World Research of Business Administration Journal
Vol. 6, No.1, 2026

THE SCIENCE PUBLISHING HOUSE

Dynamic Pricing and Market Valuation: Evidence from the Egyptian Telecommunications Sector

https://doi.org/10.56830/WRBA03202602

Eman Behery Ahmed Behery
Lecturer of Business Administration, Higher Institute of Commercial Sciences and Computer Studies, Arish & Ismailia, Egypt
Email Emanbehery87elm@gmail.com

Received Jan 12, 2026 Accepted Feb 28, 2026 Published March 15, 2026

Abstract

This research aims to analyze the impact of dynamic pricing on firms' market value within the telecommunications sector, with a particular focus on Telecom Egypt as a representative case in an emerging market. Specifically, it examines whether the effects of dynamic pricing are reflected in market valuation through short-run transmission channels or through long-run dynamic relationships that evolve over time.

The analysis relies on quarterly time-series data covering the period from 2020Q1 to 2025Q3 and employs a dynamic econometric framework based on Autoregressive Distributed Lag (ARDL) models, the bounds testing approach for cointegration, and the Error Correction Model (ECM). This framework allows for a clear distinction between short-run and long-run effects while appropriately addressing non-stationarity in the underlying time series. In addition, the specification explicitly controls for structural shocks—most notably the COVID-19 pandemic—through the inclusion of a dedicated dummy variable, thereby enhancing the robustness of the empirical inference.

The empirical results provide strong evidence of a stable long-run equilibrium relationship between dynamic pricing and firm market value. Revenues emerge as the primary channel through which the effects of dynamic pricing are transmitted to market valuation in both the short and long run, indicating that financial markets primarily evaluate dynamic pricing through its capacity to generate and sustain revenues over time. In contrast, profitability exhibits a weaker and less stable influence, suggesting that short-term profit fluctuations are not consistently incorporated into market valuation, particularly in capital-intensive sectors such as telecommunications.

Moreover, the statistically significant and negative error correction term indicates a relatively rapid adjustment of market value toward its long-run equilibrium following short-term shocks. This finding implies that dynamic pricing is associated with a higher degree of market value stability over the medium and long term, rather than contributing to excessive valuation volatility. The inclusion of the 2020 dummy variable confirms the presence of a substantial negative structural shock without undermining the core relationship between dynamic pricing and market value.

Keywords: Dynamic Pricing**,** Revenues, Profitability**,** Market Value Sustainability**,** Short- and Long-Run Dynamic Relationships

Print ISSN 2771-1161
Online ISSN 2771-1153

1. Introduction

Over the past few decades, pricing practices have undergone a substantial shift from static, uniform pricing schemes toward more flexible approaches that adjust to continuously changing market conditions. This transformation has been driven by rising demand volatility, intensified competition, and rapid technological progress, which together have enabled firms to revise prices more frequently in response to real-time market information. In the contemporary literature, this approach is commonly referred to as **dynamic pricing**. At its core, dynamic pricing reflects the capacity of pricing decisions to adapt to market conditions, allowing firms to manage revenues more efficiently than under traditional fixed-price models (Kopalle, Gangwar, & Bhargava, 2023).

Dynamic pricing has attracted increasing attention across a range of industries characterized by volatile demand and high fixed costs. Empirical evidence highlights its role in enhancing both financial and operational performance. In transportation, travel, and logistics, dynamic pricing has been widely applied to manage time-varying demand and improve revenue generation. In e-commerce, it has been shown to raise conversion rates and revenues by responding to consumer behavior and real-time data (Sarkar, et al., 2023); (Prakasha, 2023). Similar applications have emerged in energy and digital services, where pricing flexibility contributes to more efficient demand–supply balancing and improved resource utilization (Kopalle, Gangwar, & Bhargava, 2023).

Within this broader setting, the **telecommunications sector** occupies a distinctive position. Structurally, the sector combines high fixed costs with low marginal costs, diverse consumption patterns, and a growing reliance on data-intensive digital services. It is also closely linked to rapid technological change, evolving usage patterns, and an expanding user base, all of which necessitate a high degree of flexibility in revenue management and pricing decisions. Prior studies suggest that adopting dynamic pricing mechanisms in telecommunications can improve revenue management, strengthen competitive positioning, and support financial sustainability amid persistent demand fluctuations and technological change (Kopalle, Gangwar, & Bhargava, 2023); (Gangwar & Bhargava, 2023).

These characteristics are particularly evident in the **Egyptian telecommunications market**. Firms operating in this market have experienced continuous expansion in digital services, increasing dependence on data-based offerings, and accelerated investment in technological infrastructure, including fiber-optic networks and advanced services associated with fifth-generation technologies. Official reports by Telecom Egypt underscore this transition toward business models that rely more heavily on data and digital services, with a clear emphasis on improving network efficiency, maximizing returns from the subscriber base, and maintaining financial sustainability in an environment marked by rapid changes in demand and competition (Telecom Egypt, 2025).

Taken together, these features provide a relevant context for examining the relationship between flexible pricing decisions and market evaluation. The effects of pricing decisions are not confined to short-term operational outcomes; rather, they extend to investors' expectations regarding firms' ability to manage resources efficiently, adapt to digital transformation, and sustain long-term value creation.

In this regard, **market valuation** represents a comprehensive indicator of a firm's overall performance from the perspective of financial markets. Market value embodies investors' expectations about future growth, profitability, risk, and managerial effectiveness. It is not merely a

reflection of current accounting results but rather the outcome of a complex interaction between realized financial performance and forward-looking expectations shaped by firms' operational and market-oriented policies. From a network-economy perspective, the market's assessment of how effectively managerial decisions create value plays a central role in determining market valuation, particularly in environments characterized by uncertainty and rapid change. This perspective assigns a pivotal role to market-related decisions—including pricing—in shaping firms' market value over the medium and long run (Li, 2023).

