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A Survey of the Microstructure of Corporate Bond Markets in Africa

Wycliffe Oluoch^{ab*} Kalu Ojah^b

Abstract

Using a mix of survey and secondary datasets on Africa, we document that banks and non-bank financial institutions account for more than 85 percent of corporate bonds issued in Africa during 2000—2020, with a market capitalization of over 80 percent of these bonds. Africa's markets have modern trading infrastructures such as automated trading systems (ATSs) and electronic depository, settlement, and clearance systems (CDSs), that are supported by the latest technology. Contrary to the notion that costly and complex issuance procedures favor private placement, most bonds are publicly issued, and exchange-listed. Curiously, issuers sparingly deploy contract features that enhance bond quality and help investors hedge pertinent risks – e.g., sinking funds, call and put provisions, and inflation indexing. The main trading session of these markets is continuous, preceded by a pre-opening call and a post-close call session. Among other market development impediments, low awareness of bond markets, market illiquidity, low listings, and small investor base are important factors governments and bourses must address to advance the growth and efficacy (robust microstructure) of corporate bond markets in Africa.

JEL Classification: G1, G2 E4

Key words: Africa, bond markets, bond market development, corporate bonds, liquidity, market microstructure.¹

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^a Egerton University, Nakuru, Kenya

^b University of the Witwatersrand's Graduate Business School, Johannesburg, South Africa

* Corresponding author: woluoch@egerton.ac.ke

1. Introduction

Africa can cultivate vibrant corporate bond markets to assist firms that require long-term funds to finance their businesses, by rallying savers and investors that are seeking a stable income flow from their savings (investment assets). Corporate bond markets not only facilitate an increase in production, private sector growth, and employment (World Economic Forum, 2015; Hill, 2017; Wahidin et al., 2021), but they also assist governments in significantly closing the infrastructure financing gap (Kodongo et al., 2023); and thus facilitate economic growth in the process (Ibrahim & Alagidede, 2018; Diao & McMillan, 2018; Ojah et al., 2022; Timilsina et al., 2023). As a result of these benefits, international institutions such as the Africa Development Bank (AfDB), the International Monetary Fund (IMF), and the United Nations (UN), have initiated programs that support governments to develop local bond markets. However, extant literature shows that most corporate bond markets in the region remain underdeveloped: they have low depth, breadth, funding capacity, and low market liquidity (Smaoui et al., 2017; Machokoto et al., 2020).

There is therefore an important concern regarding such an “arrested development” in a potentially vital capital market. In search of answers to this market development problem, most past relevant studies have focused on the effects of macroeconomic factors on the development of bond markets in Africa (Adelegan & Radzewicz-Back, 2009; Mu et al., 2013; Essers et al., 2016; CFA & ASEA, 2019; and Smaoui et al., 2017) However, there is a glaring lack of studies on the microstructure of bond markets in Africa, as well as the impact this lack of knowledge about requisite market microstructure may be having on the region’s bond market growth (especially corporate bond markets). This gap of knowledge in an important market foundation is significant, especially considering Africa’s interest in mobilizing domestic financial (capital) resources that can foster increased production and sustainable growth (Ojah & Kodongo, 2015; Ojah et al., 2022; Kodongo et al., 2023).

For example, empirical literature shows that the microstructure of equity markets plays a significant role in determining the quality of markets, especially in terms of market liquidity (Gerace et al., 2009; Arjoon, 2016; Nguyen et al., 2020), transaction cost (O’Hara & Ye, 2011; Biais & Green, 2019), information efficiency (M. S. Pagano & Schwartz, 2003; Boehmer et al., 2005; Chang et al., 2008; Lin, 2016; Valseth, 2020), and price discovery (Comerton-Forde, 1999; M. S. Pagano et al., 2013; Chen & Zhong, 2017). These factors potentially have a significant impact on the growth of securities exchanges due to their effects on agents’ trading strategies and market effectiveness (De

Jong & Rindi, 2009; Biais & Green, 2019); thus, they deserve due attention. The interest in market microstructure is also driven by the exposure of securities exchanges to rapid evolution because of globalization, technological advancement, innovative investment assets, and the proliferation of new markets. All of this necessitates a better understanding of the securities exchange's ecosystem, particularly by exchange managers and regulators, for the sake of continuous market design improvement (Harris, 2003). Additionally, the fragility of securities markets due to global shocks, such as the 2007/8 global financial crises, and the recent Covid-19 pandemic, unearth drawbacks that require continuous improvement to overcome.

This study is, therefore, designed to map (and thus shed light on) the microstructure of corporate bond markets in Africa. More specifically, we first determine what constitutes the microstructure of these African countries' corporate bond markets, and then examine the relationship between market microstructure and market development. Finally, we investigate the barriers to the development of these markets from the perspective of the stakeholders, namely: traders, regulators, and the securities exchanges.

In a nutshell, we document that banks and non-bank financial institutions accounted for more than 85 percent of corporate bonds issued in Africa between 2000 and 2020, with a market capitalization of over 80 percent of such outstanding bonds. These markets have modern trading infrastructures such as automated trading systems (ATSs) and electronic depository, settlement, and clearance systems (CDSs), that are supported by the latest technology. Contrary to the notion that high issuance costs and complex issuance procedures favor private placements, most of the bonds are publicly issued and exchange-listed. Curiously, issuers, as at the time of this survey, tend not to deploy contract features that enhance bond quality and help investors hedge a plethora of pertinent risks. For instance, less than 10 percent of the bonds have guarantees, sinking funds, call and put provisions, and inflation indexing. The main trading session of these markets is continuous, preceded by a pre-opening call and a post-close call session.

In fact, the contributions of this work are significant in terms of public debt market development in the continent. First, we provide a comprehensive analysis of the microstructure of corporate bond markets in Africa; and, thus, shed light on the microstructure of Africa's broader bond markets in the process. Our focus on the corporate bond market for this first-of-its-kind investigation of public debt markets' microstructure, is because corporate bond markets are supplementary to sovereign bond markets, which are traditionally the first (and easier) national

bond market type to initiate. It is easier because it enables the sourcing of fiscal budget funding for governments (which initiate and use them). A reliable supply of Treasury debt yields from sovereign bond secondary markets then serves as a prerequisite (i.e., benchmark) for pricing sub-national and corporate bonds. Therefore, studies of corporate bond markets' microstructure subsume the understudying of government bond markets (Mukoki et al., 2023). In fact, national public debt markets that feature both sovereign and corporate bond markets, flag the relative sophistication of such national markets. Furthermore, we use a combination of qualitative and quantitative analyses on both survey and interview data, as well as secondary data to triangulate results for a more robust reliability of our findings. Our sample consists of 18 countries and 6320 issues of domestic corporate bonds. Primary data collection yielded 69 filled surveys and 72 in-depth oral interviews, and several documents of secondary data (information) were also obtained and analysed.

The remainder of the paper unfolds in the following sequence. Section 2 provides the underlying literature; section 3 describes the sample, data collection process and the data analysis methodology. Section 4 presents the stylized facts on Africa's bond markets. Sections 5-7 present both the findings and the main challenges impeding the development of these markets, and Section 8 concludes the paper.

2. Related Literature

The market microstructure literature primarily examines the impacts of market structure (design), transparency and transaction costs, especially on price and trading strategies (Easley & O'Hara, 1995; O'Hara, 1997; Madhavan, 2000; Hasbrouck, 2007). These studies observe that emergent market microstructures involve decisions about trading infrastructures, identifying those that are eligible to trade and the securities to be traded, as well as trading sessions and how trades are to take place (Harris, 2003; Biais & Declerck, 2007; De Jong & Rindi, 2009). For each of these matters, securities exchange managers and regulators have to make a decision, which in turn has significant impacts on market liquidity, price efficiency, investors' strategies, and traders' profits (Bennett & Wei, 2006). For example, exchanges can opt for a manual or an automated trading system; and whilst manual trading systems have been in use for a much longer period, most exchanges have replaced them with ATs, which are considered more efficient and capable of handling large-scale transactions than floor-based manual systems. This resultant efficiency leads to lower execution

costs and greater information transparency, which, in turn, facilitates price discovery, allows for an array of trading venues, and increases competition (O'Hara & Ye, 2011).

Evidence from event studies on the transition from manual to ATSs, conducted by Grunbichler et al. (1994), Naidu and Rozeff (1994), Domowitz and Steil (1999), Jain (2005), Barclay et al. (2006), Hendershott and Moulton (2011) and Arjoon (2016), unanimously affirm that the news of an exchange's intention to automate, leads to an increase in transparency and trading volume. This, according to O'Hara & Ye (2011), leads to an increase in stock prices; thus, suggesting a preference for and associated efficiency enhancement. Markets with a hybrid of automated and floor-based systems also experience a significant lead-lag relationship between changes in the prices of securities trading on both platforms. These effects are seemingly more pronounced in emerging economies which usually have low levels of market efficiency. Although the ATSs have increasingly become popular among traders, leading exchanges such as the New York Stock Exchange (NYSE) and Chicago Board of Trade (CBT) have maintained their traditional floor trading systems.

Another structure related decision in the design of securities markets is the choice between continuous and call trading sessions. Because these two trading types have different strengths and limitations, most markets will use a hybrid type that combines both. The main advantage of markets that operate continuous trading sessions is the flexibility associated with long trading hours that offers more convenience to traders. Call markets, on the other hand, improve market liquidity by bringing all interested traders together in each trading session and consolidating order flows; thus, accelerating order matching and execution (Gerace et al., 2009; Arjoon, 2016). Like in the case of ATS, continuous markets experience improvement in information efficiency across all trading sessions upon the introduction of opening and closing call auctions (Pagano & Schwartz, 2003; Chang et al., 2008) as well as significant decline in price volatility and improved price discovery due to "noise" reduction in stock prices (Comerton-Forde, 1999; Huang & Tsai, 2008; Pagano et al., 2013). These outcomes suggest a preference for call systems. Furthermore, Cornerstone (2007) observed a dramatic increase in trading activity during opening calls in IPOs, a decrease in closing price manipulation, and an improvement in market quality.

Equally important in market design is in respect of information transparency where securities exchange managers deal with the depth and timeliness of information disseminated to the investing public. Though professional traders prefer limited transparency, most regulators have been campaigning for greater transparency, arguing that opacity constrains price discovery and quality

of markets (Pagano & Röell, 1996; Boehmer et al., 2005; IOSCO, 2011; Zhu, 2014; Lin, 2016; and Valseth, 2020). Moreover, some of these works show that uninformed traders get a better price in pre-trade transparent markets like auction markets than in post-trade dealer markets. This applies across all trade sizes, and thus suggests that pre-trade transparency more positively correlates with price discovery. Chen and Zhong (2017) found that corporate bonds listed on both OTC markets and NYSE have significantly smaller bid-ask spreads and low volatility of the bid-ask spreads than corporate bonds trading on OTC only; an outcome which suggests that the benefits of pre-trade transparency in organized exchanges are transmitted to the OTC markets by corporate bonds trading on both markets.

3. Data

The target respondents of this corporate bond market study came from three categories of market participants: (1) capital market regulators, (2) securities exchange managers, and (3) securities brokers and dealers. The primary criterion for selecting the sample countries is that corporate bonds be listed on their respective national securities exchange. This screening resulted in the following 18 countries: Algeria, Botswana, Cameroon, Cabo Verde, Egypt, Eswatini, Ghana, Kenya, Mauritius, Morocco, Namibia, Nigeria, Rwanda, South Africa, Tanzania, Tunisia, Uganda, and Zambia². Additionally, we included the West African Economic and Monetary Union (WAEMU)³ which has a regional market, the Bourse Régionale des Valeurs Mobilières (BRVM). The first two categories of target respondents were automatically included in the study. The number of firms (or brokers) in the last category of respondents varies from one country to another; thus, only a representative proportion was picked as follows: in countries where licensed brokerage firms were less than 10, all of them were included in the study for survey and interview. Alternatively, in countries with more than 10 brokerage firms, the snowballing strategy was used to choose at least ten brokerage firms to participate in the survey and interview. The snowballing strategy facilitated a better response rate due to chain referrals by participants known to each other.

Face-to-face interviews and written questionnaires were administered to the selected firms. Though individual responses were allowed, most firms assembled a team of 2 to 5 staff members for the survey, based on experience in corporate bond trading or close interaction with the market through

² Due to the problems experienced in data collection in North African, Algeria, Egypt, Morocco and Tunisia are included in analysis that uses secondary data only.

