
Mauritius	0.48	0.46	0.47	0.67	0.57	0.62	0.81	0.83	0.82	0.80	0.74	0.77	0.08	0.17	0.12
Namibia	0.50	0.50	0.50	0.62	0.63	0.62	0.58	0.55	0.57	0.50	0.48	0.49	0.03	0.18	0.09
Nigeria	0.63	0.63	0.63	0.52	0.58	0.55	0.65	0.58	0.62	0.77	0.78	0.77	0.03	0.14	0.08
South Africa	0.59	0.44	0.52	0.44	0.65	0.53	0.58	0.45	0.53	0.83	0.70	0.77	0.00	0.14	0.06
Average	*0.54*	*0.54*	*0.54*	*0.59*	*0.65*	*0.62*	*0.72*	*0.64*	*0.68*	*0.67*	*0.68*	*0.67*	*0.06*	*0.14*	*0.09*

Source(s): Own calculations using data from Barth et al. (2001, 2004, 2008, 2013), Cihak et al. (2013), Anginer et al. (2019), Cerutti et al. (2017), and Swaziland Government (2001).
Note(s): All indices are normalised to one.

To begin with, the entry barrier index did not change over time in Angola, Lesotho, Namibia, and Nigeria, while it temporarily declined in Botswana, between 2008 and 2011, and in Kenya and Mauritius, between 2001 and 2003 as well as in 2012. However, the index increased in Côte d'Ivoire (in 2004), Ghana (in 2008), and Eswatini (between 2004 and 2011), but it trended downwards in South Africa. Furthermore, the index group's average score remained the same at 0.54 during the periods 1995-2007, 2008-2017, and 1995-2017. The countries that registered the mean scores that were above the group's average over the entire period (1995-2017) are Ghana (0.68), Nigeria (0.63), Botswana (0.61), and Côte d'Ivoire (0.58). Consequently, the index exhibited a little variation over time relative to other bank regulatory measures.

In the case of the ownership structure index, it trended upwards in most of middle-income SSA economies (Angola, Botswana, Ghana, Kenya, Lesotho, Nigeria, and South Africa), while it experienced a downward trend in Eswatini and Namibia and a flat trend in Côte d'Ivoire. The index group's average score increased from 0.59 to 0.65 during the periods 1995-2007 and 2008-2017, respectively. Between 1995 and 2017, all the selected middle-income SSA countries recorded the group's mean score of 0.62 in the ownership structure index, with Eswatini, Lesotho, Kenya, and Côte d'Ivoire being the economies having the following above-average mean scores, respectively: 0.78, 0.73, 0.67, and 0.63. In relation to other bank regulatory indices, the index experienced a higher variation over time.

When it comes to the activity restriction index, it experienced a downward trend in many of the middle-income SSA economies (Angola, Eswatini, Ghana, Lesotho, Mauritius, and South Africa) but an upward trend in Botswana, Kenya, and Nigeria. However, it trended upwards in Botswana, Kenya, and Nigeria and exhibited a flat trend in Côte d'Ivoire (but with an increase between 2004 and 2007) and Namibia (but with a fall between 2008 and 2011). Overall, the group's mean score of the activity restriction index fell from 0.72 to 0.64 between the periods 1995-2007 and 2008-2017, respectively. The economies that recorded the mean scores higher than the group's average score of 0.68 over the entire period (1995-2017) are Mauritius (0.82), Eswatini (0.76), Lesotho (0.75), Ghana (0.74), Botswana (0.72), Kenya (0.71), and Angola (0.69). Nevertheless, the index displayed a relatively moderate variation over time when compared to other bank regulatory measures.

Additionally, the capital regulation index experienced an upward trend in Angola, Botswana, and Eswatini, while it remained relatively high in Kenya (between 2001 and 2011), Nigeria (between 2008 and 2011), and South Africa (between 2004 and 2007). Nonetheless, the index trended downwards in Côte d'Ivoire, Lesotho, Mauritius, and Namibia, and declined in Ghana but between 2001 and 2007. Its group's mean score increased from 0.67 in the period 1995-2007 to 0.68 during the period 2008-2017. Between 1995 and 2017, all the selected middle-income SSA countries registered the capital regulation mean score of 0.67, with the following economies recording the above-average mean scores: Botswana (0.86), Ghana (0.77), Mauritius (0.77), Nigeria (0.77), South Africa (0.77), and Kenya (0.69). Thus, the index exhibited a relatively high variation over time in comparison with other bank regulatory indices.

