

Assessing the impact of COVID-19 induced rating downgrades on Eurobond yields in Africa

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Abstract

There was an outcry from policymakers over sovereign credit rating downgrades of African countries during the unprecedented COVID-19 lockdown periods. This study investigates whether sovereign downgrades during the time African countries were hit by COVID-19 had an impact on sovereign bond yields. Applying an event study analysis on the Eurobonds yields of 4 African countries that were downgraded during this period shows that there is significant evidence of excess volatility around the downgrade event and a net increase in yields within the rating event window. The results align to the view that rating agencies negatively impact macroeconomic conditions through their procyclical ratings. Hence, ratings should be regulated and controlled during crises times to avoid the procyclical impact of ratings.

Keywords: COVID-19; Africa; sovereign downgrades; Eurobond; procyclical; regulation.

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1. Introduction

The world economies have been shaken by the coronavirus (COVID-19) and its impact has been far-reaching. Global institutions such as the International Monetary Fund (IMF) and the World Bank (WB) have estimated that it will take at least 3 years for the world economies to recover from the effects of the pandemic (IMF, 2020a). The global economic outlook is estimated to shrink by -3.2 percent, with African economy expected to shrink by -1.6 percent, the first negative growth in nearly two decades (IMF, 2020b). Sovereign debt is estimated to rise to above 100 percent of Gross Domestic Product as African countries borrow to support fiscal stimulus packages and safety nets for the vulnerable population. Countries across the globe have gone into length periods of unprecedented national lockdowns in order to stop the spread and to contain the virus. For African countries, this has been strenuous given a myriad of other challenges the continent is facing; falling global commodity prices, general subdued demand, falling oil price, increasing protectionism and other socioeconomic challenges – poverty, inequality and unemployment.

International credit rating agencies have come under fierce criticism for igniting the *déjà vu* of the 2008 global financial crisis by downgrading countries during the COVID-19 crisis. Critics have questioned the rationale of downgrading economies during their most vulnerable moments when they were hit by COVID-19. Other scholars (Heywood, 2020; Mutize, 2020b; Maki, 2020) further question the timing of rating downgrades, asking why rating agencies chose to downgrade many emerging economies during crisis time like this. Heywood (2020) posits that it is time for African countries ‘stop dancing to Moody’s tune’, after Moody’s – the last one of the three international rating agencies – had downgraded South Africa’s sovereign rating to sub investment grade – or ‘junk status’. In Heywood’s views, downgrading South Africa’s sovereign rating during the covid-19 crisis time was tantamount to, ‘kicking a man whilst he is down’.

On the other hand Jonker (2020), counters Heywood (2020)’s critique as flawed as it ignores fundamental factors that results in a sovereign rating action. Jonker defend sovereign rating downgrades as objective activities that are based on credible and comprehensive methodologies. If rating agencies do not perform their function of informing investors about the deteriorating sovereign credit risk by downgrading an issuer based on fundamentals, their role becomes irrelevant. Thus, the criticism of credit rating agencies should be dismissed, as they cannot be blamed for simply fulfilling their mandate of providing factually

accurate credit ratings for investors. Instead of laying the blame on rating agencies, Jonker (2020) argues that downgrades should rightfully be blamed on governments that fail to address economic fundamentals to strengthen their country's risk profiles against a crisis.

Furthermore, in line with Jonker (2020), rating agencies defended their rating actions as informed by changes in fundamentals and underlying economic conditions. According to Moody's (2020) and Fitch (2020), its rating actions are justified and there is no issue with timing as they perform reviews in accordance with their regulatory calendar dates, which is published well in advance to the market, it just so happened that COVID-19 came along. If rating agencies fail to publish ratings on prescheduled dates, they are fined huge amounts by the regulator – the European Securities Markets Authority (ESMA) – for diverting from the schedule. Nevertheless, rating regulations have provisions that allow rating agencies to take actions out of calendar when there are major changes to a country's fundamentals that materially affect the ratings, especially in times of crises.

Based on the preceding opposing views, this study examines the following arguments and research gap. Rating agencies are expected to provide objective information to investors on the credit profile of issuers to bridge the information gap between borrowers and lenders (Partnoy, 2002; Eijffinger, 2012). On the other hand, during crisis periods, rating agencies are being criticized for driving crises by downgrading issuers (Auh, 2015; Cesaroni, 2015; Freitag, 2015; Giacomino, 2011; Utzig, 2012; Yao *et al.*, 2017). It thus emerges that rating agencies do not know what is expected of them during times of crises (Holden, 2018).

This study therefore explores the impact of rating downgrades induced by the COVID-19 pandemic in four African countries during time the countries went into an unprecedented economic lockdown. It investigates the following questions. First, what are rating agencies expected to do in crisis times; downgrade sovereigns or freeze rating actions. The study draws some conclusions and makes recommendations on the action that rating agencies should take during times of crisis? Second, COVID-19 hit all countries in the world; is it therefore rational that rating downgrades should have been across the globe rather than on the majority of African countries only? Third, African countries have drawn comprehensive policy responses (IMF, 2020a) to cushion their economies from the severity of COVID-19 crisis, it was therefore premature to downgrade countries merely on speculative expectations without waiting for them to

implement and evaluate the impact of their policy strategies? Lastly, sovereign risk factors had not yet materially changed when the rating downgrades happened. Thus, claims by rating agencies that they are reacting to changed circumstances (Riddha Basu, 2020), reflecting sudden strains that have emerged as a result of the coronavirus outbreak may not hold water.

The objective of this study is to investigate if rating downgrades induced by COVID-19 crisis conditions have any significant impact on sovereign bond yields. Thus, it examines the impact of COVID-19 induced sovereign downgrade in Africa and makes the following contributions. First, present evidence to the debate on whether ratings exacerbate a crisis by impact economies into a recession. Second, whether COVID-19 downgrades had any impact on Eurobond yields, which can be attributed to rating actions. Third, results of this study are key to the policymakers in balancing between strengthening economic fundamentals and shifting the blame of the crisis effects to rating agencies. Lastly, explore an area that previous studies have alluded to but have not written about explicitly, that is ‘*what should rating agencies do during a crisis?*’; continue with rating reviews as normal or postpone? There has been no exploration on this area and rating agencies do not seem to know what is expected of them. Recommendations on both options have significant implications on creditors and issuers of debt.