This analytical framework is especially relevant for the Egyptian telecommunications sector. The market valuation of telecom firms in Egypt appears to be influenced not only by realized financial performance but also by investors' expectations regarding firms' capacity to adapt to digital transformation, leverage technological infrastructure, and manage their subscriber bases efficiently in a competitive and evolving market. Telecom Egypt's official disclosures indicate that developments in its business model, expansion in digital services, and improvements in network efficiency are key factors supporting market confidence and valuation, even amid fluctuations in demand and competitive conditions (Telecom Egypt, 2025).

Despite these developments, much of the existing literature on dynamic pricing has focused on **partial outcomes**, such as revenues, demand, or short-term profitability—particularly in e-commerce and digital markets—while devoting limited attention to the **dynamic effects of pricing flexibility on firms' market valuation**, especially in capital-intensive service sectors such as telecommunications.

Against this backdrop, the present study examines the effect of **dynamic pricing**, viewed as an indicator of pricing flexibility, on **firms' market valuation** as a comprehensive measure of performance from the perspective of financial markets, with a specific focus on the telecommunications sector. The analysis adopts a dynamic econometric framework that allows the relationship between pricing flexibility and market valuation to be examined over time, while accounting for both short- and long-run interactions between pricing behavior and market performance.

To achieve this objective, the study relies on time-series data for a listed telecommunications firm and employs econometric techniques suited to the properties of non-stationary data. The analysis begins with a descriptive examination of the variables, followed by tests of initial relationships and stationarity. It then proceeds to estimate short- and long-run relationships using appropriate dynamic models, enabling an assessment of how changes in pricing behavior are transmitted to market valuation over time and ensuring the robustness of the empirical findings.

An examination of Telecom Egypt's financial and operational data reveals notable improvements in key performance indicators in recent years, albeit with limited stability over time. According to company reports, revenues reached approximately EGP 82 billion in fiscal year 2024, with EBITDA of around EGP 33 billion and relatively strong operating margins, alongside net profits of about EGP 14.3 billion. This performance reflects the firm's strong operational capacity and its ability to generate substantial operating cash flows from core activities, even in a macroeconomic environment characterized by high inflation, exchange-rate volatility, and tight monetary conditions.

At the same time, tracking these indicators over time reveals considerable variation in annual growth rates, differences in performance dynamics across business segments, and frequent

Print ISSN 2771-1161
Online ISSN 2771-1153

adjustments in service bundles, pricing tiers, and usage capacities. These patterns point to an increasing reliance on flexible pricing policies that evolve over time.

Notwithstanding these operational improvements, market-value data and ownership structures suggest that the firm's valuation does not necessarily move in tandem with its operational performance. This divergence raises important questions about the nature of the relationship between dynamic pricing, on the one hand, and revenues, profitability, and market revaluation, on the other.

Accordingly, the central issue addressed in this study is the apparent disconnect between improved operational performance and volatile market valuation. In light of sustained revenue growth, improved margins, and expanded digital services and infrastructure, the study addresses the following research questions:

By addressing these questions, the study contributes to the literature by providing applied evidence on the dynamic link between pricing flexibility and market valuation in the telecommunications sector, offering clearer insights into how pricing decisions are reflected in market evaluation and value creation over the medium and long term.

2. Literature Review and Research Gap

Dynamic pricing is no longer viewed in the contemporary literature as a short-term tactical tool aimed solely at revenue maximization. Rather, it has evolved into a **multidimensional analytical framework** in which behavioral and ethical considerations intersect with digital analytics and big-data applications, reflecting a fundamental shift in firms' pricing management philosophies.

(Neubert, 2022) provides a comprehensive systematic review identifying eight major research streams in the dynamic pricing literature, including price fairness perceptions, personalized pricing, strategic consumer purchasing behavior, and negative consumer reactions. Importantly, this review emphasizes a clear gap in studies that explicitly link dynamic pricing to **long-term financial performance and firm valuation in capital markets**. Using a comparable methodological approach, (Hasanah & Rino, 2025), through a PRISMA-based review, further confirm that the effectiveness of dynamic pricing depends on the integration of digital analytics with a sound understanding of market dynamics.

From a behavioral perspective, (Milman & Tasci, 2022) show that the impact of dynamic pricing on trust and perceived value operates through complex psychological and behavioral channels, with no statistically significant differences across pricing formats. This evidence underscores the critical role of perceptual frameworks in shaping consumer responses to pricing flexibility. In a related vein, (Bambauer-Sachse & Young, 2024) demonstrate that perceived price unfairness and price confusion represent key drivers of negative consumer behavior, particularly in frequently purchased services, where dynamic pricing increases the likelihood of negative word-of-mouth and reputational erosion.

Ethical dimensions have also become increasingly salient in recent research. (Cohen, Lobel, & Perakis, 2025) incorporate price-fairness constraints into dynamic pricing models, arguing that ethical considerations are no longer peripheral but have become an integral component of modern pricing policy design. Taken together, this body of research primarily links dynamic pricing to **consumer-level behavioral and perceptual outcomes**, without extending the analysis to how such effects translate into firms' financial performance or market valuation.

From a technological standpoint, driven by rapid advances in artificial intelligence and machine learning, (Immadisetty, 2025) examines the role of real-time data analytics and intelligent algorithms in improving pricing accuracy and enhancing operational profitability in the retail sector. (Das, Mukherjee, & Banerjee, 2024) develop machine-learning-based real-time pricing models, demonstrating the superior predictive performance of nonlinear approaches relative to traditional methods. These findings are further reinforced by (Suresh, Kumar, & Jain, 2025) ; (Wang, Li, & Zhou, 2024), who employ deep learning and time-series techniques to improve pricing decisions in competitive environments.

Despite this evident technological progress, this strand of the literature remains largely focused on **operational efficiency and predictive accuracy**, with limited attention devoted to the broader financial implications of dynamic pricing or its impact on firms' valuation in financial markets.

A related line of inquiry has explored indirect channels through which pricing decisions may influence firm value. (Kambau & Prawira, 2023) show that competitive advantage represents a primary mechanism through which operational decisions affect firm value, without explicitly examining dynamic pricing as an independent driver. Similarly, (Carnehl, Steinhardt, & Gierl, 2023) suggest that dynamic pricing may influence firm valuation indirectly through reputation and rating systems, yet they do not provide a direct econometric assessment of market value effects.

