

Chapter 2

Deep Learning Approaches to Market Sentiment and Stock Returns: A Cross-Country Analysis in Africa in the Time of the COVID-19 Pandemic

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ABSTRACT

This chapter explores the intersection of behavioral finance and artificial intelligence through an analysis of market sentiment and stock returns in three African financial markets: the Casablanca Stock Exchange (MASI), the Tunisian Stock Exchange (TUNINDEX), and the Regional African Stock Exchange (BRVM Composite). Using advanced natural language processing techniques, particularly BERT, the study analyzes sentiment from news articles to evaluate its influence on stock performance during the COVID-19 pandemic. The findings reveal diverse dynamics: the BRVM Composite exhibited a significant causal relationship between sentiment and returns, while the MASI and TUNINDEX showed weaker correlations, highlighting the complexity of sentiment-driven behavior. Structural factors, policy interventions, and market-specific dynamics emerged as key influences. This research contributes to behavioral finance by deepening our understanding of sentiment's impact in emerging markets and offering actionable insights for investors and policymakers during crises.

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1 INTRODUCTION

In a world where words matter and where markets pulse with the collective emotions of billions, understanding the interplay between market sentiment and financial performance is no longer just a curiosity-it's a necessity!

This need has been underscored for the last two decades by researchers in behavioral finance, challenging the accepted traditional Efficient Market Hypothesis (EMH). While EMH considers markets completely rational and the prices reflect all the available information, behavioral finance presents a contrasting perspective; psychological biases and emotions play a major role in investors' behavior and, as such, in market outcomes.

At the heart of every human behaviors and interactions, psychology emerges as a key actor and a driving force that influences and guides decisions. Whether, it's the sophisticated trading floors of Wall Street or Nasdaq, or the lively streets of Casablanca, Tunis or Abidjan, it is the collective emotions, perceptions, and biases of individuals that guide societies. After all, markets aren't just cold, rational systems; they breathe with the emotions of investors; panic in times of crisis, excitement in moments of growth, and hesitation when uncertainty prevails. Understanding this deep connection between psychology and financial behavior isn't just interesting, it's a game-changer for analyzing and predicting future market trends.

This raises a fundamental question: Is the investor truly a rational agent, as traditional financial theories assume? Historical events like the 2008 global financial crisis or the dot-com bubble of the early 2000s reveal a stark contrast between theoretical assumptions of rationality and the emotional, often erratic, decisions of market participants. Fear, panic, greed, euphoria and overconfidence can easily override careful analysis, leading to market anomalies and deviations from expected performance. These episodes highlight the need to delve deeper into the psychological foundations of investor behavior to better comprehend and predict market trends and dynamics.

The COVID-19 pandemic has further illuminated this divergence between rationality and reality in financial markets. The unprecedented economic disruptions it caused led to extreme volatility, with global markets experiencing sharp declines and subsequent recoveries, all in a very short time. Bansal (2020) observes that this crisis exposed the limitations of traditional finance models, as they failed to account for the cognitive biases and emotional reactions that drove investor behavior during this period. Overconfidence, herding behavior, and heightened risk aversion emerged as dominant forces, shaping market movements in ways that were inconsistent with purely rational decision-making. Investors, overwhelmed by uncertainty and fear, often relied on heuristics and analogies to previous crises, such as the 2008 financial meltdown, further amplifying volatility.

Such behavior underscores the importance of incorporating psychological insights into financial theories, especially during crises, when emotions often overshadow logic. This brings into focus the dual nature of human decision-making.

In his seminal work *Thinking, Fast and Slow*, Daniel Kahneman (2011) highlights the dual processes of human thought: the fast, intuitive 'System 1' and the slow, deliberate 'System 2.' In financial markets, time-sensitive decisions often amplify reliance on System 1, driven by emotions and heuristics. While adaptive in crises, this reliance frequently leads to biases such as overreaction, herd behavior, or excessive risk aversion. Kahneman's insights challenge the notion of rational markets, emphasizing the need to account for emotional and cognitive factors in financial models.

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