Proceedings of Book Series PBS - Vol 30, pp.118-124 **Emerging Approaches in Modern Business**

Transparency and Liquidity : Determinants of Market Efficiency in the Tunisian Financial Market

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Abstract—This study investigates the relationship between corporate integrity, transparency, and market efficiency in the context of the Tunisian Stock Exchange. By analyzing daily data from 38 listed firms between 2020 and 2023, we assess whether higher levels of integrity and disclosure contribute to improved liquidity, reduced volatility, and enhanced market efficiency. Using a composite Integrity Index and an efficiency measure based on variance ratios, we estimate multiple regression models to determine the effects of integrity, growth, liquidity, and macroeconomic variables on market behavior. The findings indicate that corporate integrity is positively associated with market efficiency; however, this relationship is not statistically significant once market-related factors are controlled for. In contrast, firm growth and trading activity play a more substantial role in explaining market efficiency.

Keywords— Corporate Integrity, Transparency, Market Efficiency, Volatility, Liquidity

I. INTRODUCTION

In emerging markets, information asymmetries and financing constraints remain pronounced, shaping investor behavior and price formation. Transparency and corporate integrity are therefore critical mechanisms for reducing uncertainty, strengthening governance, and improving market functioning. Understanding their role is essential for assessing efficiency in developing financial systems globally.

Transparency reduces the information gap between enterprises and their stakeholders, thereby providing markets with more effective tools to manage risk and reduce price fluctuations. Although transparency has been widely discussed in the literature, empirical evidence on its actual impact remains limited, particularly in emerging markets. This study contributes to addressing this gap by providing empirical quantitative evidence rather than relying solely on conceptual discussions. Transparency is also commonly used as a proxy for corporate integrity. Thus, this paper seeks to provide a comprehensive analysis of the factors influencing market efficiency by addressing the following research question: What is the impact of corporate integrity on market efficiency?

The empirical analysis is conducted on firms listed on the Tunisian Stock Exchange over the period 2020–2023.

We offer a methodological contribution by employing the Market Efficiency Coefficient (MEC) as our proxy for efficiency and constructing a unique index to measure corporate integrity, also to provide regulators and policymakers with the tangible impact of transparency and integrity on market efficiency. To situate our analysis, we first review the foundational literature connecting our key variables of interest liquidity, risk, valuation, and transparency to the broader concept of market efficiency.

As emerging countries advance, enterprises face difficulties accessing capital. Thus, the governance structures established by non-financial factors have a significant effect on the willingness of an investor to invest in a company and make a financing decision based on the available data.

ISSN: 2961-6611

Proceedings of Book Series PBS - Vol 30, pp.118-124 Emerging Approaches in Modern Business

Consequently, non-financial factors will increasingly dictate the financing decisions made by the firm, as they relate to its overall ability to access external financing.

The remainder of this paper is structured as follows: Section I presents the theory, Section II details the data and methodology, including the panel data model specification, the calculation of the Market Efficiency Coefficient, and the novel construction of our corporate integrity index. Section III reports the results of the regression analysis. Section IV concludes the study, highlighting the key findings, outlining the significant policy implications for emerging markets, and suggesting avenues for future research accordingly.

II. LITERATURE REVIEW

Tang & Xiong [8] and Mensi et al. [7] both provided valuable insights into how to better understand risk dynamics on a systemic level through volatility modelling. They demonstrate how different types of assets relate to one another and how their respective volatility profiles compare in order to create a more accurate picture of systemic risk within and between markets. A principal driver of such macroeconomic uncertainty and market volatility is inflation. As demonstrated by Ball, Leigh, and Mishra [1], high inflation distorts the real value of assets and introduces significant macroeconomic uncertainty. This degradation compromises the reliability of financial markets, which depend on price signals to determine the cost of capital and the present value of future cash flows. This sentiment is mentioned by Bekaert et al. [2], who confirmed that stock volatility increases significantly during periods of high inflationary uncertainty, directly impacting the risk landscape for investors.

Prior empirical studies have documented that transparency, liquidity conditions, and volatility play a key role in shaping market efficiency, particularly in emerging markets ([3], [4], [5]).

Based on these questions, we propose the following hypotheses :

H0 : Corporate integrity has no impact on the efficiency of the market.

H1 : Corporate integrity impacts the efficiency of the market.

While research on corporate social responsibility and sustainable finance has seen a rapid growth over the last several years, empirical results concerning equity, diversity, integrity and their effect on the performance of companies have been inconsistent. A number of studies demonstrate a positive correlation between ethical business practices and a company's financial performance, while other studies cite either a neutral effect or an effect that is dependent on the context in which the company operates.

These divergent results may emanate from variations in institutional settings, measurement strategies, and firm factors. It therefore remains necessary that more empirical investigations be conducted to establish the conditions in which EDI-related practices affect financing outcomes, especially in developing markets where governance structures and market discipline vary significantly from those of developed economies.