2. Literature review

Literature on the procyclical nature of rating agencies sprouted post the Asian crisis (Amato & Furfine, 2004; Ferri *et al.*, 1999; Kaminsky & Schmukler, 1999; Kräussl, 2000) presenting evidence that rating agencies aggravated the crisis by downgrading economies beyond what fundamentals would justify. These studies have consensus in that, credit ratings have substantial influence on the size and volatility of market dynamics. Another set of studies on the causes of 2008 global financial crisis pointing out the contributing role of rating agencies to the crisis (Auh, 2015; Cesaroni, 2015; Freitag, 2015; Giacomino, 2011; Utzig, 2012; Yao *et al.*, 2017). Amato and Furfine (2004), Cesaroni (2015) and Freitag (2015) argue that rating agencies do not reveal any new information to financial markets, instead they magnify the current negative underlying economic conditions through following already known economic events. This view presents the procyclical nature of ratings which follows macroeconomic indicators through downgrading (upgrading) companies and countries during periods of their financial distress (boom) (Mutize & Gossel, 2018b). Their rating actions create inaccurate optimism through positive ratings and outlooks

which leads to asset bubbles that inevitably busts after some time, igniting or exaggerating a crisis (Mutize & Gossel, 2018a, 2019).

The bubble busts followed by abrupt credit downgrades causes massive capital outflows out of a country and destabilize economies such as in the Eurozone and the US debt crisis of 2008. These conditions cause financial market distortions to a country's prevailing economic conditions, issuer's financial challenges and probability of defaulting on their debts. In its findings on the causes of the 2008 financial crisis in the US, the Financial Crisis Inquiry Commission report (2011) reported that "the financial crisis would not have happened without credit rating agencies as mortgage-related securities that were at the centre of the crisis could not have been marketed and sold without rating seal of approval". By not downgrading issuers, rating agencies were seen as having disseminated inaccurate information about the probability of default of issuers. Similarly, the European Commission Economic Crisis report (2009) show evidence that rating agencies were excessively conservative through maintaining ratings of issuers even when their financial position had evidence of impending crisis. This literature thus blames rating agencies for failure to act.

With reference to African countries, the recent COVID-19 crisis brought another dynamic of criticism against rating agencies. Literature on the how rating can respond during the recent crisis can be broadly divided into three categories, based on the role of rating agencies in times of crisis. First, the perspective by Alanis (2020) and Heywood (2020) advance that rating agencies exacerbated the impact of COVID-19 pandemic on African economies. Similar to traditional literature on the procyclical nature of ratings, these studies criticise the procyclical nature of ratings for worsening an already bad situation of a COVID-19 induced economic crisis. Stoddard (2020) further questions the timing of rating downgrades, asking why rating agencies chose to downgrade many emerging economies during COVID-19 crisis time. Mutize (2020) also points out that African countries and other emerging economies are not borrowing too much but rather their default risk is aggravated by high interest rates charged on borrowing, which is driven by poor ratings.

To further support literature on the procyclical nature of ratings, at the height of the COVID-19 pandemic in March 2020, the European Markets and Securities Authority (ESMA) – the European Union (EU) rating watchdog – cautioned rating agencies (Maijoor, 2020) over knee-jerk downgrades in pandemic, pushing economies deep into recession. Thus, Maki (2020) adds that, by issuing the statement, the EU rating regulator acknowledges that rating

agencies aggressively downgrade countries whose economies are already strained, driving markets into panic. This procyclical action cause weakening of investor confidence, raise cost of borrowing and ultimately making an economic rescue package inevitable. Thus, like as a self-fulfilling prophecy (Mutize, 2020b), these predictions, whether accurate or not, are most likely to materialize as financial markets care about rating opinions and investors act on sentiments (Benhabib *et al.*, 2016; Shah *et al.*, 2019). Since international rating agencies have tremendous power to influence market expectations and investors' portfolio allocation decisions, Ferri *et al.* (1999) present evidence that crisis-induced downgrades undermine macroeconomic fundamentals. Even countries with strong macroeconomic fundamentals, they deteriorate to converge with model-predicted ratings as investors respond by raising the cost of borrowing or by withdrawing their capital, aggravating a crisis situation.

Second, other literature (Jonker, 2020; Kisgen *et al.*, 2019) supports the actions of rating agencies during crisis periods, arguing that ratings simply reflect the changing fundamentals, which is important for markets participants. Jonker (2020) counters Heywood (2020)'s critique as flawed as it ignores fundamental factors that results in a sovereign rating action. Jonker defended sovereign rating downgrades as objective activities that are based on credible (Gaillard, 2017) and comprehensive methodologies (Gaillard, 2014). If rating agencies do not perform their function of bridging the information asymmetry gap about the deteriorating sovereign credit risk by downgrading an issuer based on fundamentals, their role becomes irrelevant (Humphrey, 2018; Kisgen *et al.*, 2019; White, 2018). Thus, these studies argue that the criticism of credit rating agencies should be dismissed, as rating agencies cannot be blamed for simply fulfilling their mandate of providing fundamentally accurate ratings for investors. Instead of laying the blame on rating agencies, Jonker (2020) argues that downgrades should rightfully be blamed on governments that fail to address economic fundamentals and to strengthen a country's risk profile against a crisis.

Furthermore, in line with Jonker (2020), rating agencies also defend their rating actions as informed by changes in fundamentals and underlying economic conditions. According to Fitch (2020) and Moody's Investors Service (2020), their rating actions are justified by scientific and legitimate rationale which is published together with the downgrade announcements. They further defend that there should be no criticism on timing of rating action as rating agencies performs reviews in accordance with their regulatory calendar dates, which are published every December of the previous year. It just happened that the

dates coincided with COVID-19 lockdown periods. According to regulations by Financial Sector Conduct Authority and other international regulatory bodies, rating agencies that fail to publish ratings on prescheduled dates are fined huge amounts in penalties for diverting from the schedule. Nevertheless, rating regulations have provisions that allow rating agencies take actions out of calendar when there are major changes to a country's fundamentals that materially affect the ratings, especially in times of crisis.

With specific reference to Africa, another study (Mutize, 2020b) have questioned the inconsistencies in timing of rating actions of African countries compared to other emerging economies in Latin America, Europe and Asia. Mutize (2020b) present evidence questioning the timing of rating downgrades in Africa compared to Europe Asia and Latin America in response to fiscal strain caused by the COVID-19. When the first case of COVID-19 was diagnosed on the African continent, Italy, France and China were already hard hit by COVID-19. Despite a debt to GDP ratio of at least 135, which was projected to rise to over 158 by end of 2020 (International Monetary Fund, 2020), the countries were neither downgraded nor their rating outlooks changed, they maintained investment grades by all the three international rating agencies.

