

How Does Economic Policy Uncertainty Affect New Quality Productive Forces of Enterprises? Evidence from the A-share Market in China

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Abstract. Economic policy uncertainty has become a key macro-environmental factor affecting enterprise development, while cultivating new quality productive forces is the core path for enterprises to achieve high-quality development. This paper takes Chinese A-share listed companies from 2011 to 2022 as research samples. The economic policy uncertainty index is used to measure policy environment fluctuations. Empirical tests are conducted to examine the impact and mechanism of economic policy uncertainty on the development of enterprise new quality productive forces. The results demonstrate that increased economic policy uncertainty significantly promotes the development of enterprise new quality productive forces, a conclusion that remains valid through robustness tests including variable transformation, removal of abnormal years, and addition of control variables. Mechanism analysis reveals that economic policy uncertainty empowers new quality productive forces development through two pathways: incentivizing enterprises to increase technological innovation investments and accelerating digital transformation. Heterogeneity analysis further indicates that non-state-owned enterprises and highly market-oriented enterprises exhibit more pronounced promotional effects from economic policy uncertainty. This study not only expands the research perspective on the relationship between economic policy uncertainty and enterprise productivity development but also provides empirical evidence for enterprises to cultivate new quality productive forces through innovation and digital transformation in policy-volatile environments. It holds significant reference value for improving policy formulation and promoting high-quality economic development.

Keywords: economic policy uncertainty, enterprise new quality productive forces, technological innovation input, digital transformation

1. Introduction

The global economic landscape is undergoing profound adjustments, geopolitical situations remain complex and volatile, and economic policy uncertainties have become a key factor influencing the decision-making and development of economic entities across countries. Data shows that in 2023, the average value of China's economic policy uncertainty index reached 189.7, marking a significant increase of 62.3% compared to 2019 [1]. The OECD has also issued a warning that policy

uncertainty has led to weak corporate investment, threatening global economic growth. The net investment share of OECD member countries' GDP has declined from 2.5% before the 2008 financial crisis to the current 1.6% .

As microeconomic entities in market systems, the development of enterprises' new productive forces directly impacts national economic transformation and competitiveness enhancement. These advanced productive forces encompass technological breakthroughs driven by innovation, production model transformations powered by digitalization and intelligentization, as well as resource-efficient allocation strategies. Economic policy uncertainties, being pivotal variables in macroeconomic environments, are closely intertwined with the evolution of enterprise new productive forces. Frequent policy fluctuations disrupt corporate strategic planning across R&D, production organization, and market expansion, thereby creating complex impacts on productivity growth [2]. Exploring the intrinsic mechanisms between these factors holds significant theoretical and practical value for enterprises to cultivate new productive forces and achieve sustainable development in complex policy landscapes.

A thorough analysis of how economic policy uncertainty impacts enterprises' new quality productive forces reveals digital transformation as a pivotal mechanism. Theoretically, economic policy uncertainty increases operational costs and risks for businesses, compelling them to pursue more efficient and resilient development strategies [3]. Through digital technology adoption, enterprises can optimize production processes, reduce information asymmetry, and enhance resource allocation efficiency, effectively mitigating the adverse effects of policy uncertainty [4]. On the innovation front, while policy uncertainty raises R&D investment risks, it also drives companies to seek technological breakthroughs through increased R&D investments and industry-academia-research collaborations, thereby boosting new quality productive forces [5]. Simultaneously, policy uncertainty prompts enterprises to re-examine resource allocation patterns, directing resources toward digitalization and intelligent transformation. This accelerates the integration of new production factors with traditional systems, creating conditions for nurturing new quality productive forces [6,7]. However, the academic community has yet to establish a comprehensive research framework explaining how economic policy uncertainty systematically influences new quality productive forces development through multiple pathways like digital transformation and technological innovation, requiring urgent exploration.