Finally, the macroprudential index increased over time in the majority of the middle-income SSA economies, while it remained the same in Ghana. The index experienced an upward trended in the following countries: Angola, which introduced concentration limits in 2007 and limits on foreign currency loans in 2011; Botswana, which, on top of the existing concentration limits, implemented limits to interbank exposures in 2016; Côte d'Ivoire, which adopted concentration limits in 2013; Eswatini, which introduced concentration limits as well as limits to foreign currency loans in 2001; Kenya, which implemented debt-to-income ratios in 2007; Lesotho, which adopted limits to interbank exposures in 2012 over the prevailing concentration limits and restrictions on domestic currency loans; Mauritius, which introduced debt-to-income ratios and capital surcharges on SIFIs in 2014 and 2016, respectively, over the existing concentration limits and loan-to-value ratios; Namibia, which implemented concentration limits, leverage ratios, and loan-to-value ratios in 2003, 2009, and 2017, respectively; Nigeria, which adopted concentration limits in 2004, limits to foreign currency loans in 2014, and capital surcharges on SIFIs in 2015; and South Africa, which introduced concentration limits, leverage ratios, and capital surcharges on SIFIs in 2008, 2013, and 2016, respectively.

The mean score of the macroprudential index for all the selected middle-income SSA countries rose from 0.06 during the period 1995-2007 to 0.14 in the period 2008-2017. Overall, the index recorded the group's average score of 0.09 from 1995 to 2017. The countries that registered the above-average mean scores over the entire period (1995-2017) are Lesotho (0.19), Ghana (0.17) (which already had concentration limits and levy or tax on financial institutions from the beginning of the review period), Eswatini (0.12), Mauritius (0.12), and Namibia (0.9). When

compared to other bank regulatory measures, the macroprudential index was relatively low and experienced a little variation over time.

3.3. Comparison of Bank Regulation in the Selected Low-income and Middle-Income SSA Countries

The paper further compares the average measures of bank regulation in the selected low-income and middle-income SSA countries and ranks these countries according to the sum of averages of bank regulatory measures as a proxy for overall bank regulatory environment. Figure 3 provides this comparison of the average measures of bank regulation between the two income groups of countries. Firstly, the average level of the entry barrier index was higher in the low-income than in the middle-income SSA economies over the period 1995-2017. The difference in the average levels of the index between these groups of countries became even larger in the period 2008-2017 than during the period 1995-2007 due to a considerable higher degree of the entry barrier index recorded in the selected low-income SSA economies.