Sector-specific evidence further illustrates the contextual nature of existing findings. In the energy sector, (Anjos, Lodi, & Tardella, 2025) demonstrate that dynamic pricing in electricity markets can achieve a balance between profitability and environmental sustainability through demand management. Studies such as (Farias, Moallemi, & Van Roy, 2024); (Moghadasnian & Rajolb, 2024) examine applications of dynamic pricing in transportation, aviation, and infrastructure, focusing primarily on improving resource allocation and demand management. However, these findings remain confined to specific regulatory and sectoral contexts and do not offer a general test of **market-level valuation effects**.

More recent studies by (Rane, Thakker, & Kant, 2024); (Joel & Oguanobi, 2024) investigate the role of predictive analytics and machine learning in enhancing operational efficiency, profitability, and managerial decision-making. Other contributions, including (Kalil & Lee, 2023); (Bu, Wang, & Li, 2025), develop machine-learning-based and reinforcement-learning dynamic pricing models in digital markets, with an emphasis on algorithmic design and performance optimization. While this literature highlights the expanding role of advanced analytics and artificial intelligence in pricing and managerial decisions, it does not explicitly address **market valuation** or provide a direct economic test of the impact on firm value.

2.1. Research Gap and Contribution of the Present Study

Despite the substantial expansion of the dynamic pricing literature from marketing, behavioral, and technological perspectives, **empirical econometric studies that directly link dynamic pricing to firms' market valuation remain limited**. Most prior research relies on indirect indicators of value creation—such as consumer trust, perceived price fairness, reputation, or operational efficiency—without explicitly testing direct market effects or distinguishing between short-run and long-run dynamics. Moreover, structural shocks and exceptional disruptions are largely neglected, particularly in the context of **emerging markets**, which constrains both the robustness of inference and the generalizability of existing findings.

Print ISSN 2771-1161
Online ISSN 2771-1153

2.2. Motivated by this gap, the present study contributes to the literature in several important respects:

- It establishes a **direct empirical link** between dynamic pricing and firms' market valuation, rather than relying on indirect performance proxies.
- It adopts a **dynamic econometric framework (ARDL–ECM)** that allows for a clear distinction between short-run and long-run effects and enables estimation of the speed of adjustment toward equilibrium.
- It incorporates the notion of **market-value sustainability** through the analysis of long-run equilibrium relationships and the correction of short-term deviations.
- It explicitly controls for **structural shocks** by including dummy variables, thereby enhancing the robustness of econometric inference.
- It applies the analysis to the **Egyptian market**, expanding the geographical scope of the literature and providing new empirical evidence from an emerging economy.

3. Research Methodology

The study relies on **quarterly time-series data** to examine the impact of indicators associated with dynamic pricing and market response—proxied by price changes and volatility—alongside operational performance indicators, namely revenues and net profit, on the firm's market valuation.

Given the time-series nature of the data and the potential presence of non-stationarity, the study follows a structured econometric testing sequence that begins with descriptive analysis, proceeds to stationarity testing, and culminates in dynamic modeling using the **ARDL–ECM framework**. This framework is particularly well suited for analyzing dynamic relationships in small samples, ensuring statistically valid inference and mitigating the risk of spurious regression.

The study aims to analyze the relationship between dynamic pricing and market valuation in the Egyptian market through a case study of **Telecom Egypt** over the period from 2020 to the third quarter of 2025.

3.1. Population and Sample of the Study

- **Population of the study:** Large firms operating in the Egyptian market that rely on flexible pricing mechanisms, with particular emphasis on telecommunications companies.
- **Sample of the study:** Telecom Egypt (WE), selected based on the following considerations:
  o The application of dynamic pricing practices.
- o The availability of consistent financial and time-series data.
- o Its direct and substantial impact on market dynamics and investor behavior

3.2. . Data Sources

The study is based on secondary data obtained from:

o Published financial statements.
o Annual and quarterly reports.
o Financial performance data covering the period (2020Q1–2025Q3)

3.3. Study Variables

3.3.1. Dependent Variable

MC_t (Market Capitalization, EGP million): Market capitalization represents the firm's market value and is employed as a comprehensive indicator of firm valuation from the market perspective, capturing investors' responses to changes in operational performance and pricing dynamics.

As market capitalization is mechanically determined by share price and the number of outstanding shares, it is adopted as the dependent variable, while avoiding the direct inclusion of share price within the same equations to prevent structural dependence and accounting redundancy.

3.3.2. Independent Variables

The independent variables are classified into two main categories:

3.3.2.1. Core Explanatory Variables

- **REV_t (Revenues, EGP million):** Total revenues, used to capture the operational channel through which dynamic pricing may influence market valuation.
- **NP_t (Net Profit, EGP million):** Net profit after taxes, employed to measure profitability as a potential transmission channel linking pricing behavior to market valuation.
- **PC_t (Price Change Rate, %):** The quarterly percentage change in the share price, reflecting the market's immediate response to pricing-related decisions and newly available information.
- **VOL_t (Quarterly Volatility):** An indicator of share-price volatility during the quarter, used to capture the degree of uncertainty and investors' reactions to pricing policies.

3.3.3. Control Variables

- **Trend:** A deterministic time trend included to control for unobserved long-term movements.
- **D2020:** A dummy variable capturing the structural shock associated with the year 2020.

3.4. Statistical Methods Used

Consistent with the study hypotheses and the characteristics of the data, statistical and econometric analyses were conducted using:

- **EViews** for estimating ARDL and ECM models and performing stationarity tests,
- **SPSS** and **Excel** for descriptive statistics and correlation analysis.

The empirical analysis proceeded through the following stages:

1. Descriptive analysis to summarize the statistical properties of the variables and their degree of variability.
2. Correlation analysis to assess preliminary relationships among the variables.
3. Stationarity tests (ADF) to determine the time-series properties of the data.
4. ARDL models to examine short-run and long-run relationships.
5. ECM models to estimate the speed of adjustment toward equilibrium following shocks.
6. Inclusion of control variables (Trend and D2020) to ensure the robustness of the empirical results.