In comparison, rating agencies lowered sovereign ratings for five African countries (South Africa, Gabon, Mauritius, Nigeria and Zambia) based on expectations that their fiscal situations will deteriorate and their health systems will be severely strained by pandemic (Fitch, 2020; Moody's Investors Service, 2020). The COVID-19 downgrades of the first five African countries happened at a time when they had a combined 1459 infections and only 14 fatalities. Their average debt was expected to rise from approximately 62 percent to 80 percent of GDP and rating agencies expected the risks to sovereign debt repayment capacity to increase due to liquidity pressures (Moody's Investors Service, 2020). In addition, the rationale was that COVID-19 would have a negative impact on economic growth and deterioration of other fiscal metrics. Hence, Mutize (2020b) present evidence that rating downgrades during crisis time impose a wave of other problems than the crisis itself, cutting cuts sovereign bond value as collateral in central-bank funding operations and drives interests high. Thus, sovereign bond values are grossly discounted (Mutize & Gossel, 2019), at the same time escalating the cost of interest repayment installments (Mutize, 2020b). As evident in the lack of consensus in literature, the objective of this study is therefore to investigate if rating downgrades induced by COVID-19 crisis conditions have any significant impact on a country's credit risk profile.

3. Data description

To examine the objective of this study, an event study technique is applied on Eurobond yields of tenures between 7 and 30 years. The impact is analysed over the period from 1 January 2020 to 30 April 2020 when 10 African countries were downgraded by the three international credit rating agencies in response to the spread of COVID-19. A summary of Eurobonds of different tenures analysed in this study is presented in Table 1 below.

TABLE 1: TENURE OF EUROBONDS

Country	Bond Tenure I	Bond Tenure II
Botswana	7-year	13-year
Mauritius	10-year	20-year
Nigeria	10-year	-
South Africa	10-year	30 year

From the 10 African countries that were downgraded, 6 were excluded from this analysis – Angola, Gabon, Cameroon, Cape Verde, DRC and Zambia – because; they have not yet issued sovereign Eurobonds, they have issued sovereign Eurobonds but they are not being publicly traded or there is no credible data available on the sovereign Eurobonds. Credit rating actions data is obtained from a rating actions consolidation site, Tradingeconomics, a New York-based financial indicators platform that provides historical data, economic forecasts, news and trading recommendations. The sovereign bond yields were obtained from Investing.com, a financial markets platform providing real-time data and analysis across 250 exchanges around the world.

The Standard & Poor’s (S&P) Africa Hard Currency Sovereign Bond Index is used as the benchmark index for estimating normal expected returns. The S&P Africa Sovereign Bond Index is designed to track the performance of African sovereign government bonds issued in Euros, Japanese yen, and U.S. dollars by 13 African countries – Botswana, Kenya, Namibia, Tanzania, Zambia, Egypt, Mauritius, Nigeria, Tunisia, Ghana, Morocco, South Africa and Uganda. This data is available on S&P Dow Jones website. Table 2 presents summary statistics for the data.

TABLE 2: SUMMARY STATISTICS

	Botswana 13-year	Botswana 7-year	Mauritius 10-year	Mauritius 20-year	Nigeria 10-year
Mean	-0.000213	-0.012257	-0.002605	-0.002122	0.000153
Median	0.000000	0.000000	0.000000	0.000000	0.000000
Maximum	0.045500	0.041700	0.038000	0.046700	0.225700
Minimum	-0.034100	-1.000000	-0.088800	-0.105900	-0.050800
Std. Dev.	0.010924	0.108708	0.012331	0.015688	0.027742
Skewness	1.177520	-8.869905	-4.247720	-3.605697	6.320937
Kurtosis	10.43581	81.13509	31.81824	26.82128	52.91956
Jarque-Bera	215.4659	23004.26	3196.933	2193.912	9391.718
Probability	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	-0.018100	-1.054060	-0.221400	-0.180400	0.013000
Sum Sq. Dev	0.010024	1.004479	0.012772	0.020673	0.064648
Observations	85	85	85	85	85

	S&P Africa US\$ index	South Africa 10-year	South Africa 30-year
Mean	0.000402	0.003040	-0.004104
Median	0.000000	0.000000	0.000000
Maximum	0.011614	0.103100	0.073300
Minimum	-0.005253	-0.054700	-0.500000
Std. Dev.	0.002676	0.021923	0.057063
Skewness	1.710605	1.446808	-7.819067
Kurtosis	7.872174	9.163792	68.79456
Jarque-Bera	125.5264	164.2106	16197.73
Probability	0.000000	0.000000	0.000000
Sum	0.034206	0.258400	-0.348800
Sum Sq. Dev	0.000601	0.040370	0.273516
Observations	85	85	85

Methodology

This study applies an event study to examine the procyclical impact of COVID-19 induced rating actions on sovereign Eurobond yields. The event study methodology is recommended by Kothari and Warner (2007) – a common framework applied in testing the effects of an event on financial market yields. This methodology is appropriate for this study as it isolate the rating actions and examine their impact on specific date to reveal pertinent information about

the behaviour of market securities in response to the procyclical rating actions. Thus, the event in this analysis is ‘sovereign credit ratings’ that took place during the COVID-19 pandemic crisis. The expected market model for sovereign bond yields, Y_t , at time t is estimated as follows:

$$E(\hat{Y}_t) = \beta_1 Y_t + \beta_2 + e_t \tag{1}$$

Assuming that $E(e_t) = 0$, $E(e_t, e_{t-j}) = 0$ and $Var(e_t) = \sigma_t^2$

where:

e_t is the stochastic error term, and;

β_1 and β_2 are model parameters estimated by ordinary least squares regression.

The benchmark S&P Africa Hard Currency Sovereign Bond Index is first used to estimate expected normal sovereign bond yields as it is a composite index that is rationally expected to be more stable than individual bond yields. Thenafter, abnormal bond yields are estimated on individual sovereign bond yields using the S&P Africa Hard Currency Sovereign Bond Index as normal sovereign bond yields in the rating event window. Abnormal yield, AY_t , on day t is determined by Equation 2 below:

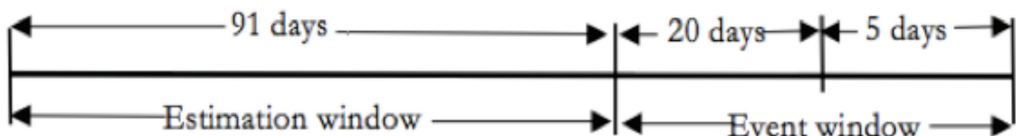
$$AY_t = Y_t - E(\hat{Y}_t) \tag{2}$$

where:

Y_t is the actual sovereign bond yield at time t .

