New Quality Productive Forces and Corporate Value Creation: A Mediation Analysis Based on Technological Innovation

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Abstract. This study examines the impact of new quality productive forces (NPRO) on corporate value and its underlying mechanisms using a sample of all A-share listed companies from 2015 to 2024. The results show that NPRO significantly and positively influences corporate value, a conclusion that remains robust across various tests. Mechanism analysis reveals that technological innovation plays a mediating role in this relationship. Furthermore, heterogeneity analysis indicates that the value-enhancing effect of NPRO is more pronounced among firms in high-tech and highly competitive industries. This paper provides micro-level empirical evidence of the economic consequences of NPRO, offering valuable insights for governments to formulate differentiated policies and for enterprises to pursue high-quality development.

Keywords: New Quality Productive Forces; Corporate Value; Technological Innovation; High-tech Industries; Market Competition

1 Introduction

In September 2023, President Xi Jinping first introduced the concept of "New Quality Productive Forces" (NPRO) during his inspection tour in Northeast China and has since elaborated on it in various high-level forums. From the perspective of its inherent characteristics, NPRO represents a form of productivity where technological innovation plays the leading role, reflecting deeper integration and modern connotations in the digital era [1]. The formation of this concept marks a novel understanding of the evolution of productive forces in China; its significance lies not only in its "newness"—manifested in new factors, new technologies, and new industries—but also in its "quality," characterized by high quality, multi-dimensionality, and dual efficiency [2]. At this critical historical juncture—marked by the accelerating evolution of the new scientific and technological revolution and industrial transformation, profound shifts in the international competitive landscape, and China's pivotal economic transition—the introduction of "New Quality Productive Forces" is a scientific judgment based on a profound

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synthesis of domestic and global conditions. It clarifies a practical path for constructing new competitive advantages by driving industrial upgrades through technological innovation [3].

While a unified evaluation standard for corporate new quality productive forces remains absent, most literature utilizes the composite index method across several theoretical trajectories. Scholars have constructed indicator systems based on the two-factor theory focusing on labor and production tools [4], and the three-factor theory comprising laborers, subjects, and means of labor [5]. Furthermore, alternative frameworks emphasize scientific-technological, green, and digital productivity [6], or adopt a dual-structure approach accounting for both inputs and outputs [7]. Collectively, these perspectives have refined Npro measurement methodologies at the firm level.

With the evolution of property rights and equity markets, firms and equity have become tradable assets, heightening the prominence of corporate value. Rather than a mere summation of book assets, corporate value represents market exchange value rooted in a firm's intrinsic worth [8]. Specifically, it is defined as the present value of expected future free cash flows, providing a comprehensive reflection of profitability, growth potential, and going-concern ability [9][10]. To measure this construct, domestic and international studies primarily utilize Tobin's Q, while some scholars also employ Economic Value Added (EVA) and Return on Equity (ROE).

Enterprises, as the fundamental "capillaries" of the national economy, are primary vehicles for driving technological breakthroughs and innovative factor allocation. Translating New Quality Productive Forces (NPRO) into corporate value is a crucial yardstick for assessing developmental impact and a fundamental imperative for stimulating endogenous motivation and sustainable growth. Existing research indicates that NPRO development significantly enhances value in retail enterprises [11] and cultivating digital new quality productive forces can bolster the brand value of "Time-honored Brands" [12]. Furthermore, studies focusing on the STAR Market provide deep analyses of the value-creation effects driven by these forces [13].

At the micro-level, the scarcity of research integrating new quality productive forces with corporate value provides significant theoretical space for this study. The marginal contributions are twofold: first, it empirically examines value-enhancing effects, offering novel evidence for enterprises to prioritize Npro development. Second, by identifying the mediating role of technological innovation, this paper elucidates the pathways and heterogeneous characteristics through which these forces influence corporate value, refining the governing theoretical framework.

2 Research Hypotheses

2.1 Direct Impact of NPRO on Corporate Value

The enhancement of corporate value by New Quality Productive Forces (NPRO) fundamentally represents a transformation in value creation logic, best elucidated through the lens of dynamic capabilities. Unlike traditional productivity focused on static resource optimization, NPRO emphasizes a departure from conventional growth models through radical technological breakthroughs and the innovative allocation of

production factors. By fostering the ability to integrate and reconfigure internal and external resources, NPRO enables firms to navigate rapidly changing environments and sustain competitive advantages, ultimately augmenting corporate value.