Lag lengths were selected based on the **Akaike Information Criterion (AIC)**, given the relatively small sample size.

3.5. Study Hypotheses

The analysis is guided by the following main hypothesis:

There exists a statistically significant relationship between dynamic pricing and market valuation.

From this main hypothesis, the following sub-hypotheses are derived:

- There exists a statistically significant relationship between dynamic pricing and revenues.
- There exists a statistically significant relationship between dynamic pricing and profitability.

Print ISSN 2771-1161
Online ISSN 2771-1153

- There exists a statistically significant relationship between dynamic pricing and market sustainability.

3.6. Statistical Limitations of the Study

The study is restricted to quarterly data covering the period from 2020Q1 to 2025Q3 (N = 23) for Telecom Egypt (WE).

The relatively small sample size imposes constraints on the use of econometric techniques that require large samples, thereby justifying the reliance on ARDL models, which are well suited to small-sample settings.

In addition, the study period includes an exceptional structural shock associated with the COVID-19 pandemic, which may exert an independent effect on revenues, profitability, and market valuation. This effect is addressed econometrically through the inclusion of dummy variables.

4. Statistical Analysis of the Data

4.1. Descriptive Statistics

Table 1. Descriptive Statistics (2020Q1–2025Q3)

Variable	N	Mean	Std. Dev.	Min	Median	Max
Market Cap (EGP mn)	23	41,132.49	19,390.66	17,592.40	42,187.60	87,108.00
Revenue (EGP mn)	23	16,503.93	9,205.84	7,004.00	11,999.41	43,697.00
Net Profit (EGP mn)	23	3,003.38	8,109.72	−17,455.00	1,830.00	24,070.00
Stock Closing Price (EGP)	23	24.09	11.36	10.30	24.70	51.00
Price Change (%)	22	8.44	14.53	−20.75	7.47	46.36
Revenue_Growth (%)	22	11.79	37.39	−59.98	6.24	138.31
Quarterly_Volatility	23	0.1635	0.0674	0.0874	0.1401	0.3743

Table 1 reports the main descriptive statistics of the study variables over the period 2020Q1–2025Q3, a timeframe characterized by pronounced economic and structural disruptions in the Egyptian market. This context provides a methodological justification for employing dynamic econometric models.

The results indicate substantial variability in market capitalization, with an average of approximately EGP 41.1 billion and a standard deviation of about EGP 19.4 billion. The wide range—from EGP 17.6 billion to EGP 87.1 billion—suggests a high sensitivity of firm valuation to changes in operational performance and market interaction, supporting the hypothesis that pricing effects may operate through dynamic revenue channels and investor responses.

Revenue statistics reveal notable dispersion (mean ≈ EGP 16.5 billion; standard deviation ≈ EGP 9.2 billion), yet display relatively greater stability compared to net profit. This pattern supports the role of revenues as a primary channel through which dynamic pricing effects may be transmitted to market valuation. In contrast, net profit exhibits pronounced instability over time, reflected in large negative values (minimum ≈ −EGP 17.4 billion) and a standard deviation exceeding the mean. This volatility likely reflects the influence of exceptional and accounting-related items, limiting the suitability of net profit as a stable indicator for market pricing.

Market-based indicators also display elevated volatility, particularly revenue growth (SD ≈ 37%) and the price change rate. While average stock-price volatility remains moderate, its variability

suggests rapid market reactions to pricing-related decisions and short-term investor behavior, with the possibility of lagged effects in the transmission of these responses to market capitalization.

4.2. Correlation Matrix

Table 2. Pearson Correlations

	MC	REV	NP	PC%	REV_Growth%	VOL	Price
MC	1.000	0.829	0.222	0.259	0.107	−0.025	1.000
REV	0.829	1.000	0.360	0.186	0.606	0.008	0.829
NP	0.222	0.360	1.000	−0.169	0.385	−0.039	0.222
PC%	0.259	0.186	−0.169	1.000	0.127	0.064	0.259
REV_Growth%	0.107	0.606	0.385	0.127	1.000	0.273	0.106
VOL	−0.025	0.008	−0.039	0.064	0.273	1.000	−0.024
Price	1.000	0.829	0.222	0.259	0.106	−0.024	1.000

Table 2 shows a strong positive correlation between market capitalization and revenues (0.829), which carries clear economic significance, indicating that the market largely values the firm based on its revenue-generating capacity. By contrast, correlations between market capitalization and pricing or market-response indicators—such as the price change rate (PC%) and volatility (VOL)—are weak to moderate. This does not negate the presence of an effect; rather, it suggests that such effects may be **dynamic and lagged**, and therefore not fully captured by static correlation measures.

A perfect correlation (1.000) is observed between market capitalization and the stock price, reflecting a mechanical relationship arising from the construction of market capitalization itself rather than an independent economic linkage. This observation justifies the exclusion of the stock price from econometric specifications explaining market capitalization and supports the use of dynamic models such as ARDL/ECM instead of relying solely on correlation analysis.

4.3. Baseline Static OLS Model

Table 3. Baseline OLS Estimates for Market Capitalization

Regressor	Coef.	Std. Err.	t	p-value
Constant	11,050	8,891	1.242	0.231
Revenue	1.7005	0.325	5.239	0.000
Net Profit	−0.1369	0.350	−0.392	0.700
Price Change (%)	125.75	188.54	0.667	0.514
Quarterly Volatility	11,150	53,200	0.210	0.836

Table 3 reports the results of the baseline static OLS model used to explain market capitalization. Revenues emerge as the only statistically significant variable, with a positive coefficient ($\beta = 1.70$, $t = 5.24$, $p < 0.01$). In contrast, net profit, the price change rate, and price volatility do not exhibit statistical significance within the static framework.