Figure 3 Average bank regulatory measures in the selected low-income and middle-income SSA countries
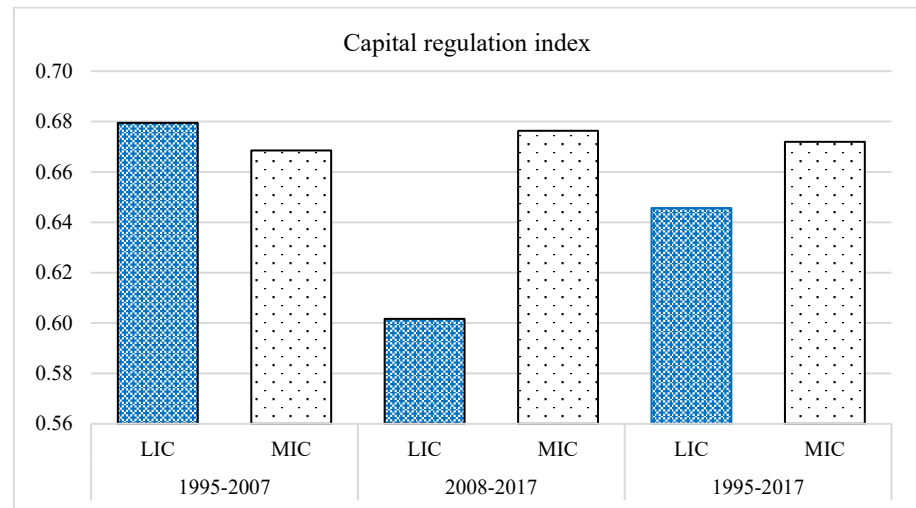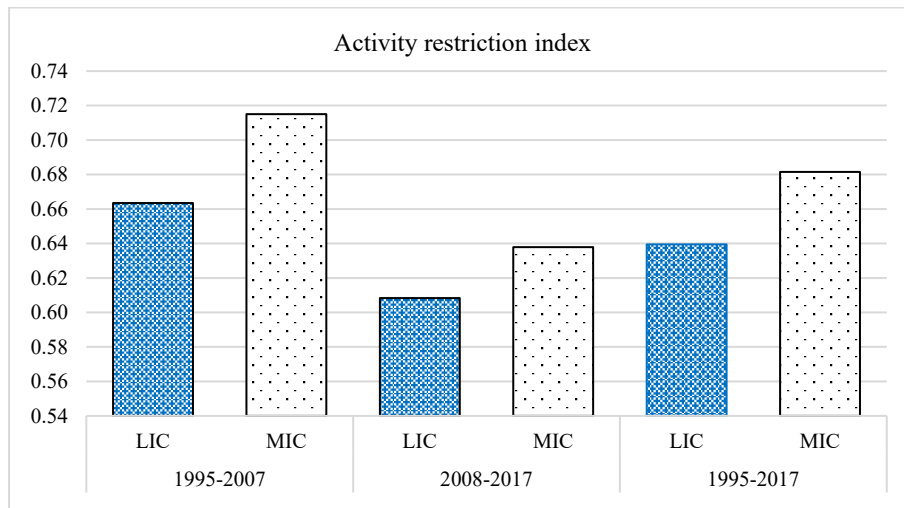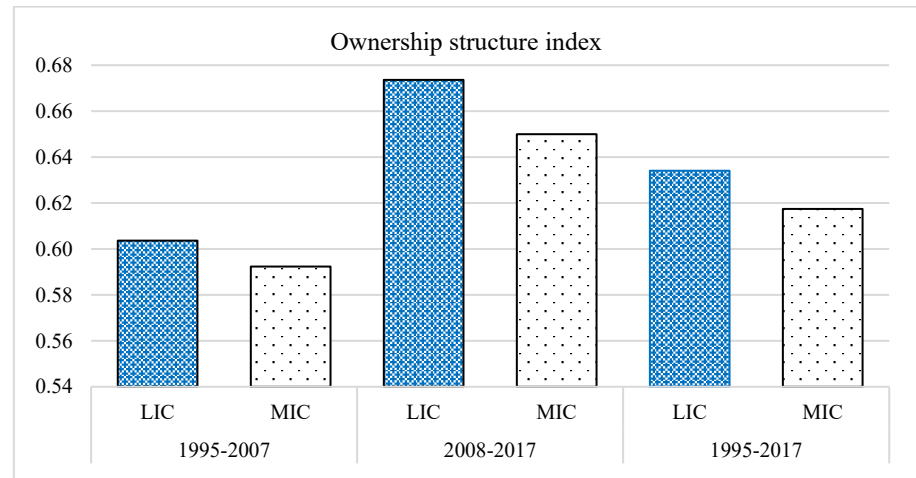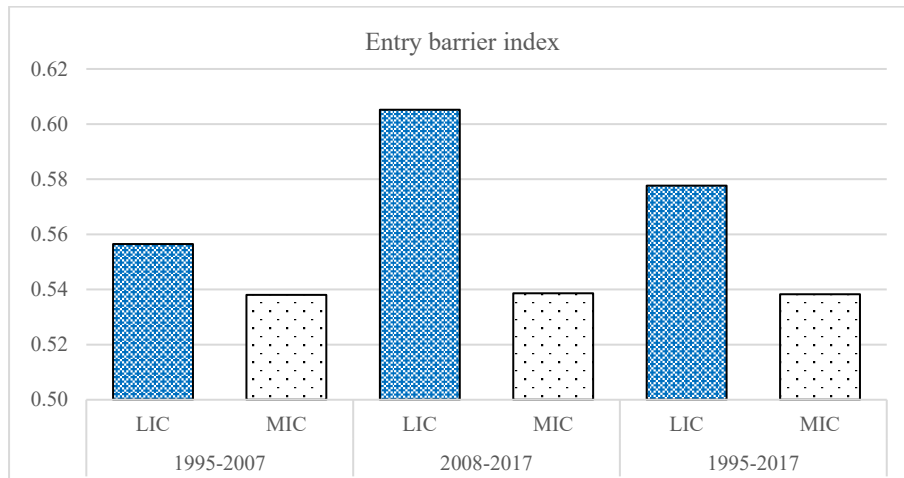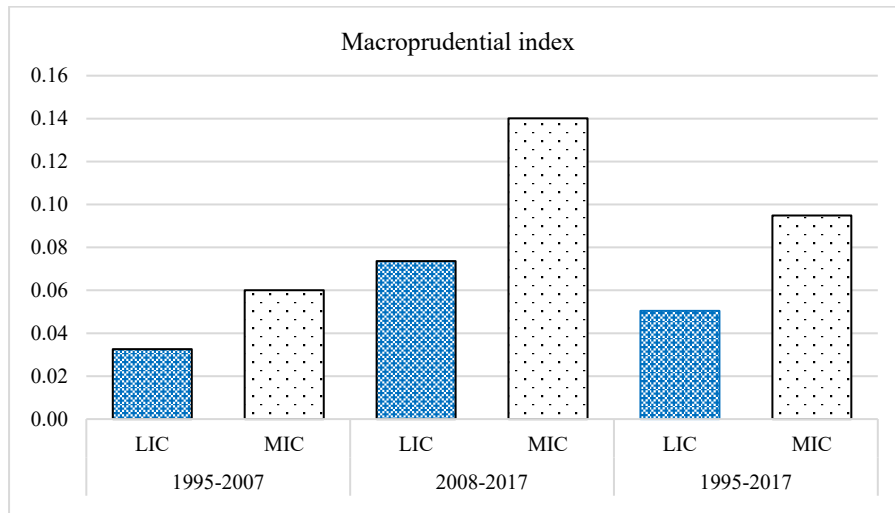
Figure 3 Average bank regulatory measures in the selected low-income and middle-income SSA countries (continuation)