To explore the impact and mechanism of economic policy uncertainty on the development of enterprises 'new quality productive forces, this paper utilized data from listed companies in China's Shanghai and Shenzhen A-share markets between 2011 and 2022. After excluding ST/*ST enterprises, the financial sector, and missing-value samples with tail trimming, the final dataset contained 31,580 valid observations. Through benchmark regression analysis and constructing an econometric model, the results demonstrated that economic policy uncertainty significantly promotes enterprises 'new quality productive forces after controlling for individual fixed effects, year fixed effects, and financial and macroeconomic variables. In robustness tests, the study validated its conclusions through five approaches: replacing new quality productive forces measurement, substituting EPU measurement, excluding abnormal years from 2019-2022, adding control variables, and setting a high uncertainty dummy variable. To address endogeneity issues, core explanatory variables were lagged by one period as instrumental variables. Results from 2SLS two-stage least squares regression passed non-identification tests and weak instrumental variable tests, confirming the validity of core conclusions. Mechanism analysis revealed that economic policy uncertainty enhances new quality productive forces by promoting digital transformation and increasing R&D investment, validating the existence of mediating effects. Heterogeneity analysis

revealed that non-state-owned enterprises and highly market-oriented firms exhibited more significant promotion effects from economic policy uncertainty. In summary, this study systematically examines the impact pathways and boundary conditions of economic policy uncertainty on enterprises' new quality productive forces, providing empirical evidence to understand the relationship between policy environments and enterprise development.

The contributions of this paper to the existing literature are mainly shown in the following aspects. First, this study expands the research scope of economic policy uncertainty (EPU) by examining its impact on corporate operations. Current literature predominantly focuses on EPU's effects on routine business activities, with key findings emphasizing its inhibitory effects on labor supply, investment scale, financing costs, and employment decisions [8-11]. Departing from previous perspectives that predominantly explore the negative impacts of economic policy uncertainty, this work provides a novel approach to understanding the relationship between macroeconomic policies and micro-level enterprise development. Innovatively linking EPU with the advancement of new quality productive forces, we demonstrate through theoretical analysis and empirical testing that EPU not only influences short-term operational decisions but also drives fundamental productivity improvements via dual pathways of technological innovation and digital transformation. This breakthrough extends beyond traditional research limitations that focus solely on EPU's effects on individual operational aspects, thereby broadening the scope of micro-level EPU effect studies. Second, this study enriches research on new quality productive forces and fills existing gaps. As a core proposition driving high-quality development, current studies predominantly focus on defining its connotation [12] and micro-level driving factors such as corporate technological innovation investments, internal effects of digital transformation, and optimized allocation of production factors [6,13,14]. While emphasizing the supporting role of corporate capacity building in new quality productive forces, systematic exploration of how macro-policy environments influence its development remains limited. By examining macroeconomic policy uncertainty—a critical external environmental variable—we systematically investigate its impact mechanisms on corporate new quality productive forces. The study highlights proactive adjustment strategies adopted by enterprises to address economic policy uncertainties, demonstrating that macro-policy fluctuations can stimulate new quality productive forces development through incentivizing increased R&D investment and accelerated digital transformation initiatives.

Next, the second part of this paper conducts theoretical analysis and summarizes several hypotheses. The third and fourth parts introduce data and econometric regression results. The fifth part discusses the channels through which economic policy uncertainty improves the new quality productive forces of enterprises. The sixth part is heterogeneity analysis. Finally, the conclusion and policy implications are presented.

2. Theoretical analysis and research hypothesis

Amid growing economic policy uncertainties, enterprises may proactively reallocate resources to enhance new productive forces and address future development challenges. Scholars argue that such policy volatility drives technological innovation, enabling companies to gain competitive advantages, strengthen core competitiveness, reduce information asymmetry in markets, and ultimately phase out underperforming firms [15]. When policy uncertainty is elevated, corporate investment decisions prioritize economic factors, with efficiency improving as uncertainty intensifies [16].

Based on the above analysis, this paper proposes hypothesis 1:

H1: The rising uncertainty of economic policy promotes the development of new quality productive forces of enterprises.