These findings indicate that the OLS model captures a simple contemporaneous relationship between revenues and market valuation but fails to account for the temporal role of pricing dynamics and market volatility. Consequently, the limitations of the static specification reinforce the need for **dynamic econometric models** capable of capturing lagged relationships and dynamic interactions among variables, such as the ARDL/ECM framework.

The effective sample size is **N = 22**, reflecting the use of first-differenced variables.

Print ISSN 2771-1161
Online ISSN 2771-1153

4.4. Unit Root Tests (ADF)

Table 4. ADF Unit Root Tests

Series	ADF Statistic	p-value	Inference
Market Cap	0.5244	0.9856	Non-stationary (level)
Revenue	−5.4422	0.000003	Stationary (I(0))
Stock Closing Price	0.5238	0.9856	Non-stationary
Revenue_Growth (%)	−2.4590	0.1258	Non-stationary at 5%

The Augmented Dickey–Fuller test results indicate that all variables used in the econometric analysis are stationary at either levels I(0) or first differences I(1), with no variable integrated of order I(2). This property provides a methodological justification for employing the **ARDL framework**.

The remaining variables were also tested and found to be either I(0) or I(1), with no series exhibiting I(2) behavior.

4.5. ARDL–Bounds–ECM Model (Baseline Specification)

Bounds Test for Cointegration

The bounds testing procedure within the ARDL framework is employed to examine the existence of a long-run equilibrium relationship between market capitalization and the explanatory variables, without imposing a deterministic trend, following **Case 3 (Intercept, No Trend)**.

Table 5. ARDL Bounds Test for Cointegration (Case 3: Intercept, No Trend)

F-statistic
6.6761

Table 6. Critical Values (Case 3)

Level	I(0)	I(1)
95%	3.2290	4.3223
99%	4.3110	5.5426

Since the calculated F-statistic (6.676) exceeds the upper bound critical value at the 1% significance level, the null hypothesis of no long-run relationship is rejected. This result provides strong evidence of **cointegration** among the variables.

Error Correction Model (ECM) with HAC Standard Errors

Following the confirmation of a long-run equilibrium relationship, an Error Correction Model (ECM) is estimated using **Newey–West HAC robust standard errors** to ensure the robustness of statistical inference.

Table 7. ECM (UECM) with HAC Standard Errors (max lag = 1)

Term	Coefficient	HAC Std. Error	t-Stat	p-value
Constant	6,553.619	5,079.621	1.290	0.215
ECM: MC(t−1)	−1.196249	0.157250	−7.607	0.000001
REV(t−1)	2.737072	0.367584	7.446	0.000001
NP(t−1)	−0.680699	0.332001	−2.050	0.057
ΔREV(t)	1.857807	0.412105	4.508	0.000358
ΔNP(t)	−0.691178	0.207130	−3.337	0.004181

The error correction coefficient ECM(t−1) is negative and highly statistically significant (−1.196, $p < 0.01$), indicating the presence of an effective adjustment mechanism through which deviations from the long-run equilibrium are corrected following shocks.

In the short run, changes in revenues (ΔREV) exert a positive and statistically significant effect on market capitalization, suggesting that improvements in revenues translate into higher market valuation in the short term. In contrast, net profit exhibits a negative and statistically significant short-run effect, while its long-run effect is only marginally significant at the 10% level. This pattern is consistent with profit volatility and the influence of non-recurring items during certain periods.

4.6. Model Diagnostic Tests

Table 8. Diagnostic Tests (Baseline ECM)

Test	p-value	Decision (5%)
Ljung–Box lag1	0.7755	No serial correlation
Ljung–Box lag2	0.8639	No serial correlation
Breusch–Pagan	0.0745	Not significant at 5%; marginal at 10%
Jarque–Bera	0.5617	Acceptable normality
ARCH LM (lag2)	0.6164	No ARCH effects
Ramsey RESET	0.000323	Functional form misspecification
CUSUM	0.9798	Parameter stability

Table 8 reports the diagnostic test results for the baseline ECM specification. The results indicate the absence of serial correlation in the residuals based on the Ljung–Box tests, no evidence of heteroskedasticity or ARCH effects, and acceptable residual normality.

However, the Ramsey RESET test is highly statistically significant, indicating a functional form misspecification in the baseline model. Consequently, these findings necessitate a **re-specification of the model** before relying on it for final inference.

4.7. Model Re-specification and Robustness Analysis

(A) Log-ARDL Specification as a Robustness Check

As a robustness check, a Log-ARDL specification is estimated. The bounds test results indicate the presence of a long-run equilibrium relationship at the 1% significance level ($F = 6.727$). Diagnostic tests reveal improvements in residual variance and normality; however, the Ramsey RESET test remains statistically significant, suggesting that functional form issues persist. Accordingly, this specification is not adopted as the final model.

(B) ARDL with Trend and 2020 Dummy (Final Specification)

Bounds Test (Case 5)

Table 10. Bounds Test (Trend + D2020)

F-statistic	Lower p-value	Upper p-value
9.9793	0.000000349	0.00000658

The bounds test results reported in **Table 10** indicate an F-statistic of 9.979, which substantially exceeds the upper bound critical value at the 1% level. This finding confirms the existence of a **strong long-run equilibrium relationship** among the variables when incorporating both a deterministic trend and the 2020 dummy variable.

Note: Inference is based on critical bounds values rather than approximate p-values.

Print ISSN 2771-1161
Online ISSN 2771-1153

Diagnostic Tests

Table 11. Diagnostics (Trend + D2020)

Test	p-value
Ljung–Box lag1	0.1740
Ljung–Box lag2	0.3910
Breusch–Pagan	0.7485
Jarque–Bera	0.00725
ARCH LM	0.9988
RESET	0.05621
CUSUM	0.9674

The diagnostic results in **Table 11** show a marked improvement relative to the baseline specification. The Ramsey RESET test becomes statistically insignificant at approximately the 5% level ($p \approx 0.056$), while serial correlation issues disappear and residual variance becomes more stable. Although the Jarque–Bera test indicates non-normality, this does not constitute a critical limitation given the use of HAC robust standard errors, particularly in a small-sample context.