Source(s): Own graphs using data from Barth et al. (2001, 2004, 2008, 2013), Cihak et al. (2013), Anginer et al. (2019), Cerutti et al. (2017), and Swaziland Government (2001).
Note(s): All indices are normalised to one and are in averages over the specified time periods; LIC=Low-income countries; MIC=Middle-income countries.

When it comes to the average level of the ownership structure index, it was higher in the low-income than in the middle-income SSA countries between 1995 and 2017. Although the index increased in both income groups of countries during the period 2008-2017 when compared to the period 1995-2007, the low-income SSA economies still registered a higher increment than the middle-income SSA countries, which widened the gap between the average levels of the index in these groups of countries.

On the contrary, the middle-income SSA countries experienced a higher average degree of the activity barrier index than the low-income SSA economies from 1995 to 2017. Nevertheless, the index declined in both income groups of countries between the periods 1995-2007 and 2008-2017, with the gap between their average levels narrowing because of a steeper decline in the average index of the middle-income SSA countries than that of the low-income SSA economies.

Similarly, the average degree of the capital regulation index in the middle-income SSA countries was higher than that of the low-income SSA economies during the period 1995 to 2017. While the index significantly declined in the low-income SSA countries between the periods 1995-2007 and 2008-2017, it increased slightly in the middle-income SSA economies, thereby widening the gap between the average levels of the index between these income groups of countries.

Lastly, the average level of the macroprudential index was higher in the middle-income than in the low-income SSA countries over the period 1995 to 2017. The difference in the average levels of the index between these income groups of countries was even larger during the period 2008-2017 than in the period 1995-2007 due to a considerable higher degree of the macroprudential index recorded in the selected middle-income SSA economies.