Amid growing economic policy uncertainties, enterprises may actively reallocate resources to enhance new quality productive forces development as risk hedging strategies, with technological innovation investment and digital transformation serving as key response pathways. Theoretical analysis reveals complex dynamics in how economic policy uncertainty impacts corporate innovation: While the irreversible nature of traditional physical investments under uncertainty may lead to caution [11,17], R&D innovation—being strategic investments characterized by high costs and long cycles—actually drives companies to maintain or increase investments. On one hand, technological breakthroughs help enterprises sustain product competitiveness, expand market share, and even offset investment irreversibility through intellectual property transactions [18]. On the other hand, market competition pressures and future revenue opportunities incentivize companies to increase R&D investments to mitigate operational risks and enhance dynamic adaptability [5]. As the core driver of new quality productive forces, technological innovation achieves qualitative transformation through revolutionary breakthroughs and total factor productivity improvements, injecting momentum into the development of new quality productive forces [12].

In the dimension of digital transformation, the impact of policy uncertainty also exhibits theoretical divergence. The stock option theory posits that uncertainty suppresses corporate investment by increasing the value of call options [9,19]. However, the long-term and systemic nature of digital transformation makes it a unique choice: modular deployment of digital technologies reduces investment irreversibility. This not only alleviates information asymmetry through data element integration [20,21], but also accelerates the transformation process via cost-increasing mechanisms [4]. The technological spillover effects of digital transformation [6] and factor integration capabilities [7] drive the combination of digital technologies with new production factors, forming a new form of productive forces [14], thereby transforming data value into actual productivity. Meanwhile, rising economic policy uncertainty compels enterprises to accelerate digital transformation. From the stock option theory perspective, digital transformation exhibits modular and scalable "investment flexibility" characteristics. Compared to traditional fixed asset investments, it demonstrates lower irreversibility and greater adaptability to mitigate short-term risks during policy fluctuations [17]. From an effectiveness perspective, digital transformation, through the integration of digital technology innovation and data elements, not only reduces information asymmetry between enterprises, markets, and governments [20,21], but also breaks through tangible factor boundaries and optimizes resource allocation efficiency via technological spillover effects [6,7]. Moreover, rising operational costs and risks caused by policy uncertainties compel enterprises to optimize management processes and enhance production efficiency through digital means to maintain competitiveness [4]. The deep integration of digital technology with new production factors precisely constitutes the critical pathway for forming a new quality productive force paradigm [14].

In summary, rising economic policy uncertainty can drive the development of new productive forces in enterprises through two pathways: First, it incentivizes companies to increase investment in technological innovation to overcome technical bottlenecks and enhance core competitiveness; second, it drives enterprises to accelerate digital transformation to optimize resource allocation and adapt to dynamic environments. Based on this analysis, this paper proposes the following hypothesis:

H2: The rising uncertainty of economic policies will encourage enterprises to increase investment in technological innovation and seek digital transformation, thus enabling the development of new

quality productive forces of enterprises.

3. Research design

3.1. Data sources and sample selection

Based on data availability, this study examines the impact of economic policy uncertainty on the development of new productive forces among A-share listed companies in China from 2011 to 2022. The economic policy uncertainty data was derived from the Economic Policy Uncertainty Index created by Baker et al. [22] through text analysis of the South China Morning Post. Financial statements and macroeconomic data of A-share listed companies were sourced from the CSMAR Bank Research Database, with three data preprocessing steps: (1) removing ST and *ST enterprises with operational issues; (2) excluding financial industry data; (3) eliminating missing-value samples. All continuous variables underwent trimming at the 1% significance level, ultimately yielding 31,580 valid samples.