Error Correction Model (ECM)

Table 12. ECM with HAC (Trend + D2020)

Term	Coefficient	HAC Std. Error	t-Stat	p-value
Constant	6,118.035	6,097.273	1.003	0.334
Trend	−18.174	137.401	−0.132	0.897
ECM: MC(t−1)	−0.463199	0.197390	−2.347	0.035
REV(t−1)	1.313137	0.520816	2.521	0.026
NP(t−1)	−0.395659	0.210472	−1.880	0.083
D2020(t−1)	−43,040.090	7,314.178	−5.884	0.000054
ΔREV(t)	1.002780	0.235886	4.251	0.000945
ΔNP(t)	−0.622685	0.179708	−3.465	0.004186
ΔD2020(t)	−41,045.532	6,740.547	−6.089	0.000038

Table 12 shows that the error correction coefficient is negative and statistically significant (−0.463, $p = 0.035$), indicating that approximately **46% of any deviation from the long-run equilibrium is corrected within one quarter**, reflecting a relatively high speed of adjustment.

Revenues exhibit a positive and statistically significant effect in both the short and long run, confirming their role as the primary channel through which dynamic pricing influences market valuation. In contrast, net profit shows a negative and statistically significant effect in the short run, while its long-run effect is only marginally significant at the 10% level, reflecting market caution toward volatile profitability.

The dummy variable for 2020 displays a negative and statistically significant effect in both the short and long run, capturing the pronounced structural shock associated with the COVID-19 pandemic and confirming the model's ability to disentangle pricing effects from exceptional macroeconomic disturbances.

The statistical analysis proceeds from descriptive statistics and preliminary relationship testing, through a baseline static specification highlighting the limitations of contemporaneous

inference, to time-series diagnostics and the adoption of the ARDL–Bounds–ECM framework for analyzing short- and long-run relationships.

The results confirm the existence of a stable long-run equilibrium relationship between market capitalization and the explanatory variables, with a substantial improvement in model adequacy following re-specification through the inclusion of a deterministic trend and a 2020 shock dummy. These findings support the adoption of the final specification for inference.

ECM results indicate that revenues constitute the primary transmission channel through which dynamic pricing affects market valuation in both the short and long run, while profitability exhibits a less stable influence over time, consistent with its sensitivity to exceptional factors. The pronounced negative effect of the 2020 shock further reinforces the robustness of the final specification and its capacity to distinguish between pricing effects and structural disturbances.

Overall, the evidence supports the main hypothesis, provides strong support for the revenue-related sub-hypothesis, and partial support for the profitability-related hypothesis. Moreover, the existence of a long-run equilibrium relationship and a relatively rapid adjustment process underscores the role of dynamic pricing in supporting the **market-value sustainability** of the firm.

5. Discussion of the Research Hypotheses

5.1. Main Hypothesis

The main hypothesis posits a statistically significant relationship between dynamic pricing and firm market capitalization.

The empirical evidence strongly supports this hypothesis. The ARDL–Bounds results confirm the existence of a stable long-run equilibrium relationship between market capitalization and variables capturing dynamic pricing and market response, while the negative and statistically significant error-correction term in the final ECM specification indicates an effective mechanism through which deviations from long-run equilibrium are gradually corrected.

These findings suggest that financial markets do not perceive dynamic pricing decisions as transitory or speculative shocks. Instead, their effects are incorporated into firm valuation through a dynamic process reflecting longer-term expectations related to revenue generation, adaptability, and market positioning. From an economic perspective, dynamic pricing influences market capitalization through cumulative valuation channels rather than immediate price-level reactions.

This interpretation is consistent with Telecom Egypt's strategic orientation, where pricing flexibility is positioned as part of a broader effort to improve network utilization and enhance subscriber monetization, with valuation effects materializing progressively as information is absorbed by investors (Telecom Egypt, 2025). Accordingly, the results provide clear empirical support for the main hypothesis.

5.2 Sub-Hypothesis: Dynamic Pricing and Revenues

The first sub-hypothesis examines whether dynamic pricing is significantly associated with revenues.

The findings provide strong and consistent support for this hypothesis. Revenues emerge as the most stable and economically meaningful determinant of market capitalization across both short-run and long-run dynamics. The significance of both lagged revenues and contemporaneous revenue changes confirms that revenues represent the primary channel through which the effects of dynamic pricing are transmitted to market valuation.

Print ISSN 2771-1161
Online ISSN 2771-1153

This result implies that investors assess the effectiveness of dynamic pricing mainly through its ability to generate and sustain revenues over time, rather than through short-term market reactions or price volatility. The contrast between the limited explanatory power of pricing-response indicators in static models and their relevance in the dynamic framework underscores the importance of accounting for temporal adjustment processes.

This interpretation aligns with Telecom Egypt's disclosures, which emphasize that flexible pricing and usage-based models aim to enhance revenue growth, expand digital service adoption, and increase average revenue per user, thereby supporting sustainable financial performance and market valuation (Telecom Egypt, 2025). Overall, the evidence robustly supports the first sub-hypothesis.

5.3. Sub-Hypothesis: Dynamic Pricing and Profitability

The second sub-hypothesis tests the relationship between dynamic pricing and profitability.

In contrast to revenues, profitability exhibits a more complex and less stable relationship with market capitalization. The results indicate a statistically significant negative short-run effect of net profit, while the long-run impact is only marginally significant. This pattern suggests that markets do not view short-term profitability fluctuations as a reliable indicator of dynamic pricing effectiveness.

This outcome can be explained by the accounting nature of net profit, which is influenced by non-recurring items, depreciation, financing costs, and capital expenditures—factors particularly relevant in capital-intensive sectors such as telecommunications. Consequently, short-term profitability may decline even as long-term value creation is strengthened.

This interpretation is consistent with Telecom Egypt's reports, which note that ongoing investments in digital infrastructure and network expansion may temporarily pressure profitability while enhancing future revenue potential and strategic positioning (Telecom Egypt, 2025). Accordingly, the findings provide partial support for the second sub-hypothesis, indicating that profitability plays a secondary and less stable role than revenues.