The paper also ranks the selected low-income and middle-income SSA countries according to the sum of averages of bank regulatory measures as a proxy for overall bank regulatory environment as shown in Figure 4 and Figure 5. Between 1995 and 2007, the degree of overall bank regulation in nine out of 23 SSA countries was above the group's average. Six of them are middle-income countries (Lesotho, Mauritius, Ghana, Botswana, Nigeria, and Kenya), while the other three are low-income economies (Uganda, Malawi, and Burundi). Out of 14

countries that had the below-average levels of overall bank regulation, five are middle-income countries (Eswatini, Côte d'Ivoire, South Africa, Angola, and Namibia), while nine are low-income economies (Madagascar, Guinea-Bissau, Benin, Mali, Niger, Senegal, Togo, Burkina Faso, and Tanzania). Thus, the bank regulatory environment was slightly stricter in the middle-income SSA countries than in the low-income SSA economies over the period 1995-2007.
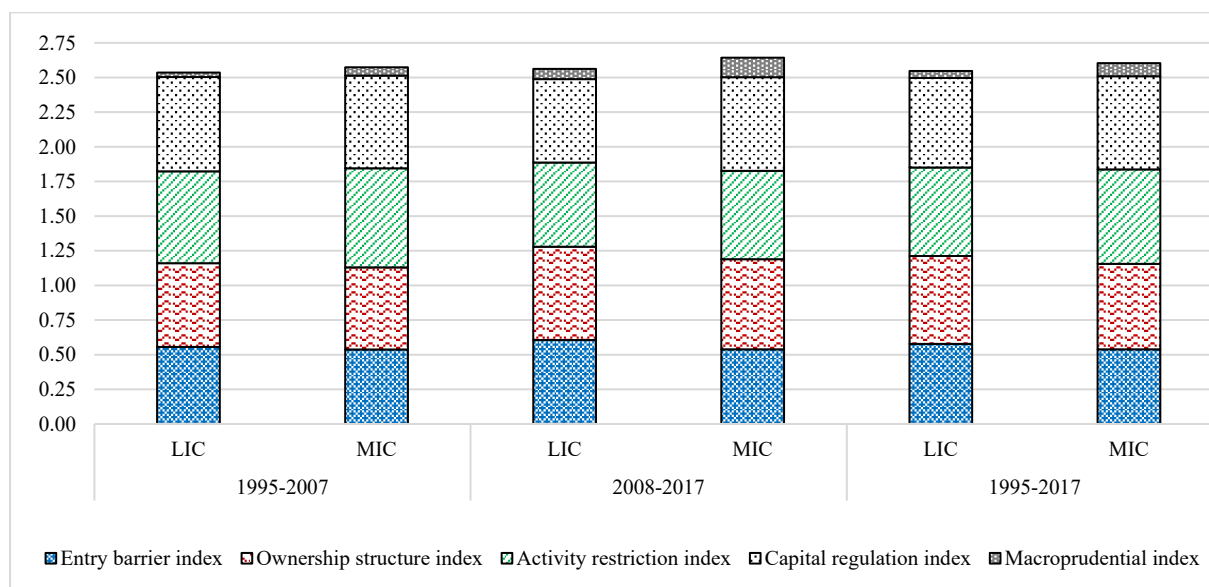
Figure 4 Sum of averages of bank regulatory measures in the selected SSA countries
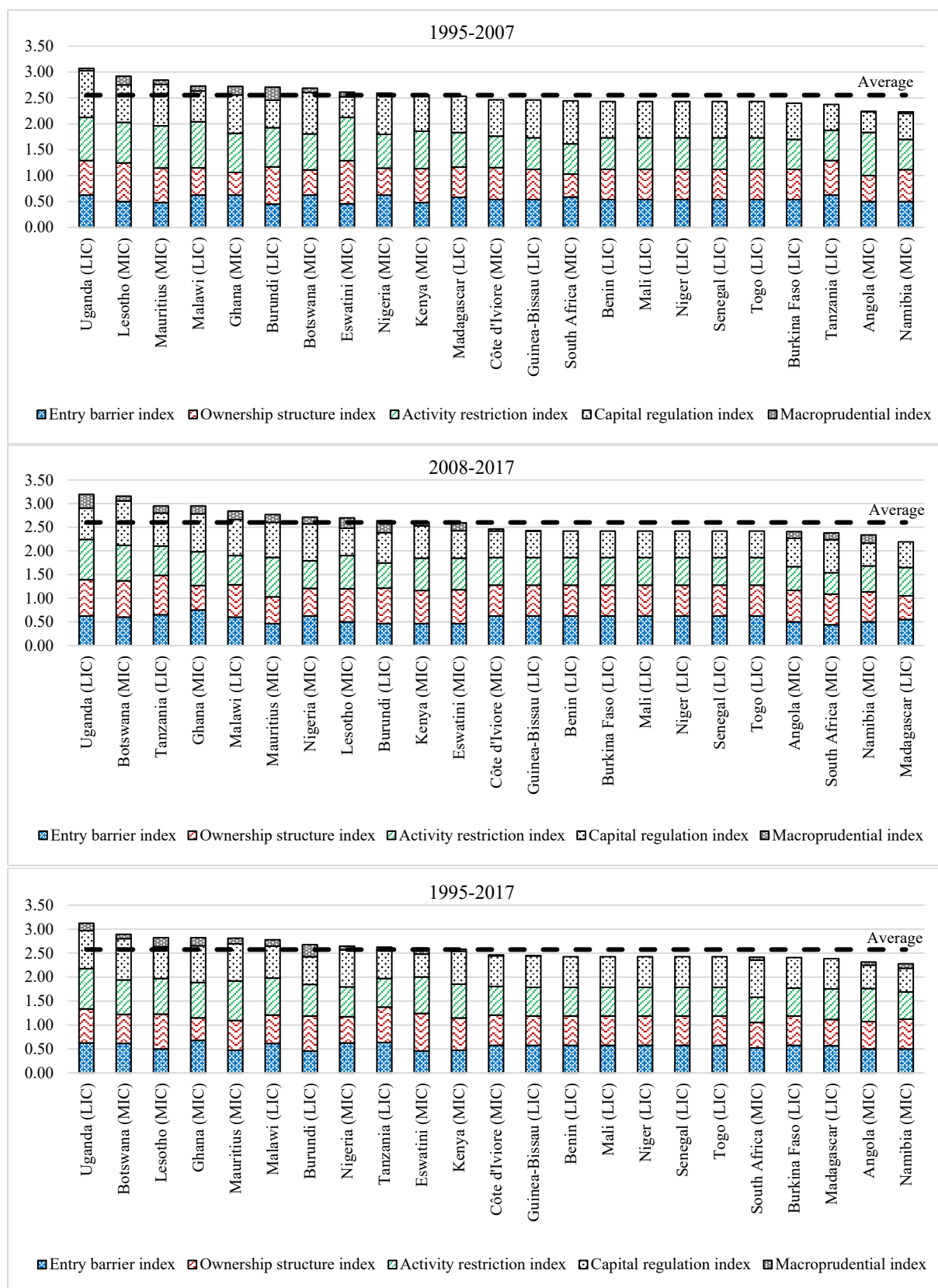
Source(s): Own graphs using data from Barth et al. (2001, 2004, 2008, 2013), Cihak et al. (2013), Anginer et al. (2019), Cerutti et al. (2017), and Swaziland Government (2001).