Following the recommendation by Kothari and Warner (2007) that, to sufficiently estimate the market model in a standard event methodology, an estimation window period of 91 days before the event should be used, this study applies the same. However, a 26-day event window (split into 20 days before the event, 5 days after the event and 1 day as event day) is also applied, which is more than the average event window of 11 days recommended by Kothari and Warner (2007). This is done to allow the full impact of the information announcement to be included for reaction assessment. The sovereign credit rating action announcement date is considered as day 0 and other trading days are skewed rounding the event day as -20 and +5 as illustrated in Figure 1 below.

FIGURE 1: SOVEREIGN RATING EVENT WINDOW



After estimating the abnormal sovereign bond yields, the study tests the significance of the sovereign rating event impact on the Eurobond yields using *t*-statistics significance test. This significance tests determine whether the actual yields significantly differ from expected yields within the event window. It is hypothesised that, if the *t*-statistic is significant, then COVID-19 induced sovereign rating actions triggers significant procyclical impact on sovereign bond yields. The time-series *t*-test is applied as follows:

$$t_{\alpha} = \frac{AY_t}{std(AY_t)} = \frac{Y_t - [\beta_1 + \beta_2 Y_t + e_t]}{s_t / \sqrt{n}} \quad (3)$$

where:

t_{α} is the student *t*-test at significance level; and

$Std(AY_t)$ is the standard error of abnormal bond yield at time *t*.

This study follows the standard significance levels of 5 percent ($\alpha = 0.05$) and 10 percent ($\alpha = 0.1$), whose standard decision criterion for significance of abnormal returns is $-1.96 > \alpha$ or $\alpha > 1.96$ and $-1.645 > \alpha$ or $\alpha > 1.645$, respectively.

5. Empirical findings

Results of the event study analyses are presented in country-based tables. Table 3 shows results of Botswana, downgraded from upper to lower medium grade – A (stable) to BBB+ (stable) - due to expectation that diamond revenues will weaken and economy will decelerate because of COVID-19. As shown in the results, there is significantly high volatility in yields of both 7 and 13-year sovereign bonds as the *t*-test values (marked **) represent significance at 5 per cent level. The values that are statistically significant (marked **) in the table are both positive and negative, implying that was volatility from both negative and positive changes in bond returns around the announcement date. In the volatility of yields, the increases were higher than the fall in the analysis window meaning the net effect of the rating downgrade is an increase in bond interest rates. The downgrade of Botswana thus add to other challenges behind the downgrade such as the prolonged depressed diamond market, slowing domestic diamond production, COVID-19 outbreak and fall in demand from China which all leads to economic deceleration. These finding align to studies (Auh, 2015; Cesaroni, 2015; Freitag, 2015; Giacomino, 2011; Utzig, 2012; Yao *et al.*, 2017), which also find procyclical evidence of rating agencies in crisis periods.

TABLE 3: BOTSWANA DOWNGRADE BY S&P FROM A (STABLE) TO BBB+ (STABLE)

Date	7-year	13-year	S&P	ER-7-year	AR-7-year	T-test	ER-13-year	AR-13-year	T-test	Model Parameters
Feb 24, 2020	-2,17%	0,00%	0,02%	0,1244	-0,1461	-10,7869**	-0,0012	0,0012	0,0882	Intercept -0,0012
Feb 25, 2020	2,22%	0,00%	0,11%	-0,1296	0,1518	11,2138**	-0,0012	0,0012	0,0882	Slope -5,7858
Feb 26, 2020	-2,17%	0,00%	0,14%	0,1244	-0,1461	-10,7869**	-0,0012	0,0012	0,0882	Std. error 0,0135
Feb 27, 2020	0,00%	0,00%	0,19%	-0,0012	0,0012	0,0882	-0,0012	0,0012	0,0882	R-square 0,0276
Feb 28, 2020	2,22%	0,00%	-0,34%	-0,1296	0,1518	11,2138**	-0,0012	0,0012	0,0882	
Mar 02, 2020	0,00%	1,19%	-0,13%	-0,0012	0,0012	0,0882	-0,0700	0,0819	6,0519**	
Mar 03, 2020	0,00%	0,39%	-0,07%	-0,0012	0,0012	0,0882	-0,0238	0,0277	2,0427**	
Mar 04, 2020	-0,82%	-1,56%	0,01%	0,0462	-0,0544	-4,0213**	0,0891	-0,1047	-7,7299**	
Mar 05, 2020	0,00%	0,00%	0,18%	-0,0012	0,0012	0,0882	-0,0012	0,0012	0,0882	
Mar 06, 2020	0,00%	0,00%	0,51%	-0,0012	0,0012	0,0882	-0,0012	0,0012	0,0882	
Mar 07, 2020	-1,79%	-0,78%	0,48%	0,1024	-0,1203	-8,8825**	0,0439	-0,0517	-3,8208**	
Mar 09, 2020	1,83%	0,79%	0,15%	-0,1071	0,1254	9,2593**	-0,0469	0,0548	4,0473**	
Mar 10, 2020	0,00%	0,00%	1,16%	-0,0012	0,0012	0,0882	-0,0012	0,0012	0,0882	
Mar 11, 2020	-1,37%	0,00%	-0,06%	0,0781	-0,0918	-6,7777**	-0,0012	0,0012	0,0882	
Mar 12, 2020	1,39%	0,40%	0,52%	-0,0816	0,0955	7,0542**	-0,0243	0,0283	2,0928**	
Mar 13, 2020	0,00%	0,20%	0,17%	-0,0012	0,0012	0,0882	-0,0128	0,0148	1,0905	
Mar 16, 2020	0,00%	0,00%	1,02%	-0,0012	0,0012	0,0882	-0,0012	0,0012	0,0882	
Mar 17, 2020	0,00%	0,00%	0,70%	-0,0012	0,0012	0,0882	-0,0012	0,0012	0,0882	
Mar 18, 2020	0,00%	-0,74%	-0,44%	-0,0012	0,0012	0,0882	0,0416	-0,0490	-3,6204**	
Mar 19, 2020	0,00%	0,15%	0,48%	-0,0012	0,0012	0,0882	-0,0099	0,0114	0,8399	
Mar 20, 2020	-1,37%	4,55%	-0,24%	0,0781	-0,0918	-6,7777**	-0,2644	0,3099	22,8907**	
Mar 23, 2020	0,00%	-3,41%	-0,53%	-0,0012	0,0012	0,0882	0,1961	-0,2302	-17,0012**	
Mar 24, 2020	1,39%	-0,39%	-0,26%	-0,0816	0,0955	7,0542**	0,0214	-0,0253	-1,8663*	
Mar 25, 2020	0,00%	0,00%	-0,24%	-0,0012	0,0012	0,0882	-0,0012	0,0012	0,0882	
Mar 26, 2020	0,00%	0,00%	0,32%	-0,0012	0,0012	0,0882	-0,0012	0,0012	0,0882	
Mar 27, 2020	0,00%	0,00%	-0,11%	-0,0012	0,0012	0,0882	-0,0012	0,0012	0,0882	
Mar 30, 2020	0,00%	0,00%	0,70%	-0,0012	0,0012	0,0882	-0,0012	0,0012	0,0882	
Mar 31, 2020	0,00%	-0,59%	-0,04%	-0,0012	0,0012	0,0882	0,0329	-0,0388	-2,8687**	
Apr 01, 2020	0,00%	0,59%	-0,33%	-0,0012	0,0012	0,0882	-0,0353	0,0412	3,0450**	
Apr 02, 2020	0,00%	0,00%	-0,10%	-0,0012	0,0012	0,0882	-0,0012	0,0012	0,0882	
Apr 03, 2020	-1,37%	-0,59%	-0,41%	0,0781	-0,0918	-6,7777**	0,0329	-0,0388	-2,8687**	