³ WAEMU member countries are Benin, Burkina Faso, Guinea Bissau, Cote d'Ivoire, Mali, Niger, Senegal, and Togo.

roles such as research, especially in the case of securities exchanges and regulatory outfits. This approach enriched the information collected because of these individuals' various relevant roles and experiences. The interview was semi-structured, with a set of questions covering specific aspects of market microstructure (e.g., trading process, infrastructure, and transparency) as well as factors that hinder the development of corporate bond markets. Respondents were encouraged to provide as much detail as possible, whilst also allowing the researcher to ask follow-up questions. The process yielded 69 firm-respondents over the collection period of 2018—2019.

The survey and interview datasets were supplemented by corporate bond issuance data obtained from DataStream. The DataStream data contained detailed quantitative and categorical information on corporate bonds issued in sample countries during 2000—2020, including price and non-price pieces of information useful for analysing bond contracts and/or trading design. Following an initial sorting of these datasets, we obtained a sample of 6,320 local currency corporate bonds, which served as our study's bond sample. An additional secondary dataset was gathered from published documents/reports from national securities exchanges and the African Securities Exchange Association (ASEA's) website, including the history of bond markets, cost structure, and legal and regulatory environment. We analyzed the collated datasets using a mixed-methods approach. The corporate bond issuance data (both quantitative and qualitative) was combined with qualitative surveys, interview data, and secondary data. Qualitative data was also used to describe markets as well as determine the relative performance of markets in the region. Finally, content analysis was used to analyze the interviews and determine, for instance, the barriers to corporate bond markets developments in Africa.

4. Stylized Facts about Corporate Bond Markets in Africa

The evolution of corporate bond markets

Africa is host to the youngest corporate bond markets in the world. It was not until 1996 that the Bond Exchange of South Africa (BESA), the first corporate bond market in the region, was established in South Africa (Ojah & Pillay, 2009; Ojah & Kodongo, 2015). During its infancy, BESA was dominated by debt instruments issued by the South African government and state-owned enterprises (SOEs) apart from a few debt issuances by large publicly listed firms (particularly banks). The exchange enjoyed rapid growth between 2000 and 2008, becoming one of the major bond markets among emerging economies. By December 2008, it had over 1102 listed debt

securities issued by over 100 companies. In 2009, BESA was acquired by JSE Securities Exchange (JSE), its name changed to JSE debt market, and its operations moved to the JSE floor. After the JSE debt market, several corporate bond markets sprung up. Like BESA's destination to becoming the JSE's debt market segment, these subsequent corporate bond markets were established within national securities exchanges rather than as independent debt securities exchanges.

Between 2000 and 2010, Africa's corporate bond markets grew in number as well as in issuances. The proportion of non-financial corporate bonds increased from 12.52 percent of the total value of private bonds in 2000 to 14.82 percent in 2010. Despite this remarkable progress, Africa's corporate bond markets remained underdeveloped in comparison to their peers in other regions of emerging economies. They are mostly shallow in depth and narrow in breadth; they feature a handful of listed bonds that are dominated by small, short tenure and homogeneous bonds, issued mainly by financial services firms. The number of listed firms in each bond market is generally small and has declined over the last decade (World Economic Forum, 2015). The table below shows the evolution of Africa's corporate bond markets in terms of the number of listed firms, number of outstanding bonds, and bond market sizes (both in absolute amount and relative to the GDP), and by year over the period 2006—2020.

According to Table 1, there were only 1621 firms listed on the 19 national securities exchanges in 2005. The low listing is reflected across the sample countries, with only Egypt, South Africa, and Nigeria having more than 100 listed firms each, while Morocco had 54 listed firms. As of December 2005, these 4 countries accounted for more than 84 percent of all listed firms. The other 15 countries had less than 50 listed firms each, with seven among them having less than ten listed firms. By 2010, the number of listed firms had dropped by up to 418, primarily because of a dramatic drop in Egypt⁴. As of December 2020, the total number of listed firms in Africa remained relatively the same. While the number of listed firms declined between 2005 and 2020, the issuance of corporate bonds increased dramatically. As shown in the table, the number of outstanding corporate bonds increased markedly between 2005 and 2020, and most of the new issuances were recorded in South Africa. Morocco also recorded a big jump in issuances to become the second most active corporate bond market in the continent, accounting for 23 percent of the outstanding

⁴ The decline in number of listed firms can be due to several reasons, including mergers and acquisitions, voluntary delisting by a firm or compulsory delisting by regulatory bodies, especially the securities exchange due to noncompliance with regulations.

corporate bonds in 2020. Egypt, on the other hand, recorded a decline in the number of bonds between 2010 and 2020.

Table 1: The evolution of corporate bond markets in Africa

Country	No. of listed Companies			No. of listed Corp. bonds			Outstanding Corp. bonds (Billions of US\$)			Outstanding Corp. bonds percent of GDP		
	2005	2010	2020	2005	2010	2020	2005	2010	2020	2005	2010	2020
Algeria	3	2	5	12	21	4	0.33	0.73	1.22	0.32	0.45	0.70
Botswana	19	21	26	24	38	17	0.20	0.34	0.16	2.06	2.62	0.85
Cameroon	0	3	3	0	3	1	0.00	0.05	0.12	0.00	0.19	0.31
Egypt	744	227	248	83	101	4	20.14	20.09	0.61	22.48	9.17	0.22
Eswatini	6	6	6	2	1	0	0.02	0.01	0.00	0.63	0.23	0.00
Ghana	27	31	29	0	1	7	0.00	0.00	1.52	0.00	0.01	2.30
Kenya	48	55	59	4	24	9	0.03	0.46	0.34	0.17	1.15	0.37
Mauritius	30	62	97	1	1	9	0.00	0.02	0.43	0.06	0.23	3.04
Morocco	54	73	74	56	115	700	1.37	6.51	35.68	2.19	6.99	30.01
Mozambique	4	4	10	4	14	4	0.01	0.06	0.03	0.11	0.56	0.18
Namibia	9	7	10	3	20	18	0.04	0.24	0.26	0.56	2.17	1.99
Nigeria	215	215	172	6	19	34	0.09	1.04	1.64	0.05	0.29	0.39
Rwanda	0	2	8	0	1	0	0.00	0.00	0.00	0.00	0.02	0.00
South Africa	348	352	281	245	833	2068	16.29	77.70	88.30	6.32	20.70	24.53
Tanzania	10	15	26	2	15	6	0.01	0.05	0.00	0.07	0.16	0.00
Tunisia	45	56	81	17	116	142	0.06	5.60	1.23	0.19	12.71	3.12
Uganda	7	13	16	2	9	2	0.02	0.04	0.02	0.21	0.17	0.05
WAEMU	39	39	46	10	22	16	0.14	0.67	3.88	0.26	0.80	2.43
Zambia	13	20	15	1	10	2	0.00	0.03	0.02	0.04	0.15	0.10
Africa	1621	1203	1212	472	1364	3043	38.76	113.65	135.44	4.32	7.24	7.00

This table reports the number of listed firms, the number of listed bonds, and the outstanding corporate bonds (market size) in billions of US\$ and as a percentage of the GDP. The GDP for WAEMU is the sum of the GDP of the member countries. The figures are for the years 2005, 2010, and 2020. *Data source:* The number of listed firms was obtained from the World Bank's WDI database. Market capitalization and the number of bonds issued are authors' calculations using corporate bond issuance data from the DataStream database.

In terms of corporate bond market size in absolute value, there were only two exchanges with outstanding bonds valued at over US\$ 10 billion in 2005 (i.e., Egypt and South Africa). Morocco was the third largest in that year but with outstanding bonds totalling only US\$ 1.37 billion. The remaining 16 markets were valued at less than US\$ 1 billion each. Between 2005 and 2010, the combined size of these bond markets increased from US\$ 38.76 billion to US\$ 113.65 billion, representing a nearly 200 percent increase. However, the increase between 2010 and 2020 was by a modest 20 percent. The average outstanding bond to the GDP ratio was 4.32 percent in 2005 and it nearly doubled in 2010, reaching 7.24 percent, and thereafter remained constant at 7 percent by 2020. Only four countries had a size to GDP of more than 1 percent in 2005, but this number

increased to 7 percent by 2020. Morocco recorded the highest increase (at 30.01 percent of GDP) relative to South Africa's 24.53 percent, even though, in absolute terms, South Africa's corporate bond market was 2.5 times bigger than Morocco's in 2020. The graphical representation of the corporate bond market relative to the GDP of each country is shown in Figure 1 below.



Figure 1: Corporate bond market size as a % of GDP from 2000 to 2020

Source: Authors' calculations using corporate bond issuance data obtained from DataStream

Figure 1 graphically reports the market size of corporate bond markets in terms of outstanding corporate bonds' value as a percentage of GDP for each year. Morocco and South Africa recorded a steady increase in their bond market size between 2000 and 2020. On the other hand, Egypt, Ghana, Tanzania, and Tunisia experienced a dramatic decline in their respective markets over the same period. Mauritius had a relatively volatile growth, peaking in 2000, 2010, and 2020, but was low in 2005 and 2015. The other countries recorded no significant growth, with their bond market size remaining below 10 percent of GDP between 2000 and 2020.

In Figure 2 below, we present sizes of selected top seven corporate bond markets, alongside a combined size of all corporate bond markets in our sample (as Africa). The figure reflects the effect of the 2007/2008 global financial crisis.

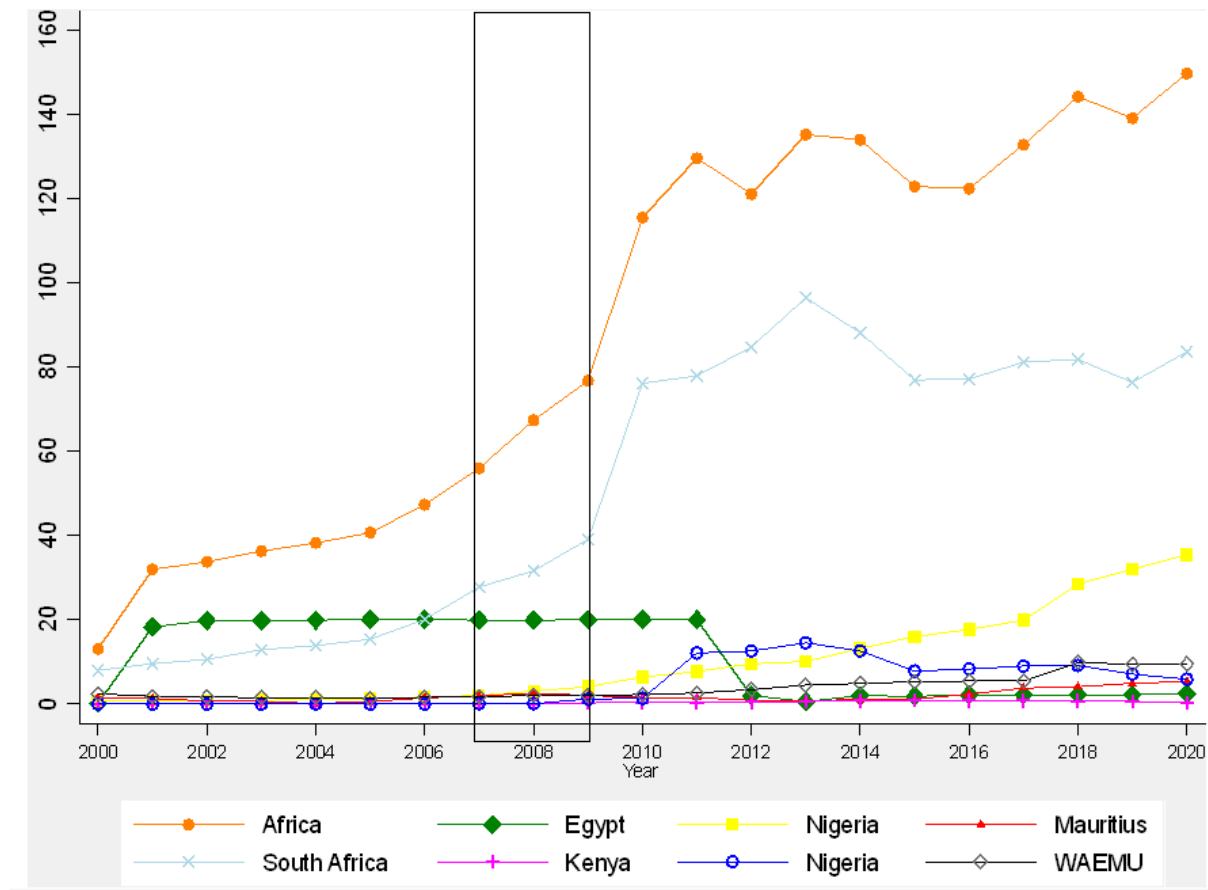


Figure 2: Market capitalization of top corporate bond markets in Africa (in billions of US dollars)

Source: Authors calculated using data from DataStream

Figure 2 shows South Africa as Africa’s dominant bond market. This market grew steadily until 2012, with no discernible effect of the global financial crisis. However, it shrank thereafter until 2015, when it began to grow again, albeit at a slower rate until the European debt crisis. Except for Morocco, which grew steadily from less than US\$20 billion in 2012 to more than US\$30 billion in 2020, the other six markets remained below US\$20 billion. Like South Africa, the combined size of Africa’s corporate bond markets increased steadily between 2000 and 2011, rising from less than US\$20 billion in 2000 to more than US\$120 billion in 2011.