3.2. Model design

In order to accurately identify the impact of economic policy uncertainty on the development of enterprises' new quality productive forces, this paper takes the annual data of economic policy uncertainty as the explanatory variable and enterprises' new quality productive forces as the dependent variable to construct the following econometric model:

$$Npro_{i,t} = \beta_0 + \beta_1 EPU_{i,t} + \delta X_{i,t} + \mu_i + Year + \varepsilon_{i,t} \quad (1)$$

Among them, the $EPU_{i,t}$ represents the perceived uncertainty of economic policies in the year t of enterprise i , and $Npro_{i,t}$ represents the new quality productive forces level of the enterprise. $X_{i,t}$ is a group of control variables, μ_i representing individual fixed effects, $Year$ represents the fixed effect of year, and $\varepsilon_{i,t}$ represents the disturbance term.

3.3. Variable declaration

3.3.1. Explanatory variable

The explanatory variable in this study is EconomicPolicyUncertainty (EPU), measured using the Economic Policy Uncertainty Index developed by Baker et al. [22]. The annual EPU data is calculated by dividing the 12-month EPU figures by 100 and then annualizing through arithmetic averaging. This index represents national-level data.

3.3.2. Dependent variable

The dependent variable in this study is the new quality productive forces (Npro) of enterprises, which refers to their comprehensive capabilities in technological innovation, management innovation, and business model innovation. This metric reflects a company's competitiveness and growth potential within the new economic environment. Following Song Jia et al.'s [13] methodology, we employ the entropy method to measure Npro, providing a holistic assessment of innovation capacity and production efficiency. The constructed indicators, as shown in Table 1, encompass not only human resource structures and material resource allocation but also financial

status and operational efficiency. This comprehensive framework fully demonstrates an enterprise's productivity level under new economic conditions.

Table 1. Enterprise new quality productive forces index

Primary indicator	Secondary indicators	Third-level indicators	Fourth-level indicators	Description of index values	weight
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New quality product ive forces	labo ur force	R& D salary ratio	R&d cost-salary/revenue	28
		Active labour	R& D staff/employee number	4
		Percenta ge of R& D staff		
	Material ized labor (object of labor)	Percenta ge of highly educated personnel	Number of people/employees above undergraduate level	3
		Share of fixed assets	Fixed assets/total assets	2
		Percenta ge of manufact uring costs	(Total cash outflow from operating activities + Depreciation of fixed assets + Amortization of intangible assets + Impairment provisions-Cash received from purchases of goods and services-Payable to employees and wages paid to employees) / (Total cash outflow from operating activities + Depreciation of fixed assets + Amortization of intangible assets + Impairment provisions)	1
		R&d depreciat ion and amortizat ion ratio	R&d cost-depreciation/amortization/revenue	27
		R&d rental fee ratio	R&d costs-lease fee/revenue	2
	Hard tech	Direct investme nt in R&D ratio	R&d cost-direct input/revenue	28
		Share of intangibl e assets	Intangible assets/total assets	3
	Soft technolo gies	turnover of total capital	Operating income/total assets/average	1
		Inverse equity multiplie r	Owners' equity/total assets	1

3.3.3. Control variable

This paper refers to the existing research, and takes enterprise age (Age), enterprise size (Size), enterprise value (TonbinQ), operating income growth rate (Grow), equity concentration (TOP), asset-liability ratio (Lev), proportion of independent directors (Bi), board size (Boa), M2 growth rate (M2) and GDP growth rate (GDP) as the control variables.

Table 2. Variable definitions

type of variable	Variable name	variable symbol	Variable description
explained variable	New qualitative productivity	Npro	The index system is constructed according to the measurement method of new quality productive forces of enterprises by Song Jia et al. [13].
	Uncertainty about economic policy	EPU_Annual	The annual arithmetic mean of the index of economic policy uncertainty/100
explanatory variable	enterprise age	Age	Natural logarithm of time to market plus 1
	scale	Size	Natural logarithm of total assets at year-end, ln (TA)
	enterprise value	TobinQ	Market value/A total assets
	increase rate of business revenue	Grow	(Operating revenue in the current quarter of this year, the amount of operating revenue in the last quarter of the previous year) / (Operating revenue in the last quarter of the previous year)
	Equity concentration	Top	Shareholding ratio of the largest shareholder
	asset-liability ratio	Lev	Total liabilities/total assets
	Percentage of independent directors	Bi	Number of independent directors/total number of directors
	Board size	Boa	Number of directors on the board
	M2 growth rate	M2	(Money supply in the current period-Money supply in the previous period)/Money supply in the previous period
control variable	GDP rate of rise	GDP	(Actual GDP of this period-Actual GDP of last period)/ Actual GDP of last period