Note(s): All indices are normalised to one and are in averages over the specified time periods; LIC=Low-income country; MIC=Middle-income country.

Figure 5 Sum of averages of bank regulatory measures in the selected low-income and middle-income SSA countries

Considering the period from 2008 to 2017, 10 out of 23 SSA countries recorded the overall bank regulation levels that were above the group's average, with six of them being middle-income economies (Botswana, Ghana, Mauritius, Nigeria, Lesotho, and Kenya), while the other four are low-income countries (Uganda, Tanzania, Malawi, and Burundi). Five out of 13 SSA countries with the levels of bank regulation that were below the group's average are middle-income economies (Côte d'Ivoire, Eswatini, Angola, South Africa, and Namibia), while the remaining eight are low-income countries (Guinea-Bissau, Benin, Burkina Faso, Mali, Niger, Senegal, Togo, and Madagascar). Despite having fewer middle-income economies registering the above-average degree of overall bank regulation during the period 2008-2017 than in the period 1995-2007, the stringency of bank regulation was still higher in the middle-income SSA economies than in the low-income SSA countries.

Finally, 10 out of 23 SSA countries exhibited the above-average levels of overall bank regulation over the entire period (1995-2017), with six of them (Botswana, Lesotho, Ghana, Mauritius, Nigeria, and Kenya) coming from the middle-income group, while the other four (Uganda, Malawi, Burundi, and Tanzania) are part of the low-income group. Five of the 13 SSA countries that recorded the levels of overall bank regulation that were below the group's average are middle-income economies (Eswatini, Côte d'Ivoire, South Africa, Angola, and

Namibia), while the other eight are low-income SSA countries (Guinea-Bissau, Benin, Mali, Niger, Senegal, Togo, Burkina Faso, and Madagascar). Therefore, the bank regulatory environment was a little more stringent in middle-income SSA countries than in low-income SSA economies during the period 1995-2017.