4.1. Market players and product/contract forms

Issuers

Firms' ownership structure can influence their ability and need to access bond markets, and thus the propensity for market growth (World Economic Forum, 2015). Consequently, we analysed the bonds in offer based on the ownership structure of issuing firms. Like other regions, Africa's corporate bonds are primarily issued by publicly held companies (corporations). Other entities that issue non-sovereign bonds are state-owned enterprises (SOEs, often referred to as agencies) that provide services such as electricity and telecommunications. Besides, there are governments such as South Africa, Kenya, Uganda, and Nigeria that allow their sub-national entities, like local authorities, counties, and other municipalities, to issue corporate or 'near corporate' bonds.

Local governments issue non-sovereign bonds to finance local projects such as roads, airports, ports, and sanitation, as well as education and health care (social infrastructure). Corporate bonds issued by SOEs, and municipalities are usually guaranteed by the government (overtly or implicitly) and thus have a higher credit rating than comparable unsecured corporate bonds. Supranational organizations, such as World Bank, International Monetary Fund, and African Development Bank (AfDB), with membership from various countries, also issue bonds not only to fund their operations and projects but also to support the development of local currency bond markets in diverse regions. For instance, AfDB issued corporate bonds in Johannesburg Stock Exchange (JSE), Nigerian Stock Exchange (NSE) and Uganda Stock Exchange (USE). The coupon payments are often paid for from operating income. Each issuer, including publicly traded firms, has a different default risk, so investors' choices are influenced by their risk tolerance.

Table 2 below summarizes the 6320 corporate bonds issued in Africa during 2000—2020 by entity type. Corporate bonds issued by SOEs are denoted 'agency bonds', and issuances by municipalities are denoted as 'Munis', whereas issuances by supranational bodies are denoted as 'supra bonds'.

Table 2: Corporate bond issuances by issuer type

Country	Issuer Type				Parent/Subsidiary		By country
	Agency	Corporate	Munis	Supra	Parent	Subsidiary	Total
Algeria	0	31	0	0	11	20	31
Botswana	8	52	0	0	20	40	60
Cameroon	0	3	0	1	4	0	4
Egypt	90	60	0	0	23	127	150
Eswatini	0	2	0	0	0	2	2
Ghana	0	15	0	0	11	4	15
Kenya	0	49	0	2	33	18	51
Mauritius	0	37	0	0	12	25	37
Morocco	4	1152	0	1	481	676	1157
Mozambique	0	27	0	0	6	21	27
Namibia	2	66	0	0	7	61	68
Nigeria	1	66	0	25	54	38	92
Rwanda	0	1	0	1	1	1	2
South Africa	186	3928	49	14	720	3457	4177
Tanzania	0	21	0	2	23	0	23
Tunisia	0	334	0	0	241	93	334
Uganda	0	7	0	3	8	2	10
WAEMU	2	36	0	26	46	18	64
Zambia	1	11	0	1	4	9	13
Total	294	5898	49	76	1705	4612	6317

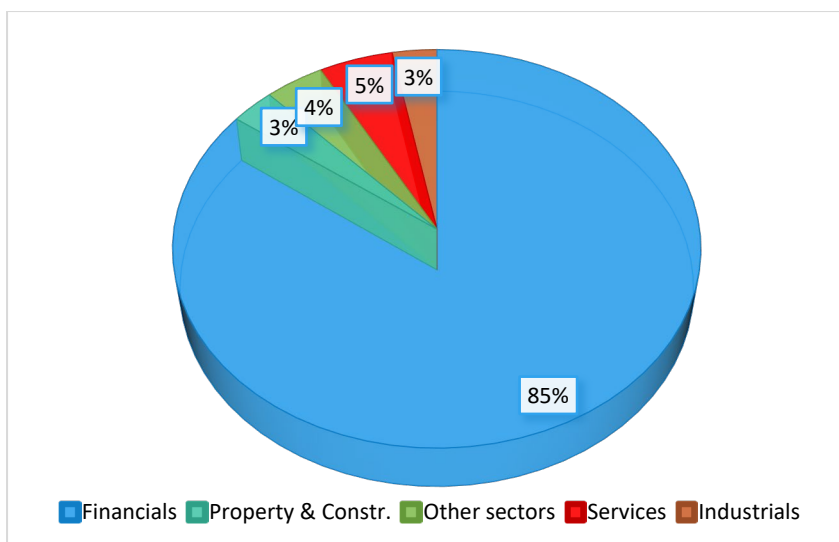
This table shows the number of corporate bond issuance from 2000 to 2020 by four issuer types. *Source:* Authors' compilation using corporate bond issuance data obtained from DataStream.

Table 2 indicates that private firms (corporations) were the leading issuers of corporate bonds, with over 93 percent of bonds issued in the continent, and more than 95 percent of corporate bonds issued in each country except Egypt. Agency bonds are primarily issued in Egypt, with 'non-agencies' accounting for only 5 percent of corporate bonds. Supranational bonds, common in the WAEMU region; and Munis, issued only in South Africa, accounted for 1 percent each. Another issuer characteristic presented in Table 2 is whether the issuer is a parent or a subsidiary firm. The way a firm designs its bond contracts, for example, the decision to include features such as bond guarantees, may be guided by the empire-building ambitions of the parent company or "corporate socialism" practices among subsidiaries (Chen et al., 2020). In this current study, we find that subsidiary firms were more active issuers of public debt instruments than parent firms. The number of bonds issued in Africa by subsidiary firms was about three times the number issued by parent firms. This trend was across many sample countries except Cameroon, Kenya, Nigeria, Tunisia,

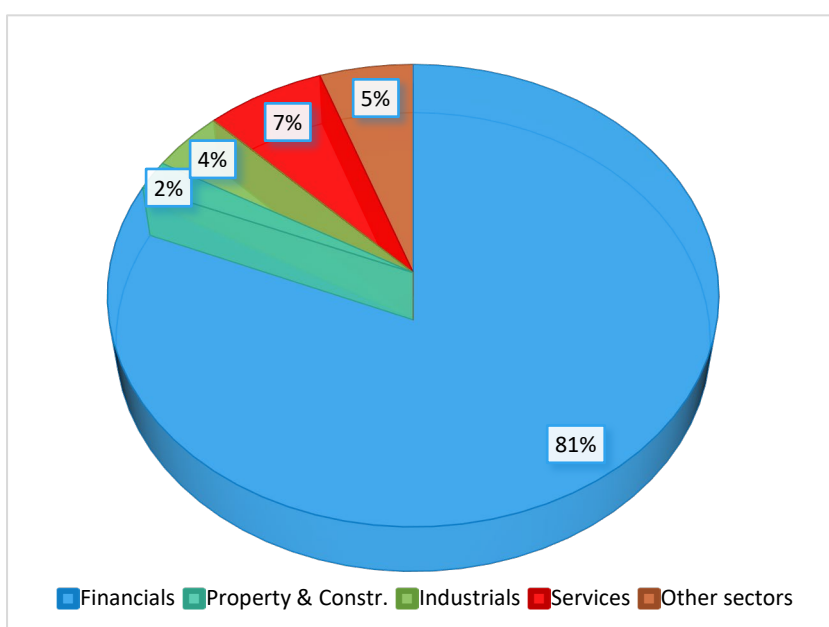
and the WAEMU region. Therefore, size may not be a significant determinant of bond issuance considering that subsidiaries are certainly smaller than parent companies.

Besides ownership structure, other important issuer characteristics that have a significant impact on access to bond markets include the sector of the economy that a firm belongs to. From a highly aggregated perspective, sectors can be categorized into financial and non-financial sectors. The non-financial segment can be further divided into a greater range of issuer types. However, given the limited number of issuances by non-financial sectors in Africa, we present just a handful of non-financial sector issuers, including property and construction, services, industrials and “other sectors”. The “other sectors” include resources, technology, consumer products and agro and food. Though issuance by non-financial firms has been increasing recently, financial firms still dominate the non-financial firms in emerging economies by a significant margin. According to the World Economic Forum (2015), financial firms account for up to two-thirds of corporate bond issuances in emerging markets. The two pie charts (Figure 3) below show the number and value of corporate bond issuances between 2000 and 2020 by sector.

The non-financial sector remains very small in Africa. Panel A shows that the financial sector accounts for 85 percent of corporate bonds issued during 2000—2020; whilst Panel B shows a similar trend, with the financial sector accounting for over 81 percent of bonds issued during 2000—2020, followed by the services sector (7 percent). These trends are consistent with accounts in the World Economic Forum’s (2015) report that financial firms account for over two-thirds of outstanding corporate bonds in emerging economies. For context, it should be noted that the main purpose of borrowing by financial firms is principally for credit extension to businesses, especially non-financial ones (World Economic Forum, 2015). This is an extension of the financial institutions’ intermediation role to the public debt market.



Panel A: Number of corporate bond issuance by sector of the economy between 2000 and 2020



Panel B: Value of bonds in offer by economic sector in Africa

Figure 3: Number and Value of corporate bonds in offer by economic sector during 2000-2020

Source: Authors' compilation using corporate bond issuance data obtained from DataStream.

Several scholars have, at various times, attributed bank dominance in the financial markets of emerging economies to information asymmetry, a major determinant of firms' choice of public or private debt securities for raising external finance (McKinnon, 1973; Allen & Santomero, 1997; Gomes & Phillips, 2012; and others). Information asymmetry is more prevalent in emerging economies, and it necessitates the intermediation role of banks because of banks' superiority in

mitigating this problem by, for instance, monitoring their clients (Diamond, 1991; Ojah & Kodongo, 2015). While there is a remarkable uptake of corporate bonds in the primary markets in Africa, suggesting high demand for public debt securities, the dominance of the financial sector in bond issuances, suggests a lack of diversity in corporate bonds supplied to the markets. Further, this lack makes these markets less attractive, especially to institutional investors who are interested in constructing diversified/balanced investment portfolios of corporate bonds. Moreover, the relative homogeneity of supplied bonds reduces investors' ability to swap bonds should they need to rebalance their investment portfolios for the maintenance of a target risk or rate of return.

Coupon types and maturity structure of bonds

A corporate bond's coupon rate and maturity tenure influence the bond's price by affecting its competitiveness and valuation in the open market. Interest rates are heavily influenced by current national government-influenced interest rates, as reflected in Treasury bonds and Treasury bills. New bonds with higher coupon rates are considered more valuable by investors because they pay more interest per year than existing bonds of similar characteristics. Whilst issuing bonds, issuers traditionally determine whether the coupon will be a floating or fixed interest rate based, as well as the duration (maturity) of the bond. And these choices are naturally based on management's view of the firm's fundamentals, the credit market conditions, and the general state of the economy, as is similarly noted by IMF (2005) that coupon types and maturities normally reflect regional trends, inflation, and past currency devaluation experiences. Moreover, firms design new corporate bonds (including all terms) to overcome their regional deficiencies, consider country-level investor protection rules, and enable access to external finance (Myers, 1977; Miller & Reisel, 2012).

Figures 4 and 5 below summarize corporate bonds by two important aspects of contract design: coupon type and maturity structure. Short-term bonds are those that have a maturity of 1 to 5 years, medium-term bonds have 5 to 10 years, and long-term bonds have more than 10 years.