3.4. Descriptive statistics

Table 3 presents the descriptive statistics of the variables. The mean value of Npro is 5.114, with a median of 4.772 and standard deviation of 2.484, indicating significant variations in new quality productive forces levels among enterprises. Given that China's overall new quality productive forces remains relatively low, substantial room for improvement exists in this area. The annual EPU has a mean of 4.555, standard deviation of 2.378, minimum value of 0.0559, and maximum value of 7.919. This demonstrates that the selected sample covers a broad spectrum, which positively contributes to the research conclusions. Other variables show consistent statistical patterns with existing literature, effectively supporting the study. Co-linearity tests reveal VIF values ranging from 1.050 to 1.930, confirming no significant multicollinearity issues among the selected variables.

Table 3. Descriptive statistics of variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	N	mean	sd	min	p25	p50	p75	max
Npro	31,580	5.114	2.484	0.728	3.486	4.772	6.310	14.66
EPU_Annual	31,580	4.555	2.378	1.139	2.444	4.605	7.169	7.919
Lev	31,580	0.421	0.203	0.0559	0.258	0.412	0.572	0.885
Grow	31,550	0.343	0.891	-0.679	-0.0345	0.124	0.396	6.129
Age	31,580	2.113	0.874	0.000	1.386	2.303	2.890	3.367
Boa	31,580	8.507	1.666	5.000	7.000	9.000	9.000	15.000
Bi	31,578	37.64	5.344	33.33	33.33	36.36	42.86	57.14
Top	31,580	34.51	14.71	9.168	23.09	32.28	44.43	74.45
TobinQ	31,580	2.021	1.295	0.839	1.232	1.602	2.296	8.441
Size	31,580	22.26	1.291	19.99	21.33	22.07	23.00	26.30
GDP	31,580	6.251	2.126	2.240	5.950	6.950	7.770	9.550
M2	31,580	10.77	2.069	8.100	8.700	11.30	12.20	13.80

4. Empirical results and analysis

4.1. Benchmarking

Table 4 presents the benchmark regression results of economic policy uncertainty on enterprises' new quality productive forces. Column (4) shows that after controlling for individual and year effects, financial variables and macroeconomic variables were gradually incorporated. The regression results in column (4) indicate that the coefficient of economic policy uncertainty is 0.065, which is statistically significant at the 1% level. This suggests that an increase in economic policy uncertainty generally promotes enterprises' new quality productive forces. Hypothesis H1 is therefore supported.

Table 4. Benchmark regression results

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Npro	Npro	Npro	Npro	first EPU_Annual	second Npro
EPU_Annual	0.212*** (36.85)	0.310*** (28.82)	0.102*** (8.70)	0.065*** (4.44)		0.140*** (4.32)
L.EPU_Annual					0.282*** (70.16)	
control variable	NO	NO	YES	YES	YES	YES
Constant	4.148*** (140.25)	3.381*** (53.47)	-0.298 (-0.82)	0.731* (1.76)	12.645*** (78.79)	-1.048* (-1.66)
Observations	31,580	31,580	31,580	31,580	26,543	26,543
R-squared	0.041	0.186	0.083	0.266	0.021	0.069
IndustryCode FE	No	YES	No	YES	YES	YES
Year FE	No	YES	No	YES	YES	YES

t-statistics in parentheses;*** p<0.01, ** p<0.05, * p<0.1

4.2. Endogenous problems

To address endogeneity issues caused by omitted variables, this study employs instrumental variable (IV) methods for endogeneity testing. We use the one-period lag of the core explanatory variable as an IV and validate it through two-stage least squares (2SLS) regression, while controlling for individual fixed effects in the empirical analysis. Tables 4(5) and 4(6) present the first and second stage regression results of the two-stage least squares method, which passed both non-identification tests and instrumental variable tests. These findings demonstrate that even after using the one-period lagged EPU index as an IV, economic policy uncertainty remains positively correlated with enterprises' new quality productive forces.