Drawing on the framework of Wang and Ahmed (2007) [14], this study delineates the value-enhancing effects of New Quality Productive Forces (NPRO) across three dimensions of dynamic capabilities. Regarding adaptive capacity, NPRO utilizes digital transformation and big data analytics to refine market perception, allowing firms to recalibrate strategies and capture emerging opportunities while preserving resilience against environmental erosion. In terms of innovative capacity, NPRO acts as an innovation-led form of productivity that drives intensive R&D and digital empowerment to develop disruptive products and "new tracks," converting innovative potential into competitive advantage. At the same time, in the information age, the scope of production factors has expanded to include diverse elements such as data [15]. NPRO facilitates the deep integration of new factors (e.g., data and algorithms) with traditional ones (capital and labor), fostering business model and management innovation to maintain market leadership. Finally, regarding absorptive capacity, the cross-sectoral nature of NPRO promotes the mutual penetration of knowledge and technology across diverse fields [16], bolstering competitiveness through resource integration. The widespread application of frontier technologies—including AI and 5G—empowers firms to build industry-university-research platforms that internalize external technical knowledge, injecting endogenous momentum for continuous corporate value enhancement.

Accordingly, this paper proposes the following hypothesis:

Hypothesis 1 (H1): The development of new quality productive forces can effectively enhance corporate value.

2.2 The Mediating Role of Technological Innovation

The paramount importance of technological innovation to enterprises is self-evident, as corporate development hinges on continuous innovative endeavors. This study posits that technological innovation serves as a critical mediating mechanism in the conversion of new quality productive forces (NPRO) into corporate value.

From the perspective of the two-factor theory of productivity, the qualitative transformation of labor and tools of production serves as the dual engine driving the enhancement of corporate innovation. Regarding labor, humans are both the creators and users of NPRO. The leap in laborers' skills and adaptability is essential for aligning with this new form of productivity [17]. Digitally literate and interdisciplinary laborers drive R&D breakthroughs and product iterations, providing essential human capital support for technological innovation. Meanwhile, New Quality Productive Forces (NPRO) emphasize the optimized allocation of labor subjects. Through the application of the Internet of Things (IoT) and data-driven production, enterprises achieve real-time data collection and full-process traceability across all production stages. Deep mining of massive datasets enables optimized management of labor subjects while helping firms identify latent pain points and technical improvement opportunities, thereby providing clear direction and empirical data support for corporate innovation. Regarding the tools of production, NPRO fosters intelligent and digital instruments that

reshape production methods and the workplace landscape [17]. By liberating enterprises from low-value-added labor, these tools compel firms to upgrade technological innovation to ensure compatibility with advanced production systems, ultimately driving corporate value appreciation.

Accordingly, this paper proposes the following hypothesis:

Hypothesis 2 (H2): Technological innovation mediates the relationship between new quality productive forces and corporate value.

3 Research Design

3.1 Sample Selection and Data Sources

This study samples 5,795 A-share listed companies from 2015 to 2024, excluding financial institutions, ST/*ST firms, and observations with missing data to ensure reliability. Continuous variables were winsorized at the 1st and 99th percentiles to mitigate outlier effects. Data were sourced from CSMAR and CNRDS.

3.2 Variable Definitions

Corporate Value (TobinQ): Measured using the Tobin's Q ratio [18].New Quality Productive Forces (Npro): Developed through an indicator system based on two dimensions: labor and production tools [4].Technological Innovation (Patent): Proxied by the natural logarithm of the number of patent applications plus one [19].Control Variables: Following existing literature, we control for firm size (Size), leverage (Lev), return on total assets (ROA), cash flow ratio (Cashflow), operating income growth rate (Growth), board size (Board), CEO duality (Dual), top shareholder's ownership (Top1), and firm age (FirmAge).