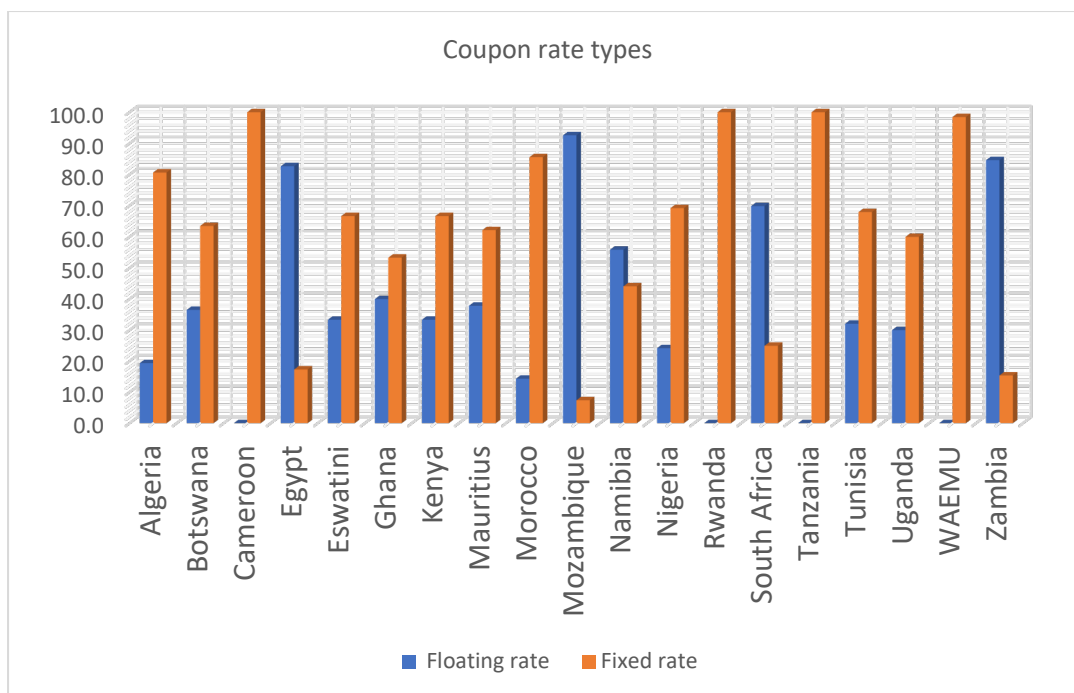


Figure 4: Coupon rate types and maturity structure of corporate bonds.

Source: Authors' compilation using corporate bond issuance data obtained from DataStream.

Figure 4 shows that fixed coupon rate corporate bonds are more popular in Africa. Bonds with fixed coupon rates dominate in all the sample countries except Egypt, Mozambique, Namibia, South Africa, and Zambia. However, based on the outstanding corporate bonds in the continent during 2000—2020, floating-rate bonds account for 55 percent versus fixed-rate bonds' 44 percent. This disparity stems from the fact that in South Africa, the country with the largest corporate bond market in Africa (with 84% of outstanding bonds in the region), it is floating rate bonds that are more popular. The floating rate bonds make up to 70 percent of corporate bonds there during 2000—2020. Thus, except for the few countries mentioned, fixed coupon rates are more prevalent in Africa's corporate bond markets. This finding is at variance with Mu et al.'s (2013) account that floating rates are typical in thin corporate bond markets. Furthermore, we fail to confirm the notion that fixed-rate bonds inhibit the issuance of long-term bonds in fledgling bond markets that are said to operate in highly uncertain environments. Finally, zero-coupon bonds were only 226 out of the 6320 sampled bonds, and all except 10 of them were issued in South Africa.

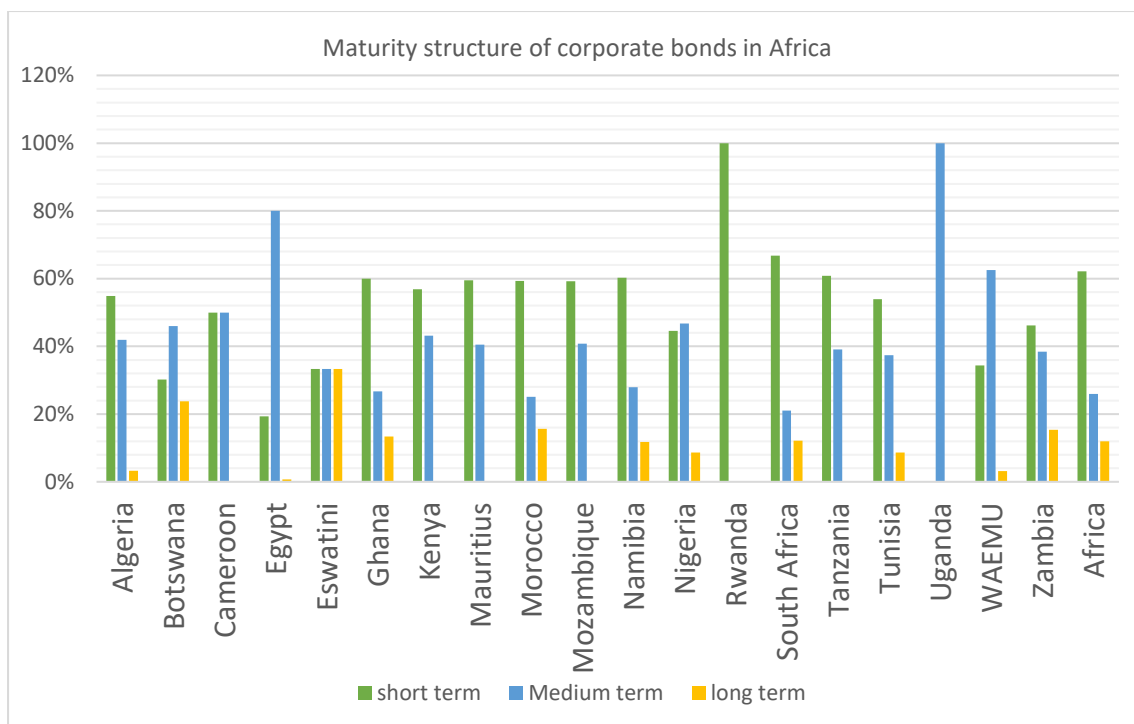


Figure 5: maturity structure of corporate bonds issued in Africa between 2000 and 2020

Source: Authors' calculations using data from the DataStream

According to Figure 5, a country-by-country analysis reveals that short-term bonds make up most of the bonds in offer, followed by medium-term bonds, except for Botswana, Egypt, Nigeria, and Uganda, where the proportion of medium-term bonds exceeds short-term bonds. Kenya, Mauritius, Mozambique, and Uganda did not record any corporate bonds with a maturity of more than ten years. Overall, short-term bonds account for 62 percent of the sample bonds, medium-term bonds account for 26 percent, and long-term bonds account for only 12 percent. These findings are generally consistent with Gwatizo and Ojah (2014) and Ojah and Kodongo (2015) who documented that Africa's bond markets are dominated by short-term issuances.

Interestingly, Flannery (1986) avers that managers who fund long-term investments by using short-term debts reflect an optimistic perspective of their firm's prospects. But short-term debts have many limitations in terms of enabling the long-term and sustainable performance of the economy. First, it exposes corporate bond markets to intense competition from banks, which, in turn, hampers the growth of corporate bond markets because banks are typically more efficient in making short-term lending. Second, short-term borrowing does not have the advantage of locking in low-interest rates across time. Thus, when future rates are expected to rise, firms are exposed to rollover/refinancing risk, especially if a new debt is obtained at a higher cost to finance the

redemption of an old and lower-cost debt. This happens mostly if the maturity coincides with worsening fundamentals of the issuing firm or poor credit market conditions (Gopalan et al., 2014). Third, a large proportion of short-term bonds is an important indication of likely instability and risk, especially if the maturities of a majority of the bonds in offer coincide (World Bank, 2006). It can create a sudden outflow of capital and/or a dramatic increase in short-term interest rates, which, in turn, increases the costs of debts. In Figure 6, we report a cross-tabulation of the sample bonds' coupon types and bond maturities.

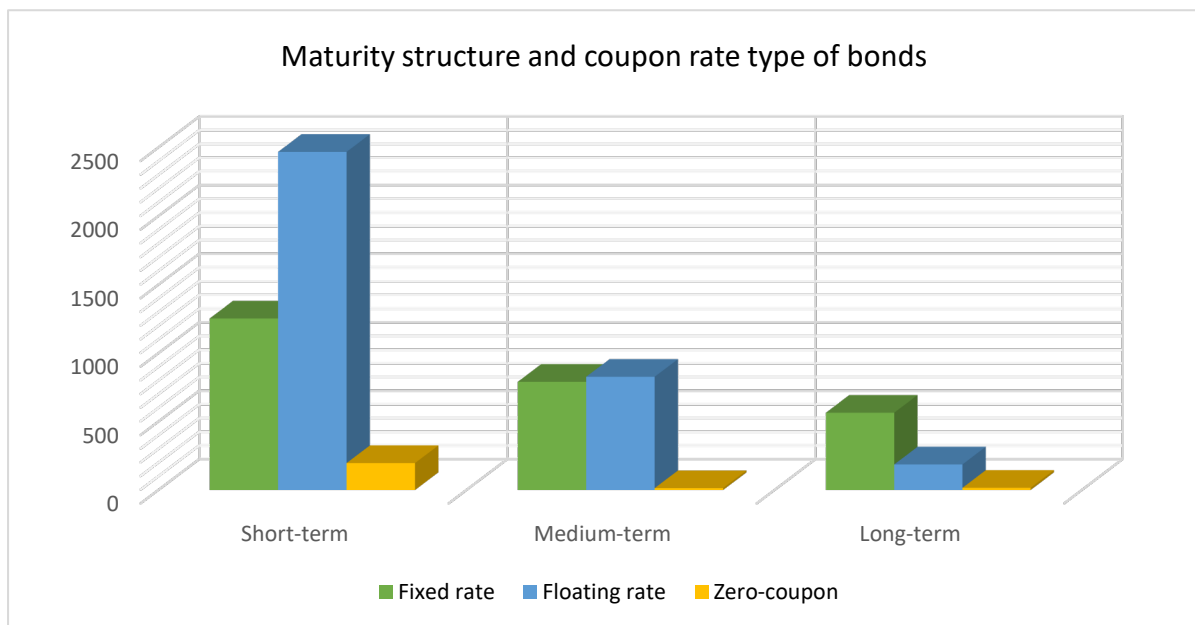


Figure 6: Cross-tabulation corporate bond tenors and coupon types

Source: Authors' calculations using data from the DataStream

According to the cross-tabulation in Figure 6, most short-term bonds have floating coupon rates. The proportion of floating-rate bonds is nearly double that of fixed-rate bonds. Medium-term bonds are equally distributed between floating-rate and fixed-rate bonds. There are different views regarding firms' choice of coupon rate type. Tufano (1995) argues that firms that adopt a market timing policy to lower the current cost of capital, are typically driven by movement in interest rates when choosing their interest rate exposure. Celik et al. (2019) suggest that floating rates may be associated with low investment-grade bonds. Faulkender (2005) attributes the choice of coupon rate to the relationship between a firm's cash flow and prevailing market interest rates: an inverse relationship is associated with floating-rate coupons, whereas a positive relationship is associated with fixed-rate coupons.

Other contract designs

Apart from maturity and coupon rate type, there are several other bond contract features with significant impact on bond value and risk, which are common in developed economies. Some of these other features, which also act as restrictive covenants to minimize conflicts between issuers and bondholders, include collateralization, bond guarantee, inflation indexing, sinking fund, and call and put provisions. According to Gu and Kowalewski (2016) and Celik et al. (2019), these covenants act as mechanisms for protecting investors post bond issuance. For instance, bond collateralization protects bondholders against potential conflict with equity holders or between different classes of lenders (Jensen & Meckling, 1976; Myers & Majluf, 1984; Rauh & Sufi, 2010; Piacentino, 2019). Restrictive covenants are also useful to lenders; for example, firms with deteriorating credit quality, use collateralization to issue debt instruments with a lower credit spread (Benmelech et al., 2020). Surprisingly, we found very limited use of these kinds of covenants by the bond-issuing firms in Africa. Due to their limited use, we provide a summary of covenants in the continent, rather than a country-by-country analysis (see Figure 7).

The proportion of secured bonds relative to outstanding bonds is only 1 percent (i.e., of the 6320 sample bonds). The proportion of guaranteed bonds is 5 percent, which is an improvement compared to the proportion of secured bonds, though still very low compared to global standards. Sinking funds also had a better proportion than secured and guaranteed bonds; still, the number is generally low. These three forms of restrictive covenants usually increase the credit quality of bonds and guarantee investors' repayments even if the performance of an issuing firm is poor. And given that Africa, like other regions of the developing world, has a high rate of information asymmetry, we expected that a good proportion of the bonds would have a few of these covenants. Chen et al. (2020) find that firms with poor credit ratings, less collateralizable assets, greater debt overhang problems, higher free cash flows, and lower growth opportunities are more likely to issue guaranteed bonds. The lack of these features does not necessarily imply that only high-quality bonds are issued in Africa; rather, it is more plausible to surmise that these kinds of protective features are yet to come into vogue due to the fledgling status of these bond markets.