Note: **represents 5 percent level significance * represents 10 percent level significance

TABLE 4: MAURITIUS DOWNGRADE BY MOODY'S FROM BAA1 (STABLE) TO BAA1 (NEGATIVE)

Date	10-year	20-year	S&P	ER-1	AR	T-test	ER2	AR2	T-test	Model Parameters
Feb 26, 2020	0,00%	0,00%	0,11%	-0,0018	0,0018	0,13876	-0,0018	0,0018	0,13876	Intercept -0,0018
Feb 27, 2020	-0,02%	0,01%	0,14%	-0,0013	0,0011	0,08280	-0,0021	0,0022	0,16675	Slope -2,6373
Feb 28, 2020	0,02%	0,00%	0,19%	-0,0023	0,0025	0,19473	-0,0018	0,0018	0,13876	Std. error 0,0130
Mar 02, 2020	0,00%	0,00%	-0,34%	-0,0018	0,0018	0,13876	-0,0018	0,0018	0,13876	R-square 0,2306
Mar 03, 2020	-1,19%	0,00%	-0,13%	0,0296	-0,0415	-3,19128**	-0,0018	0,0018	0,13876	
Mar 04, 2020	0,00%	0,00%	-0,07%	-0,0018	0,0018	0,13876	-0,0018	0,0018	0,13876	
Mar 05, 2020	-2,48%	-1,98%	0,01%	0,0636	-0,0884	-6,80116**	0,0504	-0,0702	-5,40198**	
Mar 06, 2020	-0,01%	0,00%	0,18%	-0,0015	0,0014	0,11078	-0,0018	0,0018	0,13876	
Mar 09, 2020	-2,56%	-4,10%	0,51%	0,0657	-0,0913	-7,02503**	0,1063	-0,1473	-11,33450**	
Mar 10, 2020	0,00%	-0,01%	0,48%	-0,0018	0,0018	0,13876	-0,0015	0,0014	0,11078	
Mar 11, 2020	0,00%	0,03%	0,15%	-0,0018	0,0018	0,13876	-0,0026	0,0029	0,22272	
Mar 12, 2020	-8,88%	-5,57%	1,16%	0,2324	-0,3212	-24,71065**	0,1451	-0,2008	-15,44809**	
Mar 13, 2020	0,00%	0,00%	-0,06%	-0,0018	0,0018	0,13876	-0,0018	0,0018	0,13876	
Mar 16, 2020	-0,04%	0,00%	0,52%	-0,0007	0,0003	0,02683	-0,0018	0,0018	0,13876	
Mar 17, 2020	-4,26%	-10,59%	0,17%	0,1105	-0,1531	-11,78224**	0,2775	-0,3834	-29,49584**	
Mar 18, 2020	-0,21%	4,67%	1,02%	0,0037	-0,0058	-0,44889	-0,1250	0,1717	13,20710**	
Mar 19, 2020	0,00%	0,00%	0,70%	-0,0018	0,0018	0,13876	-0,0018	0,0018	0,13876	
Mar 20, 2020	0,00%	0,00%	-0,44%	-0,0018	0,0018	0,13876	-0,0018	0,0018	0,13876	
Mar 23, 2020	0,00%	0,00%	0,48%	-0,0018	0,0018	0,13876	-0,0018	0,0018	0,13876	
Mar 24, 2020	0,00%	0,00%	-0,24%	-0,0018	0,0018	0,13876	-0,0018	0,0018	0,13876	
Mar 25, 2020	0,03%	0,00%	-0,53%	-0,0026	0,0029	0,22272	-0,0018	0,0018	0,13876	
Mar 26, 2020	-0,03%	0,00%	-0,26%	-0,0010	0,0007	0,05481	-0,0018	0,0018	0,13876	
Mar 27, 2020	0,00%	0,00%	-0,24%	-0,0018	0,0018	0,13876	-0,0018	0,0018	0,13876	
Mar 30, 2020	-0,03%	0,02%	0,32%	-0,0010	0,0007	0,05481	-0,0023	0,0025	0,19473	
Mar 31, 2020	0,03%	-0,02%	-0,11%	-0,0026	0,0029	0,22272	-0,0013	0,0011	0,08280	
Apr 01, 2020	0,00%	0,00%	0,70%	-0,0018	0,0018	0,13876	-0,0018	0,0018	0,13876	
Apr 02, 2020	0,00%	0,00%	-0,04%	-0,0018	0,0018	0,13876	-0,0018	0,0018	0,13876	
Apr 03, 2020	0,03%	0,00%	-0,33%	-0,0026	0,0029	0,22272	-0,0018	0,0018	0,13876	
Apr 06, 2020	-0,03%	0,00%	-0,10%	-0,0010	0,0007	0,05481	-0,0018	0,0018	0,13876	
Apr 07, 2020	0,00%	0,00%	-0,41%	-0,0018	0,0018	0,13876	-0,0018	0,0018	0,13876	
Apr 08, 2020	0,00%	0,00%	-0,12%	-0,0018	0,0018	0,13876	-0,0018	0,0018	0,13876	

Note: **represents 5 percent level significance * represents 10 percent level significance

Converse to downgrade of Botswana, Table 4 above shows a significant decrease in Mauritian bond yields 10 days before the event and no significant change after the rating announcement in both 10 and 20-year bonds. Mauritius rating change was driven by the shock transmitted through the decline and expected prolonged slump in the tourism industry, which represents a relatively sizable proportion of gross value added in the economy as well as a source of government revenue and export earnings. The rating action may not have an impact on announcement date possibly because the country began to experience a slump in tourism was immediately after the first COVID-19 cases were diagnosed in China. These results concur with Amato and Furfine (2004), Cesaroni (2015) and Freitag (2015) who find that rating agencies magnify the current negative underlying economic conditions through following already known economic events.