3.3 Model Specification

To examine the relationship between new quality productive forces and corporate value (Hypothesis 1), this study constructs the following baseline regression model:

$$TobinQ_{i,t} = \alpha_0 + \alpha_1 Npro_{i,t} + \alpha_2 \text{Controls}_{i,t} + \mu_i + \delta_t + \varepsilon_{i,t} \quad (1)$$

Furthermore, to analyze whether new quality productive forces drive corporate value creation by enhancing technological innovation (Hypothesis 2), we establish the following mediation model:

$$Patent_{i,t} = \beta_0 + \beta_1 Npro_{i,t} + \beta_2 Controls_{i,t} + \mu_i + \delta_t + \varepsilon_{i,t} \quad (2)$$

In the above equations, $TobinQ_{i,t}$ denotes the corporate value of firm i in year t; $Npro_{i,t}$ represents the level of new quality productive forces; $\text{Patent}_{i,t}$ signifies the level of technological innovation; and Controls refers to the set of control variables. Additionally, μ_i represents firm-specific fixed effects, δ_t represents year fixed effects, and $\varepsilon_{i,t}$ is the random error term.

4 Empirical Analysis

4.1 Descriptive Statistics

Table 1 presents the descriptive statistics for the primary variables. The mean TobinQ of 2.055 (SD = 1.315) indicates that market valuations significantly exceed book values, with notable performance variations across the sample. Npro exhibits a mean of 0.008 (SD = 0.011), ranging from 0.001 to 0.057. This distribution pattern reveals that while there is substantial room for improvement in the overall level of NPRO among the sampled firms, the development remains imbalanced across the board.

Table 1. Descriptive Statistics of Variables.

Variable	Obs	Mean	Std. dev.	Min	Max
TobinQ	31,968	2.055	1.315	0.827	8.510
Npro	31,968	0.008	0.011	0.001	0.057
Size	31,968	22.351	1.261	19.716	26.452
Lev	31,968	0.413	0.198	0.049	0.934
ROA	31,968	0.034	0.070	-0.416	0.255
Cashflow	31,968	0.050	0.066	-0.195	0.266
Growth	31,968	0.131	0.378	-0.673	4.474
Board	31,968	2.271	0.257	1.609	2.944
Dual	31,968	0.311	0.463	0	1
Top1	31,968	0.328	0.145	0.075	0.743
FirmAge	31,968	3.042	0.288	2.079	3.714

4.2 Baseline Regression Analysis

Across all specifications in Table 2, the coefficients of Npro remain consistently positive and significant at the 1% level. This confirms that NPRO exerts a substantial positive influence on corporate value, thereby providing strong empirical support for Hypothesis 1.

Table 2. Baseline Regression Results.

	(1) TobinQ	(2) TobinQ	(3) TobinQ
Npro	26.694***	7.652***	7.711***
	(0.678)	(1.269)	(1.193)
Size			-0.762***
			(0.023)
Lev			0.728***
			(0.077)
ROA			2.395***
			(0.128)
Cashflow			0.575***
			(0.105)

Growth			0.044**
			(0.017)
Board			0.065**
			(0.027)
Dual			-0.047***
			(0.018)
Top1			-0.700***
			(0.129)
FirmAge			1.566***
			(0.161)
_cons	1.850***	1.996***	13.954***
	(0.009)	(0.011)	(0.672)
Id	No	Yes	Yes
Year	No	Yes	Yes
N	31968	31968	31968
Adj. R2	0.046	0.626	0.667

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

4.3 Robustness Checks

This study confirms the reliability of baseline findings through three tests, and the regression results are shown in Table 3: (1) Alternative Dependent Variable: Re-measuring corporate value as market value to tangible assets (TobinQB) [13] yields consistent results. (2) Alternative Independent Variable: Using Total Factor Productivity (TFP) [20] estimated via the OP method as a proxy, the Npro coefficient remains significant at the 1% level. (3) Advanced Fixed Effects: Expanding specifications to include firm, year, and industry-year interaction effects confirms that the core conclusions are not altered by the refined fixed-effects structure.

Table 3. Robustness Test Results.