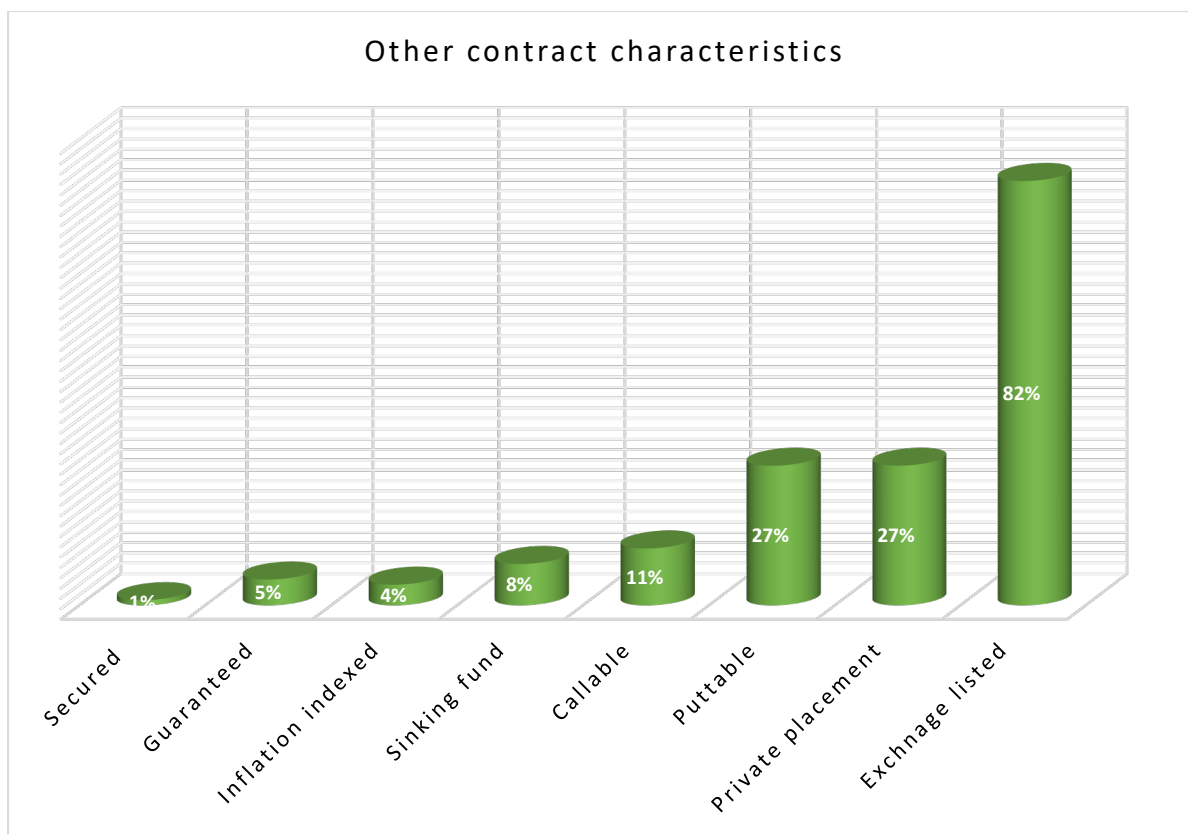


Figure 7: Other features of corporate bond contracts in Africa

Source: Authors' calculations using data from the DataStream

In terms of inflation indexing, Auckenthaler et al. (2015) argue that inflation compensation benefits investors because it protects bondholders from currency depreciation whilst shielding issuers from inflation risk premiums. Adelegan and Radzewicz-Back (2009), Mu et al. (2013), and Essers et al. (2016) found an inverse relationship between corporate bond issuance and inflation, implying that indexing could be a useful tool for mitigating the negative impact of inflation on bonds. However, only South Africa has inflation-indexed bonds: about 228 out of 6320 outstanding bonds (4%). Callable bonds make up 11 percent of outstanding bonds, and South Africa and Egypt have the largest shares of them. Since a call provision allows issuers to redeem the bonds before maturity, firms issuing callable bonds tend to adopt a market timing strategy. Regarding issuance methods and the decision to list debt securities on exchanges, 73 percent of outstanding bonds are publicly issued, whilst 82 percent are exchange-listed. Again, this is inconsistent with the notion that issuers in Africa prefer private placement due to the high issuance cost and complex issuance process.

5. Analysis and Results: Market Structure and Design

In this section, we use information from the survey and face-to-face interviews to explore more deeply the structure and design of Africa's corporate bond markets, especially the trading systems, trading schedules and order execution methods.

Broadly, we discovered that corporate bond markets in Africa coexist with equity issues in the same securities exchanges, often in the same buildings, using the same infrastructure, as well as with nearly identical trading rules. Corporate bonds are issued and traded in a fixed-income section of the exchange. Other debt instruments traded in the fixed income section include commercial papers, preference shares, and Treasury bills, notes, and bonds. There is no market segmentation in Africa – all countries except South Africa and Nigeria have only one bond market hosted within national exchanges. In Nigeria, FMDQ Securities Exchange Limited (FMDQ) was registered as an OTC market in 2012 but expanded its operations to cover registration, listing, quotation, trading, and reporting on securities and financial products in 2019. Backed by innovative products and services, the exchange recorded steady growth in market size, surpassing the National Stock Exchange in Nigeria. In 2019, FMDQ had total outstanding bonds worth US 2.5 billion, whereas the market turnover of all securities listed in the market stood at US\$ 643 billion. In South Africa, there are three alternative trading venues vis-à-vis the main bourse – JSE, where investors can buy or sell already listed securities. A2X is the largest among these alternative trading venues, with a secondary listing of over 40 firms. However, these alternative exchanges had not incorporated the trading of debt instruments on their platforms by December 2020.

Trading systems

We asked respondents both in the interview and written questionnaire to describe the types of trading systems they use. Contrary to the widely held belief that the lack of modern trading infrastructure is one of the most significant barriers to the growth and development of Africa's bourses (Allen et al., 2011; Andrianaivo & Yartey, 2010), the responses indicate that all exchanges in Africa, except Rwanda and Eswatini, have advanced automated trading infrastructure, equipped with cutting-edge technology. The trading infrastructures in most countries are comparable to those in advanced markets and are supplied by leading suppliers of exchange trading infrastructure such as Millennium Technologies (e.g., in Botswana, Kenya, Mauritius, and South Africa) and NASDAQ (e.g., in Nigeria). The automated trading platforms are integrated with centralized

electronic clearance and settlement systems in each country, for ease of clearance. Eswatini and Rwanda, the only countries using the manual systems at the time of the interviews, were undergoing an automation process and they had commissioned the new systems before this report.

Thus, brokers and dealers conduct transactions remotely through terminals located in their offices. Some exchanges, such as Kenya's, provide a few trading terminals on their trading floors for authorized traders who do not have access to trading terminals in their offices. Other countries should adopt this strategy, particularly those with small exchanges, such as Eswatini, where respondents stated that the cost of system acquisition and maintenance is prohibitively expensive in comparison to the revenue generated from brokerage activities. However, over 90 percent of respondents were very satisfied with the trading infrastructure, and we generally conclude that this is an area where the exchanges have done very well. Respondents stated that the use of modern technology in trading increased the number of transactions per day, the quality of execution, the speed of clearance, and the collection and dissemination of information. According to respondent-asset-managers, the availability of modern trading infrastructure allows institutional investors and asset managers to spend less time buying and selling bonds to rebalance their portfolios.

All markets except those in Eswatini and Namibia have a Central Depository and Settlement (CDS) system, and all securities are dematerialized⁵. Thus, investors open and maintain CDS accounts for buying, selling, and virtually depositing listed securities. CDS platforms are electronically connected to Automated Trading Systems (ATs) for seamless clearing and settlement of trades upon execution. Clearing is between 3 to 4 days (within T+2 and T+3 cycles). Firms operating the CDS work together with local banks to ensure a smooth transfer of funds from buyers' accounts to sellers' accounts. These firms also regularly provide investors with account statements showing securities' transactions and/or balances. This enables investors to verify the validity and accuracy of transactions; thus, reducing the likelihood of impropriety by brokers.

Trading sessions

All exchanges in the sample except Egypt have adopted continuous trading sessions that are conducted daily except on weekends and national holidays. The exchange in Egypt operates from

⁵ By dematerialization we refer to the process of transition of financial securities from physical certificates to electronic records. Dematerialization boosts the speed and security of financial transactions.

Sunday to Thursday, because of Egypt's religious (Islamic) background. This schedule is also consistent with the official working days in the country and in Middle Eastern countries. Opening and closing times vary by exchange, but most exchanges are open from 9:00-16:00hrs. local time, with no lunch break. Egypt, Morocco, and Tunisia have shorter opening hours during the month of Ramadan. In addition to the continuous trading sessions, Botswana, South Africa, and Tunisia have call sessions. Call sessions are held just before the start of continuous trading sessions. During the pre-opening call session, brokers and dealers can enter, amend, or cancel orders in the trading systems, but trading is not permitted. The opening and closing calls improve matching speed, liquidity, price discovery, information transparency, and the welfare of traders, and in turn reduce market volatility (Pagano & Schwartz, 2003; Huang & Tsai, 2008; Pagano et al., 2013; Arjoon, 2016). Traders in the Botswana Stock Exchange can only cancel unfilled orders during the pre-opening session, but they cannot submit new orders or amend existing orders.

A closing call session is also held immediately after the close of the continuous market session. During post-close sessions, the ATS determines the closing price for each security. Closing prices, so determined, become the opening prices on the next trading day. No trading is permitted during the post-closing sessions. Three call auctions are held during the day in Botswana and Tunisia, allowing dealers to submit new orders and amend or cancel them. Order books are closed, and orders are matched at the end of each auction session. Batch auctions can be used at the start, at the end, and during trading halts in a trading day. Opening auction has three phases. First, is the auction pre-opening phase, where all agents submit proposals to a centralized body that acts as the auctioneer (with only order submissions permitted at this phase). As a result, traders can only see the orders that have been submitted and the tentative clearing price, which algorithms continuously compute. This price formation process follows order matching and trade pricing rules.

Whilst global trends suggest that markets allow after-hour trading to cater for investors from different time zones, as to increase market liquidity, only 19 percent of the respondents indicated that the practice is allowed in their markets. After-hours trading is especially supported by online trading, which is available in some markets, as indicated by 42 percent of the participants. Some markets (78%) deploy the brokered system, which allows retail traders to trade amongst themselves without going through the dealers.

Order execution systems

Since all exchanges have ATSS, orders are electronically matched by the trading system. But order matching can be based on different rules. So, to ascertain the order execution deployed by various exchanges, we asked about order submission, routing, and execution. According to responses, 34 percent of the exchanges are dealer markets, 30 percent are auction markets, and 43 percent are a combination of auction and dealer markets. In terms of pricing, about 27 percent of respondents indicated a single pricing system, 38 percent indicated a multiple auction pricing system, and 35 percent indicated a hybrid pricing system. Order matching, which is an ATS-based process, works without the intervention of traders and exchange managers. Orders are matched based on the primary rule of price precedence and the second rule of time precedence: an order with the best price takes precedence over other orders, and if two orders have the same price, the first one to arrive takes precedence over the others. Under manual regimes, exchanges used the oral execution method, where traders negotiated prices face-to-face on the trading floor by shouting out bids and offers. Exchanges establish rules of who accesses the trading floor and how trades are negotiated.

6. Analysis and Results: Information Transparency

Transparency of information is a critical component of market microstructure that has a significant impact on investment decisions and trading strategies. Whether markets are transparent or not is the main question when dealing with trading information. We observe that the adoption of ATSS and CDSs has significantly improved the process of data collection and dissemination in Africa's corporate bond markets; thus, providing traders with easy and concurrent access to the same information. The ATS is integrated with the CDS accounts, and the trading platform uploads information from the CDS accounts at the beginning of each trading day as activities occur. CDSs also help to keep track of all securities held by an investor, with transactions recorded immediately upon execution/settlement of a buy or sell order. Other factors that foster information provision to participants include the availability of benchmark interest rates and bond market indexes. These markets adopt both pre-trade and post-trade transparency.

Pre-trade information includes knowledge of securities on sale and order sizes, and they are only accessed by licensed traders through the ATS. Per Figure 8, only 58 percent of respondents indicated that they have access to pre-trade information. Participants stated that they have limited access to pre-trade information such as bids, asks, and order quantities via the ATS or on the

trading floor. As shown by the proportion of those who access the information above, the information is sometimes accessible only to select participants. “Call markets” naturally involve pre-trade transparency since all traders are called to converge in the marketplace simultaneously; hence, they can observe each other’s bids, offers, and order quantities during the auction. The orders entered for the call can be publicized either audibly on the trading floor or electronically.