As can be seen in Table 5, the downgrade of Nigeria in highly speculative grade had a significant increase in the yield of its 10-year bond around the two event dates. The rating changes added to the COVID-19 challenges, fiscal and external shock resulting from lower oil prices and economic recession. These results thus show that sovereign downgrades during the crisis times add to the impact on sovereign bond yields. The results agree with Mutize and Gossel (2018a, 2019) who present evidence on the procyclical nature of ratings which follows macroeconomic indicators through downgrading (upgrading) companies and countries during periods of their financial distress (boom), creating inaccurate optimism through positive ratings and outlooks which leads to asset bubbles that inevitably busts after some time, igniting or exaggerating a crisis.

Moody's downgraded South Africa, the most industrialised economy in Africa with liquid and well-established financial markets from investment grade to sub-investment grade. There was excessively high volatility in yields of both 10 and 30-year sovereign bonds throughout the estimations and event window. The table shows a 17.88% net increase in 10-year sovereign bond yield within the analysis window, proof that crisis ratings changes significantly drives cost of borrowing. This has a direct aggravation on the factors that caused the rating action such as the rising debt burden and structurally weak economic growth. Thus, it can be concluded that procyclical effect of the downgrade magnified the impact of the lockdown.

TABLE 5: NIGERIA DOWNGRADE BY S&P FROM B (NEGATIVE) TO B (STABLE) AND FITCH B+ (NEGATIVE) TO B (NEGATIVE)

Date	10-year Bond	S&P yield	ER	AR	T-test	Model Parameters
Feb 27, 2020	0,05%	0,14%	-0,0054	0,0059	0,4638	Intercept -0,0027
Feb 28, 2020	-0,02%	0,19%	-0,0017	0,0015	0,1189	Slope -5,2299
Mar 03, 2020	3,22%	-0,47%	-0,1712	0,2034	16,0842**	Std. error 0,0126
Mar 04, 2020	2,77%	-0,07%	-0,1476	0,1753	13,8668**	R-square 0,1354
Mar 05, 2020	0,00%	0,01%	-0,0027	0,0027	0,2174	
Mar 06, 2020	1,12%	0,18%	-0,0613	0,0725	5,7363**	
Mar 09, 2020	0,00%	0,51%	-0,0027	0,0027	0,2174	
Mar 10, 2020	0,00%	0,48%	-0,0027	0,0027	0,2174	
Mar 11, 2020	0,01%	0,15%	-0,0033	0,0034	0,2667	
Mar 12, 2020	0,00%	1,16%	-0,0027	0,0027	0,2174	
Mar 13, 2020	0,00%	-0,06%	-0,0027	0,0027	0,2174	
Mar 16, 2020	22,57%	0,52%	-1,1831	1,4088	111,4325**	
Mar 17, 2020	-0,02%	0,17%	-0,0017	0,0015	0,1189	
Mar 18, 2020	-5,08%	1,02%	0,2629	-0,3137	-24,8146**	
Mar 19, 2020	1,57%	0,70%	-0,0849	0,1006	7,9537**	
Mar 20, 2020	-0,02%	-0,44%	-0,0017	0,0015	0,1189	
Mar 23, 2020	0,01%	0,48%	-0,0033	0,0034	0,2667	
Mar 24, 2020	1,06%	-0,24%	-0,0582	0,0688	5,4406**	
Mar 25, 2020	0,05%	-0,53%	-0,0054	0,0059	0,4638	
Mar 26, 2020	0,01%	-0,26%	-0,0033	0,0034	0,2667	
Mar 27, 2020	0,82%	-0,24%	-0,0456	0,0538	4,2580**	
Mar 30, 2020	-0,36%	0,32%	0,0161	-0,0197	-1,5565	
Mar 31, 2020	-1,70%	-0,11%	0,0862	-0,1032	-8,1594**	
Apr 01, 2020	-0,64%	0,70%	0,0307	-0,0371	-2,9362**	
Apr 02, 2020	-0,30%	-0,04%	0,0129	-0,0159	-1,2608	
Apr 03, 2020	-0,40%	-0,33%	0,0182	-0,0222	-1,7536*	
Apr 06, 2020	-0,98%	-0,10%	0,0485	-0,0583	-4,6116**	
Apr 07, 2020	-1,57%	-0,41%	0,0794	-0,0951	-7,5188**	
Apr 08, 2020	0,01%	-0,12%	-0,0033	0,0034	0,2667	
Apr 09, 2020	0,01%	-0,17%	-0,0033	0,0034	0,2667	
Apr 14, 2020	-0,03%	-0,28%	-0,0012	0,0009	0,0696	
Apr 15, 2020	-1,75%	0,19%	0,0888	-0,1063	-8,4058**	

Note: **represents 5 percent level significance * represents 10 percent level significance

TABLE 6: SOUTH AFRICA DOWNGRADE BY MOODY'S FROM BAA3 (NEGATIVE) TO BAI (NEGATIVE); FITCH BB+ (NEGATIVE) TO BB (NEGATIVE)