4. Conclusion

The role played by bank regulation in promoting financial stability, hence economic growth and development, cannot be overstated. This is even more important in the SSA region where the financial sector in most countries is dominated by the banking industry. Given that the bank regulation environment has been changing over time in these economies, this paper has discussed the dynamics of bank regulation during the period before the 1990s and post 1990s and described the trends in bank regulatory measures between 1995 and 2017.

Before the 1990s, bank regulation in the majority of SSA countries was inadequate and this led to multiple occurrences of banking crises. As a result, many countries introduced the financial sector reforms from the late 1980s that included major adjustments in the banking regulatory and supervisory frameworks. Almost all the countries in the SSA region implemented the Basel I accord, while others later adopted higher standards of the Basel II and Basel III. Moreover, most of these economies have aligned themselves with the international financial reporting standards, but a few have adopted the deposit insurance schemes.

In both low-income and middle-income SSA economies, the bank regulatory environment became more stringent over time during the review period, driven by increased restrictions on bank entry barriers and ownership structure, as well as the introduction of macroprudential policies in the case of the former, while in the case of the latter, it was influenced by more restrictions on bank ownership structure and capital regulation requirements, as well as the adoption of macroprudential policies. But generally, the bank regulatory environment was slightly more stringent in middle-income than in low-income SSA economies over the period under consideration.

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Appendix A

Table A1 Measurement of bank regulatory indices

Index	Sub-components	Qualification	Range
Entry barrier	Limitations on foreign bank ownership of domestic banks	Are foreign entities prohibited from entering through: *a) Acquisition? b) Subsidiary? c) Branch? d) Joint Venture? [Yes=1; No=0; for each]*	0-4
	Entry into banking requirements	Are the following legal submissions required to obtain a banking license: *a) Draft bylaws? b) Intended organization chart? c) Financial projections? d) Financial information on main potential shareholders? e) Background/experience of future directors? f) Background/experience of future managers? g) Sources of funds to be disbursed in the capitalisation of new bank? h) Market differentiation intended for the new bank? [Yes=1; No=0; for each]*	0-8
Ownership structure	Bank ownership of non-financial Firms	To what extent can banks own and control non-financial firms? *[Unrestricted=1=a bank may own 100 percent of the equity in any nonfinancial firm; Permitted=2=a bank may own 100 percent of the equity of a nonfinancial firm, but ownership is limited based on a bank's equity capital; Restricted=3=a bank can only acquire less than 100 percent of the equity in a nonfinancial firm; and Prohibited=4=a bank may not acquire any equity investment in a nonfinancial firm whatsoever]*	1-4
	Non-financial firm ownership of banks	To what extent can non-financial firms own and control banks? *[Unrestricted=1=a nonfinancial firm may own 100 percent of the equity in a bank; Permitted=2=unrestricted with prior authorization or approval; Restricted=3=limits are placed on ownership, such as a maximum percentage of a bank's capital or shares; and Prohibited=4=no equity investment in a bank.]*	1-4
	Non-bank financial firms owning banks	The extent to which non-bank financial firms may own and control banks? *[Unrestricted=1=a nonbank financial firm may own 100 percent of the equity in a bank; Permitted=2=unrestricted with prior authorization or approval; Restricted=3=limits are placed on ownership, such as a maximum percentage of a bank's capital or shares; and Prohibited=4=no equity investment in a bank.]*	1-4
Activity restriction	Securities Activities	To what extent can banks engage in the following activities: *a) Securities? b) Insurance? c) Real estate? [Unrestricted=1=full range of activities can be conducted directly in the bank;*	1-4
	Insurance Activities		1-4