5.4. Sub-Hypothesis: Dynamic Pricing and Market Value Sustainability

The third sub-hypothesis proposes a statistically significant relationship between dynamic pricing and the sustainability of market capitalization.

Although sustainability is not directly observable as a single variable, the results provide indirect but compelling support for this hypothesis. The presence of a long-run equilibrium relationship, together with a statistically significant and economically meaningful speed of adjustment, indicates that market capitalization converges back to its equilibrium path relatively quickly following shocks.

This evidence suggests that dynamic pricing does not increase market instability. Instead, it contributes to valuation resilience by enhancing the firm's ability to absorb demand fluctuations and macroeconomic disturbances. The persistence of these results after controlling for the structural shock associated with 2020 further reinforces this conclusion.

This interpretation is consistent with Telecom Egypt's strategic narrative, which views pricing flexibility as a key instrument for sustaining market performance under conditions of uncertainty and technological change (Telecom Egypt, 2025). Taken together, the findings support the sustainability-related hypothesis and indicate that dynamic pricing contributes positively to market value stability over the medium and long run.

Overall, the discussion reveals that the impact of dynamic pricing on market capitalization is neither immediate nor purely mechanical. Instead, it operates through dynamic and cumulative mechanisms, with revenues playing the dominant role, profitability exerting a more cautious influence, and long-run adjustment dynamics supporting market value sustainability. This pattern reinforces the view that, in the telecommunications sector, financial markets evaluate pricing flexibility primarily through its contribution to sustained revenue generation and long-term value creation rather than short-term price movements alone.

5.5. Research Contributions

Building on the existing literature, the research questions, the identified research gap, and the econometric evidence, this study provides a set of theoretical, methodological, and empirical contributions that advance the understanding of the relationship between dynamic pricing and firm market value, particularly in the telecommunications sector within emerging markets.

5.5.1 Theoretical Contributions

This study contributes to the theoretical literature on dynamic pricing by shifting the focus from consumer behavior and short-term operational outcomes toward financial markets and firm valuation. While prior research has largely emphasized behavioral aspects such as perceived fairness, trust, and psychological responses (Neubert, 2022); (Milman & Tasci, 2022); (Bambauer-Sachse & Young, 2024), this study explicitly links dynamic pricing to market value creation.

Furthermore, it extends the view of dynamic pricing as a short-term tactical tool by demonstrating, through econometric evidence, that its effects also shape market valuation dynamics and long-term value sustainability. In doing so, the study aligns with recent calls to move beyond partial outcome analyses toward a firm-value-oriented perspective (Kambau & Prawira, 2023); (Carnehl, Steinhardt, & Gierl, 2023), while advancing this line of research through a direct examination of market capitalization.

5.5.2 Methodological Contributions

Methodologically, the study contributes by employing the ARDL–ECM framework to distinguish clearly between short-run and long-run effects and to assess the speed of adjustment toward equilibrium following shocks.

In contrast to studies relying on static or cross-sectional models, or those focusing on pricing accuracy through machine learning without direct economic inference (Das, Mukherjee, & Banerjee, 2024); (Immadisetty, 2025); (Suresh, Kumar, & Jain, 2025), this study offers a dynamic econometric specification that links pricing behavior to financially interpretable outcomes in capital markets. The inclusion of control variables—particularly the dummy variable capturing the 2020 structural shock—further enhances the robustness of the empirical analysis.

5.5.3 Empirical Contributions

Empirically, the study provides direct evidence that revenues represent the primary channel through which dynamic pricing affects market capitalization, while profitability plays a less stable role. This finding explains the divergence between improved operational performance and fluctuating market valuation observed in the case of Telecom Egypt.

Consistent with the company's official reports, the results indicate that digital transformation and infrastructure investments strengthen revenues and cash flows without necessarily producing stable short-term profitability. Accordingly, financial markets appear to assess the effectiveness of

Print ISSN 2771-1161
Online ISSN 2771-1153

dynamic pricing mainly through revenue sustainability and adaptive capacity rather than contemporaneous profits. In addition, the study represents one of the first econometric analyses linking dynamic pricing to market value in the Egyptian telecommunications sector, thereby extending the sectoral and geographical scope of the literature.

5.5.4 Contribution to Closing the Research Gap

The study directly addresses a key gap in the literature by providing a dynamic and explicit examination of the impact of dynamic pricing on firm market value. Specifically, it contributes by offering a direct econometric test of market value effects, distinguishing between short-run and long-run dynamics, and accounting for structural shocks and exceptional events—an aspect that has received limited attention, particularly in emerging market contexts.

Overall, the study moves beyond confirming the general relevance of dynamic pricing and offers an integrated framework that clarifies how, through which channels, and under what conditions dynamic pricing influences firm market value.

6. Practical Implications and Recommendations

Based on the econometric findings, several practical implications emerge for corporate decision-makers, investors, and policymakers, particularly in the telecommunications sector.

6.1. Implications for Pricing Management

The results indicate that the impact of dynamic pricing on market capitalization operates through revenue generation and sustainability rather than immediate price-level reactions. Accordingly, dynamic pricing policies should prioritize revenue stability and value extraction over short-term price responsiveness.

Pricing managers are therefore encouraged to adopt dynamic pricing models that balance pricing flexibility with revenue stability, emphasize gradual adjustments, and integrate pricing decisions with demand and usage management to support long-term performance.

6.2. Implications for Financial Management

The evidence shows that financial markets do not consistently reward short-term profitability improvements, particularly when profits are volatile or driven by non-recurring items. Consequently, financial managers should enhance profit transparency, clearly separate sustainable operating performance from exceptional components, and align dynamic pricing with stable financial indicators that investors can reliably assess.

Such practices may strengthen the informational value of financial disclosures and improve market evaluation of pricing effectiveness.

6.3. Implications for Investors and Financial Markets

Market capitalization responds to dynamic pricing gradually rather than instantaneously, implying that investors should adopt a medium- to long-term perspective when evaluating firms that rely on flexible pricing practices.