Date	10-year	30-year	S&P	ER-10 yr	AR-10 yr	T-test	ER-30 yr	AR-30 yr	T-test	Model Parameters
Feb 28, 2020	3,11%	2,18%	0,19%	0,0018	0,0293	10,4418**	0,0018	0,0200	7,1359**	Intercept 0,0017
Mar 02, 2020	0,66%	0,24%	-0,34%	0,0245	-0,0179	-6,3871**	0,0017	0,0007	0,2398	Slope 0,0022
Mar 03, 2020	-3,43%	-2,04%	-0,13%	0,0241	-0,0584	-20,7926**	0,0017	-0,0221	-7,8650**	Std. error 0,0028
Mar 04, 2020	0,17%	-0,05%	-0,07%	0,0241	-0,0224	-7,9634**	0,0017	-0,0022	-0,7911	R-square 0,0023
Mar 05, 2020	0,23%	0,50%	0,01%	0,0242	-0,0219	-7,7890**	0,0017	0,0033	1,1640	
Mar 06, 2020	1,52%	0,99%	0,18%	0,0244	-0,0092	-3,2720**	0,0017	0,0082	2,9058**	
Mar 09, 2020	1,88%	-0,20%	0,51%	0,0243	-0,0055	-1,9738**	0,0017	-0,0037	-1,3243	
Mar 10, 2020	-0,38%	1,66%	0,48%	0,0247	-0,0285	-10,1591**	0,0018	0,0148	5,2875**	
Mar 11, 2020	1,36%	-0,24%	0,15%	0,0247	-0,0111	-3,9405**	0,0017	-0,0041	-1,4665	
Mar 12, 2020	5,54%	1,06%	1,16%	0,0249	0,0305	10,8645**	0,0017	0,0089	3,1546**	
Mar 13, 2020	1,99%	4,34%	-0,06%	0,0259	-0,0060	-2,1411**	0,0018	0,0416	14,8141**	
Mar 16, 2020	7,45%	0,96%	0,52%	0,0261	0,0484	17,2279**	0,0017	0,0079	2,7992**	
Mar 17, 2020	0,00%	7,33%	0,17%	0,0279	-0,0279	-9,9514**	0,0019	0,0714	25,4427**	
Mar 18, 2020	4,70%	-0,08%	1,02%	0,0279	0,0191	6,8006**	0,0017	-0,0025	-0,8977	
Mar 19, 2020	4,27%	3,97%	0,70%	0,0290	0,0137	4,8985**	0,0018	0,0379	13,4988**	
Mar 20, 2020	-0,51%	4,10%	-0,44%	0,0301	-0,0352	-12,5285	0,0018	0,0392	13,9609**	
Mar 23, 2020	5,44%	-0,70%	0,48%	0,0299	0,0245	8,7398**	0,0017	-0,0087	-3,1017**	
Mar 24, 2020	0,41%	4,63%	-0,24%	0,0312	-0,0271	-9,6447**	0,0018	0,0445	15,8449**	
Mar 25, 2020	-5,34%	-0,94%	-0,53%	0,0309	-0,0843	-30,0311**	0,0017	-0,0111	-3,9548**	
Mar 26, 2020	-2,05%	-6,48%	-0,26%	0,0290	-0,0495	-17,6368**	0,0016	-0,0664	-23,6479**	
Mar 27, 2020	1,48%	-1,82%	-0,24%	0,0285	-0,0137	-4,8836**	0,0017	-0,0199	-7,0829**	
Mar 29, 2020	0,04%	1,82%	0,32%	0,0290	-0,0286	-10,1870**	0,0018	0,0164	5,8562**	
Mar 30, 2020	-0,26%	0,00%	-0,11%	0,0290	-0,0316	-11,2558**	0,0017	-0,0017	-0,6134	
Mar 31, 2020	-5,47%	-0,28%	0,70%	0,0289	-0,0836	-29,7893**	0,0017	-0,0045	-1,6087	
Apr 01, 2020	0,96%	0,41%	-0,04%	0,0290	-0,0194	-6,9212**	0,0017	0,0024	0,8441	
Apr 02, 2020	1,08%	-4,74%	-0,33%	0,0277	-0,0169	-6,0329**	0,0016	-0,0490	-17,4627**	
Apr 03, 2020	2,19%	0,81%	-0,10%	0,0279	-0,0060	-2,1533**	0,0017	0,0064	2,2659**	
Apr 06, 2020	-1,05%	0,59%	-0,41%	0,0281	-0,0386	-13,7512**	0,0017	0,0042	1,4839	
Apr 07, 2020	-3,18%	1,59%	-0,12%	0,0285	-0,0603	-21,4892**	0,0018	0,0141	5,0386**	
Apr 08, 2020	0,18%	-0,62%	-0,17%	0,0284	-0,0266	-9,4598**	0,0017	-0,0079	-2,8173**	
Apr 09, 2020	-1,50%	-2,74%	0,03%	0,0276	-0,0426	-15,1850**	0,0017	-0,0291	-10,3533**	
Apr 14, 2020	-3,61%	0,43%	-0,06%	0,0277	-0,0638	-22,7415**	0,0017	0,0026	0,9152	

Note: **represents 5 percent level significance * represents 10 percent level significance

These findings support the assertion that negative rating actions are procyclical and increase the magnitude of a crisis. It agrees with Benhabib *et al.*, (2016), Shah *et al.* (2019) and Ferri *et al.* (1999) who also present evidence that crisis-induced downgrades undermine macroeconomic fundamentals. Even countries with strong macroeconomic fundamentals deteriorate to converge with model-predicted ratings as investors respond by raising the cost of borrowing or by withdrawing their capital, aggravating a crisis situation.

6. Conclusion and recommendations

The study applies event study analysis on four African countries that were downgraded in response to COVID-19 challenges. The results show that the procyclical rating actions during the COVID-19 pandemic caused an abrupt rise in bond interest that governments would be required to pay more on the same amount of debt they previously owed. The volatility yields are evident that investors have a knee-jack portfolio adjustment in response to ratings, which is likely to cause capital flight. This study thus concludes that, although there is an inherent conflict of expectations between investors and issuers, in crisis times rating agencies should consider actions that are not detrimental to already stressed sovereign fundamentals.

Based on the conclusion, this study makes the following four recommendations and pragmatic responses. First, countries that have regulatory bodies for rating agencies need to regulate the timing of announcement of ratings to curb procyclical nature of rating actions that disrupt markets by triggering a knee-jerk market panic. In times of crises like the COVID-19 pandemic, financial markets have a natural way of discounting risk when fundamentals are conspicuously changing. Second, to enhance transparency and disclosure for more comprehensive engagements between governments and rating agencies, there should be more physical presence in rated countries rather than assessing countries from a remote location. Third, in collaboration with other market regulatory bodies such as stock exchanges and debt markets, countries should restrict or ban short selling transactions to minimize spikes in yields.

Biographical Note

Misheck Mutize is the lead expert researcher on support to African countries in the area of international credit ratings. He holds a Doctor of Philosophy and Master's of Science in Finance and Investment from the University of Cape Town's Graduate School of Business in South Africa. He has researched