Index	Sub-components	Qualification	Range
	Real Estate Activities	*Permitted=2=full range of activities can be conducted, but some or all must be conducted in subsidiaries; Restricted=3=less than full range of activities can be conducted in the bank or subsidiaries; and Prohibited=4=the activity cannot be conducted in either the bank or subsidiaries; for each.]*	1-4
Capital regulation	Overall capital stringency	Overall capital requirement questions: *a) Is it risk-weighted in line with Basle guidelines? b) Does the ratio vary with a bank's credit risk? c) Does the ratio vary with market risk? d) Before minimum capital adequacy is determined, which items are deducted from capital: i) Market value of loan losses? ii) Unrealized securities losses? iii) Unrealized foreign exchange losses? [Yes=1; No=0; for each]*	0-6
	Initial capital stringency	Questions: *a) Are the sources of funds to be used as capital verified by authorities? [Yes=1; No=0] b) Can assets other than cash/government securities be used to increase capital? c) Can borrowed funds be used? [Yes=0; No=1; for b) and c)]*	0-3
Macroprudential	-	Does the following macroprudential policy exist: *a) Debt-to-Income Ratio [Constrains household indebtedness by enforcing or encouraging a limit]? b) Time-Varying/Dynamic Loan-Loss Provisioning [Requires banks to hold more loan-loss provisions during upturns]? c) General Countercyclical Capital Buffer/Requirement [Requires banks to hold more capital during upturns]? d) Leverage Ratio [Limits banks from exceeding a fixed minimum leverage ratio]? e) Capital Surcharges on Systemically Important Financial Institutions (SIFIs) [Requires SIFIs to hold a higher capital level than other financial institutions]? f) Limits on Interbank Exposures [Limits the fraction of liabilities held by the banking sector or by individual banks]? g) Concentration Limits [Limits the fraction of assets held by a limited number of borrowers]? h) Limits on Foreign Currency Loans [Limits banks' foreign currency loans, as a way to reduce vulnerability to foreign-currency risks]? i) Limits on Domestic Currency Loans [Limits credit growth directly]? j) Levy/Tax on Financial Institutions [Taxes revenues of financial institutions]? k) Loan-to-Value Ratio (LTV) Caps [Limits to LTV used as a strictly enforced cap on new loans, as opposed to a supervisory guideline or merely a determinant of risk weights]? l) Foreign Exchange (FX) and/or Countercyclical Reserve Requirements (RR) [Limits to RR which i) imposes a wedge of on foreign currency deposits, or ii) is adjusted countercyclically]? [Yes = 1; No = 0; for each]*	0-12

Source(s): Barth et al. (2001, 2004, 2008, 2013); Cihak et al. (2013); Anginer et al. (2019); Cerutti et al. (2017).

Table A2 World Bank's bank regulation surveys for the selected SSA countries

Country name	Country code	Survey I (1999)	Survey II (2003)	Survey III (2007)	Survey IV (2011)	Survey V (2019)
Low- income countries						
1. Benin	BEN	-	✔	✔	✔	✔
2. Burkina Faso	BFA	-	✔	✔	✔	✔
3. Burundi	BDI	✔	✔	✔	✔	✔
4. Guinea-Bissau	GNB	-	✔	✔	-	✔
5. Madagascar	MDG	-	✔	-	✔	✔
6. Malawi	MWI	✔	-	✔	✔	✔
7. Mali	MLI	-	✔	✔	✔	✔
8. Niger	NER	-	✔	✔	✔	✔
9. Senegal	SEN	-	✔	✔	-	✔
10. Tanzania	TZA	-	-	✔	✔	✔
11. Togo	TGO	-	✔	✔	✔	✔
12. Uganda	UGA	-	-	✔	✔	✔
Middle- income countries						
1. Angola	AGO	-	-	✔	✔	✔
2. Botswana	BWA	✔	✔	✔	✔	✔
3. Côte d'Ivoire	CIV	-	✔	✔	✔	✔
4. Eswatini	SWZ	-	✔	-	✔	✔
5. Ghana	GHA	-	✔	✔	✔	✔
6. Kenya	KEN	✔	✔	✔	✔	✔
7. Lesotho	LSO	✔	✔	✔	✔	✔
8. Mauritius	MUS	✔	✔	✔	✔	✔
9. Namibia	NAM	✔	✔	-	✔	✔
10. Nigeria	NGA	✔	✔	✔	✔	✔
11. South Africa	ZAF	✔	✔	✔	✔	✔

Source(s): Own computation using data from Barth et al. (2001, 2004, 2008, 2013), Cihak et al. (2013), and Anginer et al. (2019).

Note(s): The parenthesis gives the year of completion of the survey; A tick (✔) shows that the data is available; A dash (-) shows that the data is unavailable, and the previous or subsequent available survey data is used instead.