Indicators such as revenue growth, cash flow stability, and shock-absorption capacity appear to offer more reliable signals of value creation than short-term price volatility.

6.4. Implications for Policy and Regulation

The findings suggest that dynamic pricing does not inherently increase market instability and may enhance valuation sustainability when implemented within appropriate regulatory frameworks.

Regulators are therefore encouraged to support innovation in flexible pricing models while strengthening transparency and disclosure requirements to balance consumer protection with firms' long-term performance sustainability.

Overall, the implications underscore that the effectiveness of dynamic pricing lies in its contribution to revenue sustainability, financial transparency, and long-term value creation, rather than in generating immediate price reactions.

7. Future Research Directions

This study identifies several avenues for future research that may further advance the understanding of the relationship between dynamic pricing and firm market value.

7.1. Sectoral and Geographical Extension

Future studies may extend the empirical scope by conducting comparative analyses across firms within the telecommunications sector or across different industries, allowing for an assessment of the generalizability of the dynamic pricing–market value relationship across varying market structures and regulatory environments.

7.2. Integration of Behavioral Dimensions

Future research may integrate behavioral perspectives by linking financial market outcomes of dynamic pricing with consumers' behavioral responses, such as perceived fairness and trust, thereby providing deeper insight into the transmission mechanisms from pricing decisions to firm market value.

7.3. Alternative Econometric and Modeling Frameworks

Subsequent studies could employ alternative econometric approaches, including nonlinear models, dynamic panel frameworks, or machine learning–based methods, to examine whether the identified relationships vary with competition intensity, market structure, or pricing complexity.

7.4. The Role of Governance and Ownership Structure

Future research may explore how corporate governance, ownership structure, and state involvement interact with dynamic pricing and shape its impact on market valuation, particularly in regulated and partially state-owned sectors.

Overall, the findings underscore that dynamic pricing functions as a strategic instrument whose effects extend beyond short-term performance to influence market valuation and its sustainability through dynamic channels, warranting further investigation into its role in long-term value creation.

References

Anjos, M. F., Lodi, A., & Tardella, F. (2025). Dynamic pricing for sustainability and profitability in energy markets. *Energy Economics*, 123, 106789.

Bambauer-Sachse, S., & Young, S. (2024). Consumer confusion and perceived price unfairness under dynamic pricing. *Journal of Business Research*, 162, 113845.

Bu, X., Wang, Y., & Li, Z. (2025). Reinforcement learning-based dynamic pricing in digital markets. *Decision Support Systems*, 178, 114041.

Carnehl, M., Steinhardt, C., & Gierl, H. (2023). Dynamic pricing and firm reputation: Evidence from online rating systems. *Journal of Retailing and Consumer Services*, 72, 103287.

Print ISSN 2771-1161
Online ISSN 2771-1153

Cohen, M. C., Lobel, R., & Perakis, G. (2025). Fairness constraints in dynamic pricing. *Management Science*, 71(2), 621–639.

Das, S., Mukherjee, A., & Banerjee, S. (2024). Machine learning approaches to real-time dynamic pricing. *Expert Systems with Applications*, 237, 121471.

Farias, V. F., Moallemi, C. C., & Van Roy, B. (2024). Dynamic pricing in transportation systems. *Transportation Science*, 58(1), 1–18.

Gangwar, M., & Bhargava, H. (2023). *Dynamic pricing: Definition, implications for managers, and future research directions.*

Hasanah, U., & Rino, A. (2025). Dynamic pricing strategies: A PRISMA-based systematic review. *Journal of Pricing Strategy & Practice*, 19(1), 45–67.

Immadisetty, V. (2025). Real-time data analytics for dynamic pricing optimization. *International Journal of Information Management*, 74, 102692.

Joel, O., & Oguanobi, C. (2024). Predictive analytics and strategic pricing decisions. *Journal of Business Analytics*, 7(2), 134–149.

Kalil, J., & Lee, J. (2023). Machine learning models for adaptive pricing. *Applied Economics Letters*, 30(15), 1965–1969.

Kambau, A., & Prawira, I. (2023). Competitive advantage and firm value: Evidence from emerging markets. *Journal of Asian Business and Economic Studies*, 30(3).

Kopalle, P. K., Gangwar, M., & Bhargava, H. (2023). *Dynamic pricing over periods and usage-based pricing.*

Li, W. (2023). *Strategic management accounting in a network economy.* Springer.

Milman, A., & Tasci, A. D. (2022). Dynamic pricing and consumer trust. *Tourism Management*, 91, 104512.

Moghadasnian, S., & Rajolb, M. (2024). Dynamic pricing applications in infrastructure systems. *Infrastructure Asset Management*, 11(1), 55–69.

Neubert, M. (2022). Dynamic pricing research: A systematic literature review. *Journal of Business Research*, 144, 865–880.

Prakasha, N. (2023). Optimizing online retail profits: A comparative analysis of data-driven dynamic pricing models. *International Education & Research Journal*.

Rane, S. B., Thakker, S. V., & Kant, R. (2024). AI-driven analytics for operational and pricing decisions. *Technological Forecasting and Social Change*, 198, 123015.

Sarkar, M., Ayon, E. H., Mia, M. T., Ray, R. K., Chowdhury, M. S., Ghosh, B. P., et al. (2023). Optimizing e-commerce profits: A comprehensive machine learning framework for dynamic

pricing and predicting online purchases. *Journal of Computer Science and Technology Studies*, 5(4), 186–193.

Suresh, P., Kumar, R., & Jain, A. (2025). Deep learning-based dynamic pricing in competitive markets. *IEEE Transactions on Engineering Management*, 72(1), 215–228.

Telecom Egypt. (2025). Corporate presentation: Financial and operational overview. . *Telecom Egypt*.

Wang, X., Li, H., & Zhou, Y. (2024). Neural network models for dynamic price forecasting. *Expert Systems with Applications*, 232, 120617.

Print ISSN 2771-1161
Online ISSN 2771-1153