III. DATA AND METHODOLOGY

A. Data Collection

The sample consists of 38 firms listed on the Tunisian Stock Exchange between 2020 and 2023. We use :

- Daily closing prices to compute volatility and variance ratios
  - Annual reports to build the Integrity Disclosure Index
  - Firm-level variables such as liquidity, growth, and market capitalization
  - Macroeconomic indicators (inflation, interest rates)

ISSN: 2961-6611

B. Market Efficiency Measure

Market Efficiency Coefficient (MEC) is computed using the variance ratio method :

$$MEC_{it} = \alpha + \beta_1\, GR_{it} + \beta_2\, P/B_{it} + \beta_3\, LIQ_{it} + \beta_4\, VAR\_RM_{it} + \beta_5\, INFLAT_{it} + \beta_6\, INTEGRITY_{it} + \varepsilon it$$

A ratio close to 1 indicates higher efficiency.

Where:

MEC_{it} indicates the efficiency of the market. Following Hasbrouck and Schwartz, MEC is calculated as a unique measure of market efficiency [6]:

MEC_{it} = Var long $_{it}$/Var short $_{it}$.

The daily return ($_{rt}$) is calculated as ln p_t / p_{t-1}.

$INFLAT_{it}$ is the monthly inflation rate. Data are sourced from the official website of the Tunisian central bank. High inflation erodes purchasing power and increases market uncertainty, potentially causing inefficiency.

VAR_RM_{it} (Market Volatility) : Represented by the variance of market returns, it is a direct measure of price fluctuations and uncertainty within the market.

$INTEGRITY_{it}$: Defined as honesty, transparency, and ethical conduct in financial reporting. It is measured by a transparency index derived from the annual reports of publicly traded companies for the period 2020-2023.

This index is constructed by identifying the presence (coded 1) or absence (coded 0) of predefined keywords such as "transparency," "financial statements," "IFRS standards," "audit," "governance," "statutory auditor," "risk," "CSR," and "executive compensation." The final integrity index corresponds to the average of these binary indicators for each financial report.

LIQ_{it} (Liquidity) : A control variable measured as the ratio of trading volume to market capitalization.

P/B_{it} =(Price-to-Book Ratio): Defined as a company's current share price divided by its book value per share. This ratio reflects investor valuation.

GR_{it}: Represents national economic growth and is included as a macroeconomic control variable.

ε_{it} is the error term.

This study has chosen a methodological framework that will strengthen and increase the validity of the empirical analysis. The research methodology integrates qualitative evidence with econometric estimation to develop a complete understanding of financing patterns associated with equity, diversity, and integrity practices. The use of a mixed-methods approach reduces potential bias due to data limitations and increases the credibility of the findings. Additionally, the application of panel data techniques allows for the control of unobserved heterogeneity across firms over time, improving the overall explanatory value of the model.

IV. RESULTS AND DISCUSSION

Based on data covering the period 2020–2023, the empirical results indicate that liquidity and firm growth are positively associated with market efficiency.

ISSN: 2961-6611

 10.051103/PBS.2601307017

Proceedings of Book Series PBS - Vol 30, pp.118-124

The empirical results indicate that liquidity and firm growth are positively associated with market efficiency. More liquid stocks exhibit faster price adjustment, consistent with market microstructure theory. Attracting investor interest and boosting trading activity are two ways through which enterprise growth leads to greater operational efficiency. Uncertainty caused by market volatility leads to lower efficiency, as it hinders faster incorporation of new information. Inflation does not produce statistically significant effects. However, it is likely that inflation may have a direct effect through increased volatility.Corporate integrity exhibits a positive but statistically insignificant relationship with market efficiency once market-related factors are controlled for. This suggests that while transparency and ethical disclosure may enhance investor confidence, they are not sufficient on their own to ensure efficient price formation in the Tunisian stock market.

Structural characteristics such as limited liquidity, low analyst coverage, and delayed information dissemination appear to dominate informational effects.

The discussion of the empirical findings is grounded in several complementary theoretical perspectives, including agency theory, stakeholder theory, and the sustainable finance framework. These approaches highlight the role of governance mechanisms and ethical practices in mitigating information asymmetries and enhancing organizational credibility. In the context of emerging markets, such mechanisms may play a crucial role in shaping firms' access to financial resources. The interpretation of the results therefore seeks to situate the observed relationships within these theoretical debates, while accounting for the institutional specificities of the Tunisian financial ecosystem.

A. Descriptive Statistics

The statistics indicate substantial variability in growth, liquidity, and volatility among Tunisian firms. Volatility is relatively high, consistent with emerging market characteristics.