Table 3: Indicators of information availability and flow

Sample countries	There is a bond market index	There are rating agencies	Credit rating is mandatory	Minimum rating point req.	Benchmark interest rate	Order books available	Pre-trade transparency	Post-trade transparency
Botswana	Yes	Yes	No	No	No	Yes	Yes	Yes
Eswatini	No	No	No	No	Yes	Yes	Yes	Yes
Ghana	No	No	No	No	No	Yes	Yes	Yes
I. Coast	No	Yes	No	No	No	Yes	Yes	Yes
Kenya	No	Yes	No	No	No	Yes	Yes	Yes
Mauritius	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Namibia	Yes	Yes	No	No	No	Yes	No	No
Nigeria	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Rwanda	No	No	No	No	No	Yes	Yes	Yes
S. Africa	Yes	Yes	No	No	No	Yes	Yes	Yes
Tanzania	No	No	No	No	No	Yes	Yes	Yes
Uganda	No	No	No	No	No	Yes	Yes	Yes
Zambia	No	No	No	No	No	Yes	No	Yes

Source: Stock exchange reports and information gathered from the websites of the listed exchanges

Post-trade information is more comprehensive and is widely accessible to all traders, including non-active traders. Whereas traders access relevant information through the ATS, other stakeholders can subscribe to access information on a real-time basis via the websites of the exchanges. Information is also made available to the electronic and print media houses that publish a summary of daily trading information such as security prices, trading volume, and market indices. Licensed market participants and data subscribers have access to more detailed post-trade information. From the survey, only 58 percent of participants think there is pre-trade transparency while up to 82 percent of respondents say they enjoy post-trade transparency. Investors can subscribe to detailed daily reports of transactions, volumes traded, and prices directly from the source. Exchanges also sell data to vendors such as Bloomberg, DataStream, and the like. The CDS is also a source of information from where investors receive account statements at regular intervals and transaction alerts, all of which helps investors to monitor their accounts.

Per survey responses, the relevant areas that need improvement include the lack of credit rating of bonds. The participants indicated that credit rating is not required for bond issuance, whereas from

Table 3, a number of countries do not have credit rating agencies active in their markets. Thus, investors depend on the information provided by issuing firms (annual reports) when valuing these firms. In such circumstances, information asymmetry may allow financially weak firms to issue corporate bonds when their companies are overvalued; thus, increasing the likelihood of default risk in the process. Participants also noted that several corporate bond markets do not compute and/or provide bond market indices, which are an important set of information used by secondary players to assess market performance and/or form trading strategies. As you can see, these discussed information-related characteristics are summarized qualitatively, by country, in Table 3.

Summary of the selected microstructure of corporate bond markets in Africa

In this subsection, we summarize salient features of Africa's corporate bond markets' microstructure, both diagrammatically (for appreciation of structure flow) and in tabular form (for disaggregation of the structure flow into individual countries' market status – Table 4). According to the schematic below, a (bond) market's microstructure comprises three identifiable components: (1) profiles of the main players in the market, (2) the nature and terms of the various securities (contracts) traditionally issued and traded in the market and (3) deals on how 1 and 2 shape the market's microstructure proper. This culmination – market microstructure – is reflected in the market's infrastructures, the market's trading processes and schedules, and finally, the market's information production/gathering and distribution that defines its degree of transparency.

Per Table 4 below, which follows the market microstructure schematic, some of the primary characteristics of South Africa, which is the leading corporate bond market in Africa, are that: it was established earlier than the other markets in the sample, and it unsurprisingly boasts the highest listings, and both foster its place as the top issuer of corporate bonds in Africa. Most of the bonds issued in the South African market have floating coupon (interest) rates. It was also the first to deploy ATS and CDS, as well as the first bourse to be demutualised.

Another important distinction is that South Africa has alternative trading venues available, along with only Nigeria; and together with Kenya, they are the only sample countries that possess derivatives markets. It boasts an active secondary market. Its bond market shares many similarities with those of other sample countries, with most possessing lesser features than it given it is the most advanced (see Table 4). Furthermore, the South African market uses a hybrid of dealer and

auction trading systems like most other exchanges in Africa. Listed firms here use IFRS accounting standards for reporting, and the most popular bonds' maturities are short-term.

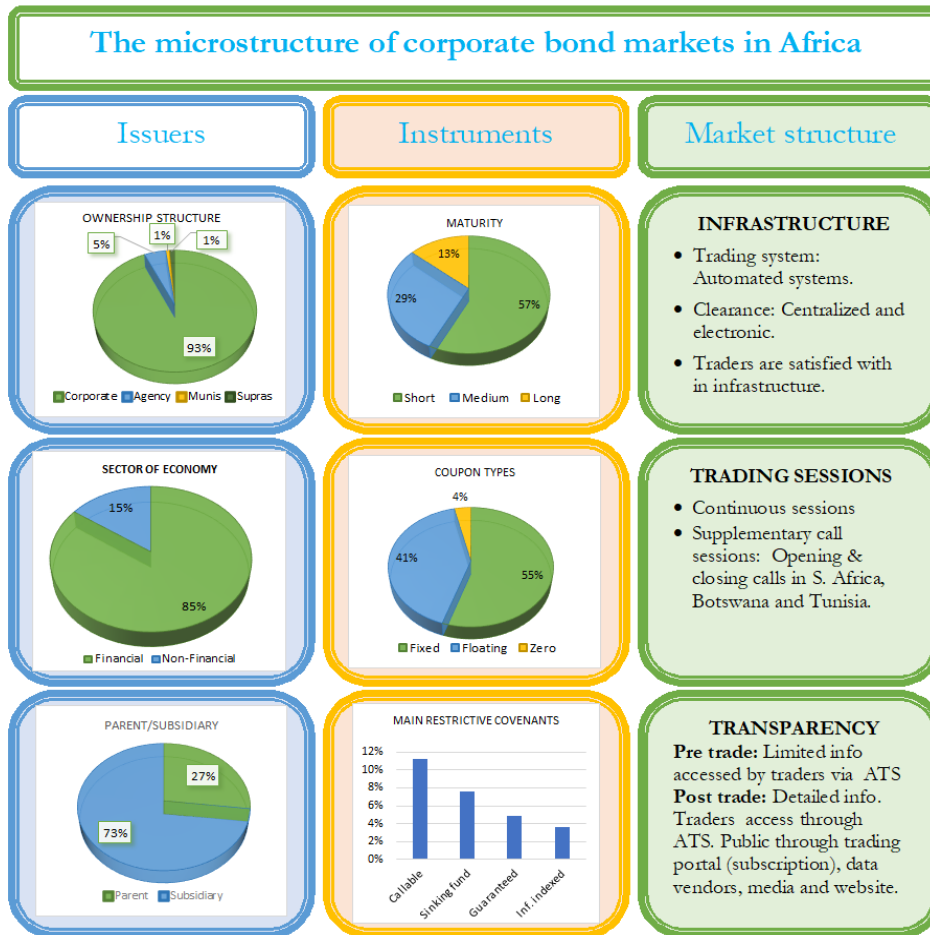


Figure 3: Summary representation of microstructure of corporate bond markets in Africa

Source: Authors' conceptualization

Table 4: A summary of selected market-microstructure characteristics with respect to each exchange.

Microstructure characteristics	Countries												
	Botswana	Eswatini	Ghana	Kenya	Mauritius	Namibia	Nigeria	Rwanda	S. Africa	Tanzania	Uganda	WAEMU	Zambia
Year stock market was established.	1989	1990	1990	1954	1988	1992	1960	2011	1887	1998	1997	1998	1994
Year stock market was demutualised	2018	2015	2019	2014	1989	NA	NA	2010	2005	2015	2017	NA	NA
Year ATS system was implemented	2012	2019	2008	2007	2001	2012	2013	NA	1997	2013	2015	2013	2000
Year CDS was implemented	2008	NA	NA	2004	2001	NA	1999	2011	1997	1999	2010	2014	1996
Year derivative market was established	NA	NA	NA	2019	NA	NA	NA	NA	1992	NA	NA	NA	NA
Number of Listed Firms in Dec 2020	26	6	29	59	97	10	172	8	281	26	16	46	15
No of listed CB in Dec 2020	17	0	7	9	9	18	34	0	2068	6	2	16	2
Total No issued bonds (2000 - 2020)	60	2	15	51	37	68	92	2	4177	23	10	64	13
Outstanding CB in 2020 (millions US\$)	160	0	1520	340	430	260	1640	0	88300	0	20	3880	20
Outstanding CB to GDP 2020 (%)	0.85	0	2.3	0.37	3.04	1.99	0.39	0	24.53	0	0.05	2.43	0.1
OTC trading of CB allowed	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	No	No	Yes	No
Cross-listed CB exist	No	No	Yes	Yes	No	Yes	No	No	Yes	No	No	Yes	No
Secondary market for CB exists	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	No
The corporate bond market is?	Hybrid	Auction	Hybrid	Auction	Hybrid	Dealer	Hybrid	Hybrid	Hybrid	Hybrid	Hybrid	Auction	Hybrid
Accounting std used by firms	IFRS	Local	IFRS	IFRS	IFRS	IFRS	IFRS	IFRS	IFRS	IFRS	IFRS	Local	IFRS
Alternative Trading locations available	No	No	No	No	No	No	Yes	No	Yes	No	No	Yes	No
Popular CB maturity	Medium	Short	Short	Short	Short	Short	Medium	Short	Short	Short	Medium	Medium	Short
Popular CB coupon type	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Fixed	Floating	Fixed	Fixed	Fixed	Floating

This table provides an overview of the market microstructure characteristics described in previous sections. To calculate issuance data, we use the number of bonds issued in Africa between 2000 and 2020 from DataStream. Short-term bonds have maturities of 1 to 5 years, medium-term bonds of 5 to 10 years, and long-term bonds of more than ten years. Note that CB stands for corporate bond.

Source: By Authors constructed from the dataset.

7. Challenges Facing Corporate Bond Markets in Africa

In the interviews, we focused on the challenges facing bond market participants, especially in their daily trading or oversight activities. The interviews were transcribed, coded, and cross-tabulated to identify the most prominent factors affecting corporate bond markets in the sample countries. The responses are as discussed below in both related themes as well as the order of importance that respondents attached to them. Content analysis is generously deployed in this section's report.

Investors' lack of awareness

This factor emerged as the most important challenge facing corporate bond markets in Africa. Most participants believe that low investor participation in domestic markets is due primarily to a lack of awareness about the opportunities available in corporate bond markets. According to the CDS accounts data, a small percentage of the population in each of the sample countries (less than 10%) participates in capital markets and even fewer invest in corporate bonds. This can, in turn, be attributed to a lack of financial literacy, high poverty levels, and a poor savings and investment culture in many African countries. Most retail investors, including high-net-worth individuals, have limited knowledge of corporate bond market operations and some think that they are only for institutional investors like pension funds and mutual funds. According to some respondents, "even institutional investors are not fully educated on the bond trading process because most of them behave like retail investors, buying and holding the securities until maturity". As a result, there is a scarcity of tradable debt securities in the secondary market. A well-thought-out investor education program seems necessary.

Surprisingly, many brokers, dealers, and asset managers struggle to understand the corporate bond trading process, particularly their valuation. Such inadequately informed agents advise potential investors to buy equity assets but not fixed-income debts: "I have been a practitioner for about 10 years, and what I still see is a lack of understanding of our corporate bond market" one of the brokers said. The respondent went on to explain that bond pricing and yield curve interpretation require a strong background in finance, which most African brokers lack. "I can still say that most of my colleagues do not quite understand the process" – a point on which many other brokers and dealers agree with him. Some brokers, dealers, and asset managers have corporate bonds in their portfolios but would hold

them until maturity rather than periodically evaluating and trading them in the interim, if needed. Nevertheless, awareness of corporate bonds as an investment asset class is gradually increasing. “We all thought it was complicated” one respondent observed, “but now, many brokers think it is even easier than the equity side upon understanding how it works ... Most people understand where the market is headed, and many brokers are now shifting their focus to fixed-income securities”.

Market liquidity problem

Unsurprisingly, low market liquidity emerged as the second most important factor affecting the development of corporate bond markets in Africa. Apart from South Africa, illiquidity affects both equity and corporate bond markets, with the effect being more severe on corporate bond markets; it is an outcome that is consistent with a related recent finding by Mukoki et al. (2023). South Africa’s bond market, which deals with both corporate and sovereign bonds, is liquid and well developed with a good number of issuances, participants, and daily activity. According to the JSE Securities Exchange website, the market trades an estimated R25 billion rands (1.25 billion US dollars) per day. Apart from South Africa, a few countries including Kenya, Nigeria, and Botswana, have limited trading activity in the secondary markets for corporate bonds, with investors opting to buy and hold bonds till maturity. A few trades occur per year, and these are mainly by asset managers who are trying to rebalance their portfolios. These markets have few participants, as well as few securities that are on offer for sale. According to respondents, a few factors have contributed to this illiquidity including a narrow investor base, crowding out by government bonds, a small population size, and a lack of investor awareness.