	(1) TobinQB	(2) TobinQ	(3) TobinQ
Npro	13.428***		2.760**
	(1.398)		(1.260)
TFP_OP		0.065***	
		(0.022)	
Controls	Yes	Yes	Yes
Id	Yes	Yes	Yes
Year	Yes	Yes	Yes
Industry_Year	No	No	Yes
N	31968	30947	31924
Adj. R2	0.665	0.660	0.689

4.4 Heterogeneity Analysis

Heterogeneity in Industry Technological Attributes. A firm's technological level and reservoir of expertise profoundly influence the development of new quality productive forces (NPRO). Following the industry classification criteria proposed by Shi (2020) [21], the grouped regression results in Columns (1) and (2) of Table 4 show that the value-enhancing effect of NPRO is significantly more pronounced in high-tech industries compared to non-high-tech sectors.

Heterogeneity in Industry Competitive Intensity. External market competition acts as a catalyst for stimulating corporate innovative vitality [22]. Utilizing the Herfindahl-Hirschman Index (HHI) for group testing[13], results in Columns (3) and (4) of Table 4 reveal that NPRO exerts a stronger positive impact on corporate value in highly competitive industries. This suggests that intense competition facilitates the realization of the value-enhancing potential inherent in NPRO.

Table 4. Results of Heterogeneity and Mediation Analysis.

	(1) Non-High-Tech	(2) High-Tech	(3) Low-Competition	(4) High-Competition	(5) Patent
Npro	0.275	10.949***	3.597**	9.585***	2.028**
	(1.660)	(1.710)	(1.816)	(1.611)	(1.003)
Controls	Yes	Yes	Yes	Yes	Yes
Id	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes
N	17205	14572	15968	15694	31963
Adj. R2	0.679	0.658	0.671	0.663	0.776

4.5 Mediation Effect Analysis

Column (5) of Table 4 presents the empirical results for the mediating effect of technological innovation in the relationship between new quality productive forces (NPRO) and corporate value. Following the "two-step method" advocated by Jiang (2022) [23], we find that the coefficient of NPRO on technological innovation is positive and statistically significant at the 5% level. Furthermore, the role of technological innovation in driving value creation has been extensively validated by existing literature [19, 24, 25]. Taken together, these findings confirm that the mediating mechanism of technological innovation between new quality productive forces and corporate value is empirically valid, thereby supporting Hypothesis 2.

5 Conclusions and Recommendations

5.1 Research Conclusions

Focusing on A-share listed companies from 2015 to 2024, this study delves into the impact of new quality productive forces (NPRO) on corporate value and its underlying mechanisms. The findings are as follows: First, NPRO exerts a significant positive driving effect on corporate value, a result that remains consistent across various robustness tests. Mechanistically, technological innovation serves as a pivotal mediator between new quality productive forces and corporate value. Furthermore, heterogeneity analysis reveals that this value-enhancing effect is more pronounced within high-tech industries and highly competitive market environments.

5.2 Policy Recommendations

Based on the findings, this study proposes the following recommendations:

For enterprises, Npro cultivation must be integrated into strategic planning to reshape value models. Firms should intensify R&D and digital empowerment to strengthen innovation, converting momentum into sustainable competitiveness. Optimizing talent structures and introducing intelligent tools is crucial to accelerate value conversion. Finally, enterprises should adopt adaptive strategies: high-tech firms must lead via R&D breakthroughs, while competitive-sector firms utilize digital technologies to optimize resource allocation.

For the government, categorized policies are essential to foster a conducive institutional environment. Authorities should enforce differentiated support—including tax incentives and financing channels—specifically for high-tech and competitive industries. Additionally, the innovation ecosystem must be refined by building industry-university-research platforms and streamlining patent processes. Finally, dismantling market barriers is vital to ensure fair competition and facilitate the free flow of production elements, fully releasing NPRO's value potential.

References

1. Zhou, W., & Xu, L. Y. (2023). On New Quality Pr oductivity: Connotative Char acter istics and Impor tant Focus. *Reform*, (10), 1-13.
2. Jiang, Y. M., & Qiao, Z. Y. (2024). New Quality Productivity: Logic, Connotation and Path. Social Science Research, (01), 10-18+211.
3. Pu, Q. P., & Huang, Y. Y. (2023). Generation Logic, Theoretical Innovation and Time Value of General Secretary Xi Jinping's Important Exposition on New Quality Productivity. Journal of Southwest University (Social Sciences Edition), 49(06), 1-11.
4. Song, J., Zhang, J. C., & Pan, Y. (2024). Research on the Impact of ESG Development on New Quality Productive Forces of Enterprises——Empirical Evidence from Chinese A-share Listed Companies. Contemporary Economic Management, 46(06), 1-11.
5. Zhang, X. E., Wang, W., & Yu, Y. B. (2025). Research on the influence of digital intelligence transformation on the new quality productivity of enterprises. Studies in Science of Science, 43(05), 943-954.