TABLE I DESCRIPTIVE STATISTICS

	MEC	GROWTH	PRICE_TO_BOOK	LIQ	VAR_RM	INFLATION_RATE	INTEGRITY
Mean	0.047766	2.826596	0.040670	0.092899	0.005579	0.071376	0.553158
Median	8.31E-06	2.300000	0.000000	0.047689	0.002583	0.064000	0.600000
Maximum	31.89845	16.90000	1.000000	0.816256	0.232578	0.104000	0.700000
Minimum	0.000000	-0.900000	-9.47E-06	0.000000	0.000000	0.048000	0.400000
Std. Dev.	0.882058	4.229078	0.197527	0.125690	0.012930	0.017367	0.098670

B. Correlation Analysis

TABLE II AUTOCORRELATION OF VARIABLES

	MEC	GROWTH	PRICE_TO_BOOK	LIQ	VAR_RM	INFLATION_RATE	INTEGRITY
MEC	1.000000	-0.017877	0.045829	0.070561	0.217940	0.038940	0.017926
GROWTH	0.017877	1.000000	-0.027309	0.020915	-0.024026	-0.009996	-0.018537
PRICE_TO_BOOK	0.045829	-0.027309	1.000000	0.187528	-0.002851	0.118619	0.109113
LIQ	0.070561	0.020915	0.187528	1.000000	-0.003932	0.101717	-0.040504
VAR_RM	0.217940	-0.024026	-0.002851	0.003932	1.000000	0.003210	-0.007671

Growth correlates positively with efficiency, while liquidity and integrity show weaker associations.

C. Regression Results

Table III reports the OLS regression results examining the determinants of market efficiency. Liquidity and market volatility emerge as the main explanatory factors, with liquidity positively affecting efficiency and volatility exerting a strong negative influence.

ISSN: 2961-6611

Economic growth and valuation also display significant effects. In contrast, the Integrity Disclosure Index shows a positive but statistically insignificant coefficient, indicating that transparency alone does not directly drive efficient price formation in the Tunisian market overall context.

TABLE III SIGNIFICANCE OLS

Variables	Coefficient	T student
C	-0.366245	-1.468792
GR	-0.002494	-2.412869**
P/B	0.157334	2.046446**
LIQ	0.492222	4.531384***
VAR_RM	14.85427	3.373148***
INTEGRITY	0.185218	1,32
INFLAT	2.632178	0,82

** p<0.10, ** p<0.05, *** p<0.01*

Main findings :

- Integrity (IDI) display a positive but statistically insignificant effect on MEC ($p > 0.10$).
- Growth has a significant positive effect ($p < 0.05$).
- Liquidity is positively associated but not significant.
- Volatility significantly reduces efficiency ($p < 0.01$).
- Inflation shows no significant effect.

These results suggest that integrity alone does not directly improve market efficiency in Tunisia. Instead, efficiency appears to be primarily driven by market-related factors such as growth and volatility.

Taken together, these findings offer meaningful insights into the drivers of market efficiency in the context of an emerging market, which informs the subsequent discussion of implications.

These findings contribute to ongoing debates on market efficiency by highlighting that, although transparency and integrity improve information quality, their direct impact on market efficiency remains limited in emerging markets characterized by structural frictions.

V. CONCLUSION

This study assesses whether corporate integrity and transparent disclosure contribute to market efficiency in the Tunisian Stock Exchange during the period. Using an Integrity Disclosure Index and variance-ratio-based efficiency measure, The empirical results indicate that corporate integrity has a positive but statistically insignificant direct impact on market efficiency in the Tunisian Stock Exchange during the study period. This suggests that integrity-driven disclosure enhances governance quality and investor trust, yet its effectiveness in improving price efficiency is constrained by market structure limitations such as low liquidity and limited analyst coverage.

Beyond these core findings, our results contribute to a deeper understanding of how transparency-driven mechanisms operate within emerging and frontier markets. While traditional financial theory posits that integrity and disclosure should improve informational efficiency, our evidence suggests that their influence remains conditional on broader market characteristics such as liquidity conditions, volatility regimes, and macroeconomic stability.

This implies that structural frictions such as limited analyst coverage, thin trading volumes, or delayed information dissemination may dampen the expected benefits of transparency initiatives.

Moreover, the divergence between theoretical expectations and empirical outcomes highlights the need for regulatory strategies that go beyond disclosure requirements.

ISSN: 2961-6611

Strengthening market microstructure, enhancing enforcement mechanisms and investor education could amplify the positive effects of integrity on price formation.

From a methodological standpoint, the use of alternative proxies of efficiency including intraday data, high-frequency measures, or nonlinear modeling may reveal dynamics that are not captured by the MEC alone.

Overall, this study underscores the complexity of the transparency and efficiency nexus in emerging markets and encourages future empirical research to integrate behavioral, and structural dimensions when assessing the determinants of market efficiency.

In addition, these results may assist policymakers and market authorities in designing more effective regulatory frameworks aimed at improving transparency practices, strengthening investor protection, and fostering confidence, thereby supporting the gradual development and stability of financial markets in Tunisia and comparable emerging economies globally.

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ISSN: 2961-6611