Other liquidity-impeding factors include credit risk. For instance, participants in Kenya, Uganda, and Tanzania observed a decline in corporate bond trading activity at the Nairobi Securities Exchange following the collapse of Imperial Banks and Chase Bank immediately after they issued new bonds. Traders believed that the exchange and capital market authorities should have performed more due diligence to avoid such risky issuance. Traders in Nigeria contended that “most bonds are unsecured, yet there is also a lack of discipline among the issuing firms in terms of meeting requisite obligations”. “This can be resolved by a sinking fund contract feature that requires firms to set aside funds for paying interest and redemption value”, they observed. Tanzanian participants noted that most bonds are not rated; thus, forcing investors to rely on the prospectus, which is not an objective account. As a result,

it is difficult for investors to effectively assess credit risk, which, in turn, affects secondary market trading. The overarching view from the interviews is that secondary market liquidity is either steadily declining or, at best, not advancing.

Participants also mentioned the lack of a derivatives market, which can help investors hedge risk and thus increase activity. Derivative markets exist only in Kenya and South Africa. Evidence documented by Li et al. (2018) suggests that short-selling can stabilize asset prices, increase liquidity, and, thus, improve market quality in emerging economies, which are usually characterized by less developed securities markets. Foley-Fisher et al. (2019) show that the suspension of AIG's securities lending program in 2008, resulted in a significant decline in the liquidity of most corporate bonds that AIG held. However, such a liquidity facility (e.g., hedging via credit default swaps) is glaringly lacking in Africa's exchanges, with only 25 percent of market participants reporting short-selling in their markets. Literature suggests that cross-listing of securities improves liquidity by providing an improved information environment and better investor protection (Dang et al., 2015). However, like short-selling, cross-listing is still quite limited in Africa, with only 22 percent of participants indicating that they have come across cross-listed bonds in their respective countries.

OTC markets are thought to be a source of liquidity because they allow traders to negotiate their trades directly. However, we find that only 6 out of 13 markets indicated they have OTC markets, and only 41 percent of respondents are aware of OTC trades in listed corporate bonds. Furthermore, only respondents from South Africa and Nigeria indicated that their markets permit online bond trading. Our analysis shows that only South Africa permits the short-selling of securities to improve liquidity. In Botswana and Morocco, market makers are empowered to provide liquidity when required and mop up liquidity for the securities they are approved to make a market. In Morocco, issuers of securities are expected to monitor their securities' liquidity. These liquidity providers are also expected to provide a minimum inventory of each of the securities they 'make a market in'. Thus, they place the necessary buy and sell orders and ensure minimum volume and maximum price range as spelt out in the market-making rule. Succinctly, Table 5 summarizes the forgoing survey findings on the market liquidity of sample countries.

Table 5: Market Liquidity Indicators by country

Country of residence	Fragmented markets	Trading after hours	OTC trading	Cross-listing bonds	Secondary market	Online trading	Intraday trading	Short selling	Derivatives market
Botswana	No	No	Yes	No	Yes	No	No	No	No
Eswatini	No	No	No	No	No	No	No	No	No
Ghana	No	No	Yes	Yes	Yes	No	No	No	No
I. Coast	Yes	No	Yes	Yes	Yes	No	No	No	No
Kenya	No	No	No	Yes	Yes	No	No	No	Yes
Mauritius	No	No	No	No	Yes	No	Yes	No	No
Namibia	No	No	Yes	Yes	Yes	No	Yes	No	No
Nigeria	Yes	No	Yes	No	Yes	Yes	Yes	No	No
Rwanda	No	Yes	Yes	No	No	No	No	No	No
S. Africa	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Tanzania	No	No	No	No	Yes	No	No	No	No
Uganda	No	No	No	No	No	Yes	Yes	No	No
Zambia	No	No	No	No	No	No	No	No	No

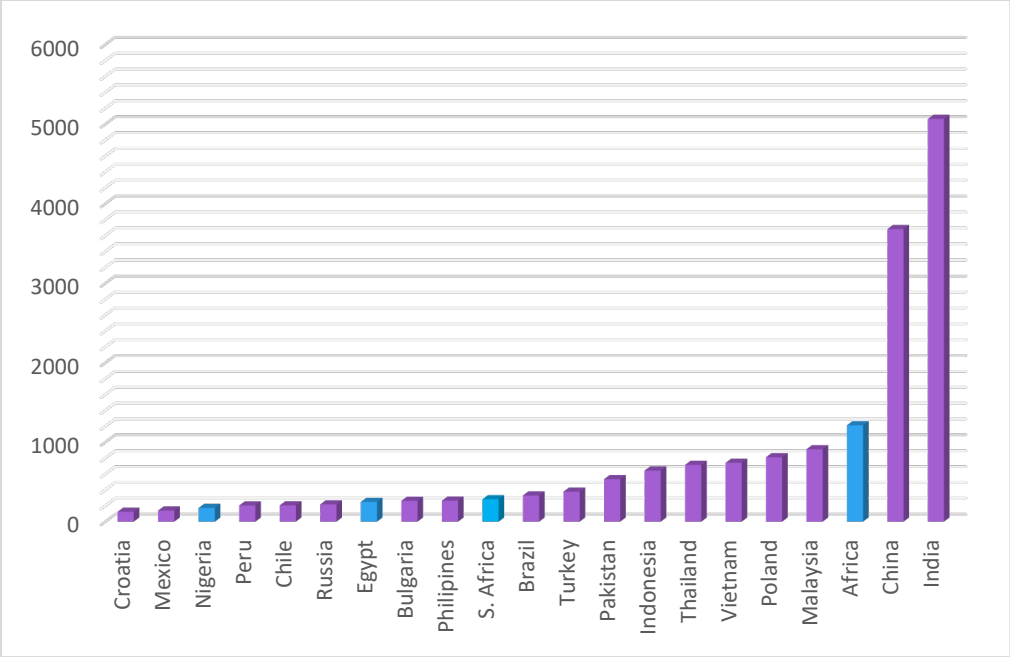
Source: Authors' calculation using primary data

Low number of listed firms

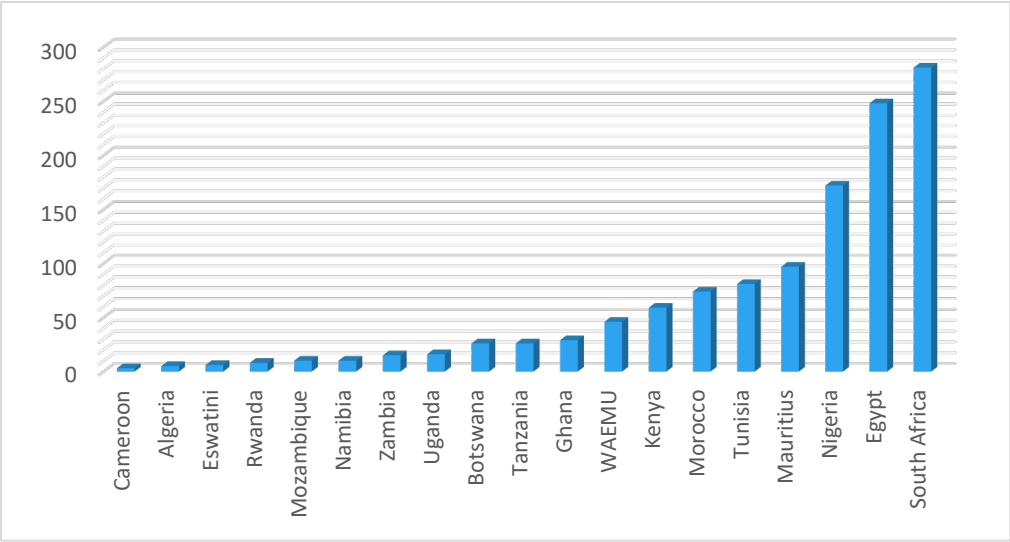
Intuitively, the higher the number of listed firms, the higher the likelihood of securities issuances, and thus the higher the number of listed bonds. However, Africa's exchanges have always been plagued by low listings. To date, only South Africa, Egypt, and Nigeria have more than 100 listed firms on their securities exchanges. Consequently, there is a limited supply of debt securities. Participants emphasized the importance of more firms being listed on domestic exchanges to increase corporate bond issuance. Respondents also noted that potential issuing firms have a low incentive to list on the national bourses because the cost of raising capital is viewed to be quite high when compared to the cost of raising capital in private debt markets. The efforts of governments and exchanges to increase listings have often yielded limited results. Many governments, for example, exempt or reduce corporate tax rates for newly listed firms for a set number of years. The corporate income tax (CIT) rate in Rwanda is 30 percent, but newly listed firms are taxed about 20-28 percent for the first 5 years, depending on the number of shares sold to the public. Firms that sell at least 20 percent of their offered shares to the public pay a CIT rate of 28 percent, whereas firms that sell 30-40 percent of their shares to the public pay CIT rates of 25-20 percent. In Tanzania, a newly listed firm on the Dar es Salaam Stock Exchange pays a reduced CIT rate of 25 percent for three years if it issues at least 30 percent of its shares to the public. Despite these incentives, listings on Africa's exchanges remain low. Figure 10 provides a contrasting picture of listings in the broader markets group vis-à-vis listings in the sample African countries.

As shown in Panel A (Fig. 10), African countries in the list of the broader emerging markets' group have the lowest listings. The combined number of listings in Africa is less than 30 percent and 20 percent of the listings in China and India, respectively. In Panel B, several countries including Ghana, Botswana, Zambia, and Tanzania have less than 20 listed firms. Respondents revealed that many firms are family-owned, and owners do not want to lose ownership control. This is consistent with the findings of Brau and Fawcett (2006), who suggest that the primary reason for remaining private is to maintain decision-making control and ownership of family-owned businesses. Furthermore, most firms do not keep proper records, and others manipulate the books to pay less tax.

Such owners and managers believe that exchange-listing will subject them to strict financial reporting and disclosure requirements; thus, exposing errors or fraud that may result in litigations or penalties. Most firms do not recognize the benefits of listing on the exchange, such as access to a large pool of affordable capital. Firms can use an IPO to overcome financial constraints that prevent them from producing at scale (Clementi, 2002). Further, Pagano et al. (1998) noted that publicly traded firms have access to a large pool of capital at affordable costs, which, in turn, makes it easier for listed firms to explore, a lot more than usual, profitable investment opportunities. And according to French et al. (2021), the primary function of a listing is to reduce financial constraints and agency fees, and thus increase investments (Yarba & Yassa, 2022). However, despite these benefits, our analysis shows that listings have remained quite low in Africa; thus, affecting the number of listed bonds in the continent.



Panel A: Number of Listed firms in emerging economies



Panel B: Number of listed firms in Africa in 2020

Figure 10: Comparative listings in select emerging markets versus listings in African countries

Source: Authors' calculation using primary data.

Narrow investor base

Across Africa, there are very few institutional investors, which primarily consist of non-bank financial institutions such as pension schemes, mutual funds, and insurance companies. These institutional investors (e.g., pension funds) are only permitted by law to invest a small portion of their assets under management (AUM) in corporate bond markets. For example, the Capital Markets Authority of Kenya allows pension funds to invest not more than 20 percent of AUM in corporate bonds, mortgages, and other fixed-income assets. Furthermore, institutional investors are concerned about reinvestment, credit, and liquidity risks that affect many corporate bond markets. As a result, they are more active in government securities markets whilst being cautious about corporate bond markets.

Similarly, retail investor participation is also low. Less than 10 percent of the population in each country have CDS accounts, which is a first step towards participation in the capital markets. Retail investors are discouraged by the high minimum investment amount required in corporate bond markets (US\$ 500 in Kenya) compared to stock markets, where the required minimum investment amount can be as low as US\$ 5. Retail investor participation is also hampered by financial illiteracy among most Africans, high levels of poverty, and inconsistent macroeconomic performance. Further, many African countries, such as Namibia and Botswana, are too small, resulting in a small number of participants in their capital markets. All of this reduces the likelihood of these markets attracting foreign investors, which altogether results in a narrow investor base. In fact, countries like Namibia and Eswatini have no foreign investors in their exchanges. Respondents in countries with foreign investors, such as Ghana, Nigeria, Kenya, and South Africa, noted that whenever foreign investors pull away, market activity decreases. Respondents also noted that most foreign investors prefer markets with regular issuance of large amounts (quantities) of debt securities. Corporate bond markets are currently issuing smaller-denominated debts, which are less cost-effective to manage.