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References

- Alanis, E. (2020). Is There Valuable Private Information in Credit Ratings? *SSRN Electronic Journal*, 3–5. <https://doi.org/10.2139/ssrn.3548216>
- Amato, J. D., & Furfine, C. H. (2004). Are credit ratings procyclical? *Journal of Banking and Finance*, 28(11), 2641–2677. <https://doi.org/10.1016/j.jbankfin.2004.06.005>
- Auh, J. K. (2015). Procyclical Credit Rating Policy. *SSRN Electronic Journal*, November. <https://doi.org/10.2139/ssrn.2581738>
- Benhabib, J., Liu, X., & Wang, P. (2016). Sentiments, financial markets, and macroeconomic fluctuations. *Journal of Financial Economics*. <https://doi.org/10.1016/j.jfineco.2016.01.008>
- Cesaroni, T. (2015). Procyclicality of credit rating systems: How to manage it. *Journal of Economics and Business*, 82, 62–83. <https://doi.org/10.1016/j.jeconbus.2015.09.001>
- Commission, E. (2009). Economic Crisis in Europe : Causes , Consequences and Responses. In *European Economy*. <https://doi.org/10.1371/journal.pone.0016233>
- Eijffinger, S. C. (2012). Rating agencies: Role and influence of their sovereign credit risk assessment in the eurozone. *Journal of Common Market Studies*, 50(6), 912-921.
- Ferri, G., Liu, L.-G., & Stiglitz, J. E. (1999). The Procyclical Role of Rating Agencies: Evidence from the East Asian Crisis. *Economic Notes*, 28(3), 335–355. <https://doi.org/10.1111/1468-0300.00016>
- Ferri, Giovanni. (2004). More analysts, better ratings: do rating agencies invest enough in the less developed countries? *Journal of Applied Economics*, 7(1), 77–98.
- Financial Crisis Inquiry Commission. (2011). The Financial Crisis Inquiry Report. Public Law. available on <https://www.govinfo.gov/content/pkg/GPO-FCIC/pdf/GPO-FCIC.pdf>
- Fitch. (2020). Fitch Downgrades South African Banks to 'BB', Negative Outlook on Coronavirus Impact. 1–9.

- Freitag, L. (2015). Procyclicality and Path Dependence of Sovereign Credit Ratings: The Example of Europe. *Economic Notes*, 44(2), 309–332. <https://doi.org/10.1111/ecno.12032>
- Gaillard, N. (2014). What Is the Value of Sovereign Ratings? *German Economic Review*, 15(1), 208–224. <https://doi.org/10.1111/geer.12018>
- Gaillard, N. J. (2017). Credible sovereign ratings: Beyond statistics and regulations. *European Business Law Review*, 28(1), 5–18.
- Giacomino, P. (2011). Are Sovereign Credit Ratings Pro-cyclical? A Controversial Issue Revisited in Light of the Current Financial Crisis. *Rivista di Politica Economica*, 4, 79-111
- Heywood, B. M. (2020). Stop Dancing to Moody’s tune. *Daily Maverick*. Published 30 March 2020, Accessed 03 April 2020.
- Holden, S., Natvik, G. J., & Vigier, A. (2018). Credit rating and debt crises. *International Economic Review*, 59(2), 973-987.
- Humphrey, C. (2018). The Role of Credit Rating Agencies in Shaping Multilateral Finance Recent Developments and Policy Options. Discussion draft, Inter-Governmental Group, 24
- IMF. (2020). Policy Responses to COVID-19. 1–247. <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>
- International Monetary Fund. (2020). CHAPTER 1 THE GREAT LOCKDOWN: World Economic Outlook Growth projections 2020. May.
- Jonker, J. (2020). Moody ’s should not be made the scapegoat for government’s failures. *Daily Maverick*, Published 15 April 2020, Accessed 20 April 2020.
- Kaminsky, G. L., & Schmukler, S. L. (1999). What triggers market jitters? *Journal of International Money and Finance*, 18(4), 537–560. [https://doi.org/10.1016/S0261-5606\(99\)00015-7](https://doi.org/10.1016/S0261-5606(99)00015-7)
- Kisgen, D. J., Nickerson, J., Osborn, M., & Reuter, J. (2019). Analyst Promotions within Credit Rating Agencies: Accuracy or Bias? *Journal of Financial and Quantitative Analysis*. <https://doi.org/10.1017/S0022109019000243>
- Kothari, S. P., & Warner, J. B. (2007). Econometrics of Event Studies. In *Handbook of Empirical Corporate Finance SET*. <https://doi.org/10.1016/B978-0-444-53265-7.50015-9>
- Kräussl, R. (2000). Sovereign Credit Ratings and Their Impact on Recent Financial Crises Sovereign Credit Ratings and Their Impact on Recent Financial Crises. In *Centre for financial studies* (Vol. 4, pp. 1–23).

- Maijoor, S. (2020). EU watchdog cautions rating agencies over knee-jerk downgrades in pandemic. 4–9.
- Maki, B. S. (2020). A Trio of Downgrades Spell Default Danger for Emerging Markets. 3–6.
- Moody's Investors Service. (2020). Rating Action : Moody's downgrades South Africa's ratings to Ba1, maintains negative outlook. August.
- Mutize, M. (2020a). African countries aren't borrowing too much : they're paying too much for debt. *The Conversation*. Published 19 February 2020, Accessed 25 April 2020.
- Mutize, M. (2020b). Why downgrading countries in a time of crisis is an exceptionally bad idea. *The Conversation*. Published 30 April 2020, Accessed 30 April 2020.
- Mutize, M., & Gossel, S. (2018a). The effects of sovereign credit rating spillovers on neighbouring countries' financial markets. *The Journal of International Trade & Economic Development*, 27(8), 857-900. <https://doi.org/10.1080/09638199.2018.1458891>
- Mutize, M., & Gossel, S. J. (2018b). Do sovereign credit rating announcements influence excess bond and equity returns in Africa? *International Journal of Emerging Markets*, 13(6), 1522–1537. <https://doi.org/10.1108/IJoEM-09-2017-0339>
- Mutize, M., & Gossel, S. J. (2019). Sovereign Credit Rating Announcement Effects on Foreign Currency Denominated Bond and Equity Markets in Africa. *Journal of African Business*, 20(1), 135–152. <https://doi.org/10.1080/15228916.2019.1580996>
- Partnoy, F. (2002). The paradox of credit ratings. In *Ratings, rating agencies and the global financial system* (pp. 65-84). Springer, Boston, MA.
- Riddha Basu, G. W. U. (2020). Rating agencies brace for backlash after rash of downgrades. *Financial Times*, 5–8.
- Shah, D., Isah, H., & Zulkernine, F. (2019). Predicting the Effects of News Sentiments on the Stock Market. Proceedings - 2018 IEEE International Conference on Big Data, Big Data 2018. <https://doi.org/10.1109/BigData.2018.8621884>
- Stoddard, E. (2020). Fitch downgrade pours more salt into the gaping wound that is the SA economy. *Daily Maverick*. Published 6 April 2020, Accessed 20 April 2020.

- Utzig, S. (2012). The Financial Crisis and the Regulation of Credit Rating Agencies: A European Banking Perspective. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.1592834>
- White, L. (2018). The Credit Rating Agencies and Their Role in the Financial System. Brousseau, Ed., *Oxford Handbook on Institutions, International Economic Governance, and Market Regulation*, Oxford University Press, Av, 11.
- Yao, Z., Gu, D., & Chen, Y. (2017). Rating deflation versus inflation: On procyclical credit ratings. *Pacific Basin Finance Journal*, 41, 46–64. <https://doi.org/10.1016/j.pacfin.2016.12.003>