6. 7. Lu, J., Guo, Z. A., & Wang, Y. P. (2024). Levels of development of new quality productivity, regional differences and paths to enhancement. Journal of Chongqing University (Social Sciences Edition), 30(03), 1-17.
7. Diao, H. C. (2025). Analysis of the Impact Pathways of Enterprise Basic Research on New Quality Productive Forces. The Journal of Quantitative & Technical Economics, 42(03), 91-110.
8. Wang, P., Zhang, J. R., & Zhou, L. (2012). Corporate value: Concept, influencing factors and measurement: Review and prospect. Finance and Accounting Monthly, (30), 87-90.
9. Ohlson J A. Earnings, book values, and dividends in equity valuation[J]. Contemporary accounting research, 1995, 11(2): 661-687.
10. Shen, H. H., Yu, P., & Wu, L. S. (2012). State Ownership,Environment Uncertainty and Investment Efficiency. Economic Research Journal, 47(07), 113-126.
11. Zhang, X. D. (2025). The logic and mechanism of the impact of new-quality productive forces on retail enterprise value. Journal of Commercial Economics, (20), 145-148.
12. Ou, X. J. (2025). The effect of new-quality productive forces on brand value of time-honored enterprises: Analysis based on the mediating role of corporate innovation. Journal of Commercial Economics, (14), 159-162.
13. Zhang, Z. X., Zhang, Y. Y., & Ye, R. (2025). Analysis of the Path for Enhancing Enterprise Market Value Through New Quality Productive Forces: Empirical Study Based on the STAR Market. Securities Market Herald, (09), 3-17.
14. Wang L C, Ahmed K P .Dynamic capabilities: A review and research agenda[J].International Journal of Management Reviews,2007,9(1):31-51.
15. Gao, F. (2023). The Logic,Multidimensional Connotation and Current Significance of "New Quality Productivity". China Review of Political Economy, 14(06), 127-145.
16. Wen, F. (2025). Research on the impact of new-quality productive forces on independent innovation performance of high-tech industries. Friends of Accounting, (21), 43-50.
17. Zhou, Y. J., & Liu, X. J. (2025). The Systematic Restructuring and Optimized Combination of the Three Elements of Labor in New-Quality Productive Forces. Hunan Social Sciences, (01), 40-49.
18. Li, Z. X. (2025). Supply chain stability, integrated innovation and value creation of retail enterprises. Journal of Commercial Economics, (19), 168-171.
19. Li, X. Y., & Li, X. (2025). The Mechanism and Effect of Artificial Intelligence Driving High Quality Development of Enterprises: Based on the Dual Perspectives of Technological Innovation and Cost Control. Journal of Technical Economics & Management, (11), 142-150.
20. Yuan, W. H., & Zhou, J. P. (2024). The Impact of Digital Transformation on the New Quality Productive Forces of Enterprises. East China Economic Management, 38(12), 9-20.
21. Shi, Q., Xiao, S. F., & Wu, J. Y. (2020). Stock Option, Contract Elements Design, and Corporate Innovation Output: Research Based on Risk-taking and Performance-based Incentive Effect .Nankai Business Review, 23(02), 27-38+62.
22. Boone J .Intensity of competition and the incentive to innovate[J].International Journal of Industrial Organization,2001,19(5):705-726.
23. Jiang, T. (2022). Mediating Effects and Moderating Effects in Causal Inference. China Industrial Economics, (05), 100-120.
24. Liu, X. N., & Sun, X. Y. (2025). Research on the effect of marketing investment on corporate brand value: Based on the mechanism of technological innovation. Journal of Commercial Economics, (10), 162-165.
25. Li, L., & Shi, J. F. (2025). Analysis of the impact of marketing investment on corporate brand value improvement: Based on the mediating effect of technological innovation. Journal of Commercial Economics, (24), 179-182.