Crowding out by government securities

Closing the top four most important factors affecting corporate bond market development in Africa is the effect of issuance by governments. Respondents across our sample countries observed that active issuance of government debt securities discourages issuance of non-government public debt, and thus,

significantly affects the growth of corporate bond markets in Africa. Government bonds crowd out the issuance of private-sector debt securities; thus, resulting in slow growth of corporate bond markets, as observed by Mu et al. (2013), Essers et al. (2016) and Smaoui et al. (2017). Most African countries have massive budget deficits, which force them to borrow aggressively from domestic bond markets. Respondents identified three ways in which this has impeded corporate bond markets' growth. First, corporate and government debt securities compete in the same market for investors. However, government bonds are appealing to most investors, especially institutional and foreign investors, due to their low default risk, high issuance frequency, large denominations, and overall liquidity. In Kenya, government debt securities account for up to 90 percent of public debt securities in the country. They noted that major institutional investors prefer government bonds because they are liquid and less risky: "Treasury bonds overshadow corporate bonds because they are issued more frequently, on an organized timetable, and the issue size is large enough to accommodate many investors, including institutional and foreign investors, unlike many corporate bonds", the participant explained.

Similarly, most investors in Mauritius prefer government bonds due to their high yields and relative liquidity in the secondary market. In Namibia, the government bond market is highly active, with new issuances offered almost every Friday and trade clearance occurring within a day. In Rwanda, Treasury bonds surpass corporate bonds in the market, and the government issues at least one batch of Treasury bonds every quarter since 2014. On the other hand, only two corporate bond batches have been issued in the market since its establishment. For these favorable characteristics of Treasury securities, most investors prefer them; thus, resulting in less issuance and trading of corporate bonds. According to respondents, most firms pay a premium of up to 5 percent on the government interest rate to cover credit and liquidity risks. Thus, if governments borrow aggressively in domestic bond markets and offer higher interest rates to attract investors, firms are forced to offer much higher rates when issuing corporate bonds. Expectedly, this often discourages new corporate bond issuances. In the aggregate, Figure 11 aptly illustrates the dominance of sovereign bond issuances over corporate bond issuances.

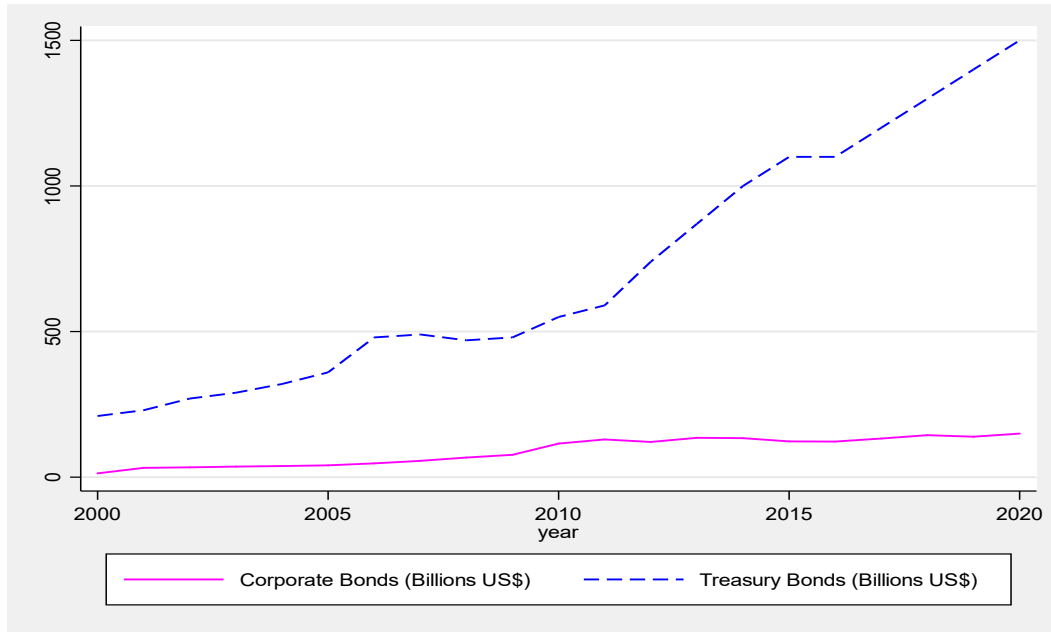


Figure 11: Trends of aggregate corporate and sovereign bonds in sample countries

The complex and costly issuance process

Ranked third among market development-impeding factors by respondents, is the ‘complex and costly issuance process’. According to respondents, many firms borrow from banks (private debt markets) to avoid the lengthy corporate bond issuance process. The process involves investment bankers, accountants, and legal experts, which increases the cost and time required to complete a public issuance. Respondents stated that firms frequently hire promoters to organize roadshows and educate investors about the issuance, whereas firms with properties require professionals to value assets for disclosure in the prospectus. This prolongs the issuance process and makes it more costly, especially for firms that keep poor records, as observed in Eswatini. Such firms conduct extensive documentation at the time of issuance. On the other hand, the process of borrowing from a bank is a one-stop shop in which firms submit all necessary documents and directly negotiate a debt contract without the need for an agent or other players. Equipped with detailed borrowers’ information banks can make credible credit decisions. All these results in competitive lending rates, especially for firms with collateralizable assets and/or multiple bank relationships (Rajan, 1982; Ojah & Pillay, 2009).

The issuance process is often underpinned by regulatory rules. For instance, to issue corporate bonds in Côte d'Ivoire, a firm must have been operating for at least 3 years. Regulators and/or exchanges require issuers to pay annual bond listing fees, which can be quite high, as Eswatini participants reported. They noted that issuers had complained of high issuance costs and that regulators had begun an investigation. Lastly, given high issuance costs and the associated lengthy process, corporate bond markets attract firms that need large debt funds that banks cannot easily provide because of restricted scale due to statutory dictates.

In Summary, given our overarching motivation for such a basics-oriented work – i.e., identification of possible ways to improve and/or expand financial (capital fund) resources to support increased production and sustainable growth in Africa, we summarize the identified bond market development impeding factors in a one-look enlightening picture. Accordingly, Figure 12 encapsulates the important findings discussed in this section.

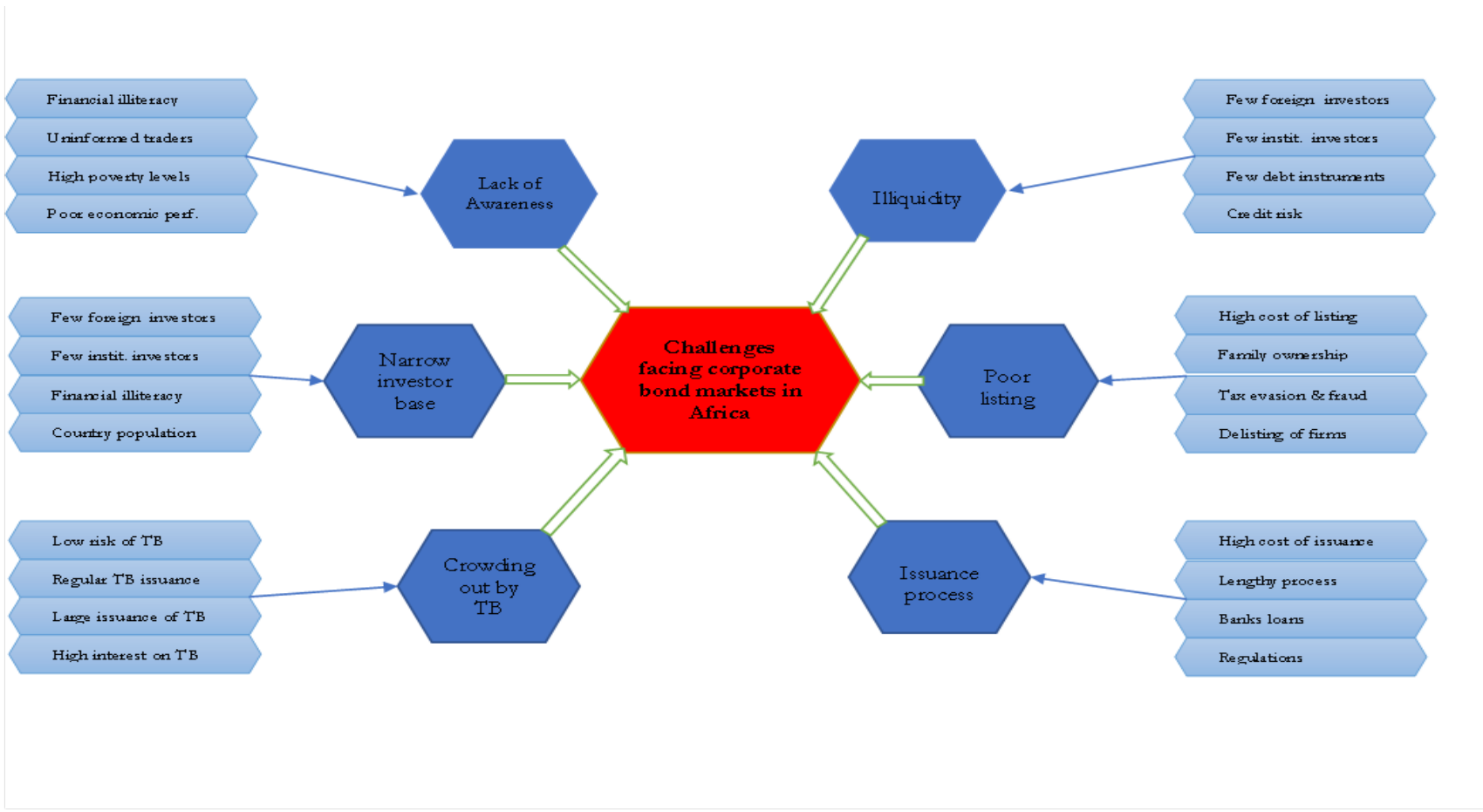


Figure 4: Factors affecting the development of corporate bond markets in Africa. Note that TB stands for Treasury (sovereign) bond.

8. Concluding Remarks

Studies on corporate bond markets in Africa have focused on the macro environment. However, existing studies on advanced economies indicate that the structure and design of markets, information transparency, and trading costs have a significant effect on the efficacy of bond markets (e.g., by fostering trading strategies, frequency of trading, and market liquidity). In this study, which is the first of its kind about Africa, we explored the microstructure of corporate bond markets in Africa, first focusing on mapping the microstructure of these markets. Next, we traced the relationship between bond market microstructure and bond market performance. Then, with an eye on possible ways forward, we analyzed the views of market participants, especially the sell-side, and other market stakeholders (regulators and securities exchanges), on the factors that affect the development of corporate bond markets in Africa.

Our findings show that banks and non-bank financial institutions accounted for more than 85 percent of corporate bonds issued in Africa during 2000—2020, with a market capitalization of over 80 percent of these outstanding bonds. Africa's bond markets have modern trading infrastructures (automated trading systems - ATs) and electronic depository, settlement, and clearance systems (CDSs) that are supported by the latest technology. Contrary to the notion that costly and complex issuance procedures favor private placement, most bonds in the continent are publicly issued and exchange-listed. Surprisingly, issuers sparingly deploy contract features that enhance bond quality or help investors hedge pertinent risks. For instance, less than 10 percent of the bonds have guarantees, sinking funds, call and put provisions, and inflation indexing. The dominant trading session is continuous, preceded by a pre-opening call and a post-close call session. Orders are submitted electronically by the brokers and dealers and executed on a yield preference (followed by a time preference) basis. Most exchanges provide limited pre-trade transparency, usually the order quantity. However, participants noted that the pre-trade information is not equally accessible to all market participants. Unlike pre trade information, post-trade information is detailed and accessible to all market participants, with a summary of the relevant set of information shared with electronic and print media for further dissemination to the public.

The main impediment to corporate bond market development in Africa is illiquidity. Though primary markets are liquid and new issuances are oversubscribed, only about 70 percent of these markets have secondary market trading, and amongst them, only South Africa is considered highly liquid. Liquidity is partly reduced by limited strategic trade-enhancing mechanisms such as cross-listing, short-selling, and derivatives. Other impeding factors, in addition to illiquidity, are lack of investor awareness, complex and costly issuance process, crowding out by issuances of government bonds, low listings on exchanges, and a narrow investor base consisting largely of a few institutional investors who traditionally buy and hold most securities until maturity.

Though our findings show that Africa's exchanges have significantly improved and adopted modern trading infrastructure; moving forwards, attention should be on increasing listings, which would, in turn, increase the frequency of corporate bond listings. Therefore, it is wise to review both issuance and listing processes to remove bottlenecks. Policies should also be initiated to increase the pool of retail and institutional investors (including foreign investors) to improve market liquidity. Finally, this being the first study about the microstructure of corporate bond markets in Africa, a lot remains to be understood. For example, we could not examine liquidity at a granular level due to a lack of active trading and a dearth of pertinent data. Future studies could focus on more active markets, like South Africa's JSE, to conduct a detailed study of individual markets' liquidity using trading data.

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