4.3. Robustness test

In this paper, when conducting the benchmark regression, we have carried out the regression with annual fixed effects and individual fixed effects, and obtained significant positive results. Therefore, this paper will adopt the following five methods for robustness test on this basis.

Measuring the replacement of new quality productive forces in enterprises. In economics, productivity and efficiency are often interchangeable [13]. Therefore, this study uses Total Factor Productivity (TFP) as a substitute dependent variable to test for the impact of economic policy uncertainty through robustness checks. The academic community commonly employs four methods for TFP measurement: the Least Poisson (LP) method, Ordinary Least Squares (OLS) method, Generalized Method of Moments (GMM) method, and Open-Ended Method (OP). The LP method avoids the OLS method's limitation of sample inestimability when investment amounts are zero by using intermediate input as a proxy variable. Compared to OLS, GMM method better addresses endogeneity issues. Consequently, this study employs both LP and GMM methods for regression analysis. As shown in Table 6(1), replacing the dependent variable still demonstrates that economic

policy uncertainty has a significant positive impact on enterprises' new quality productive forces level, with reliable regression results.

This study adopts the approach of Huang Hong et al. [23] to measure economic policy uncertainty. The monthly data on policy uncertainty is processed using a weighted average method, where the weights increase progressively toward the end of the year. The weights for each month are sequentially 1/78, 2/78...12/78. As shown in Table 6(2), the regression results remain robust after modifying the measurement of explanatory variables.

Excluding exceptional years. When conducting robustness tests, following Song Jia et al. [13]'s research, we removed the three-year data period from 2019 to 2022 to minimize interference from COVID-19 pandemic years on corporate operations, then performed regression tests. As shown in Table 6(3), EPU_Annual remains significantly positive at the 1% level, thereby reaffirming Hypothesis 1.

Regarding the omission of macroeconomic variables: Although this study has controlled for the impact of GDP growth rate and broad money supply (M2) on corporate new productive capacity through these macroeconomic indicators, to ensure research rigor and accuracy, we expanded the analysis by incorporating China's Consumer Confidence Index (CCI) as an additional control variable. The regression results in Table 5 column (4) demonstrate that EPU_Annual remains statistically significant at the 1% level, further validating Hypothesis I.

Other alternative indicators. In 2012, the United States, France, and Russia all held elections, China also held a national leader election, and the European debt crisis worsened; in 2015, global commodity prices plummeted, the RMB exchange rate reform occurred, and the A-share market circuit breaker was triggered; in 2016, Trump was elected as U.S. President, RMB depreciation led to capital outflows, and the Federal Reserve continued to raise interest rates, among other factors that further intensified economic policy uncertainty. Drawing on the approach of Tan Xiaofen and Zhang Wenjing [19], dummy variables were established, with 2012, 2015, and 2016 designated as periods of high economic policy uncertainty. When the sample falls within these years, it is set to 1, otherwise 0, and regression analysis was conducted. The regression results in column (5) of Table 6 show that the conclusions remain consistent without significant differences.

Table 5. Regression results of robustness test

	(1)	(2)	(3)	(4)	(5)
VARIABLES	TFP_LP	Npro	Npro	Npro	Npro
EPU_Annual	0.025** (1.96)		0.542*** (13.07)	0.119*** (7.61)	
EPU_Annual2		0.436*** (13.08)			
Di_EPU					0.393***
CCI				-0.024*** (-7.75)	
control variable	YES	YES	YES	YES	YES
Constant	-7.654*** (-8.08)	3.745 (1.00)	2.266 (0.61)	3.431*** (5.96)	1.359*** (3.62)
Observations	30,508	31,548	30,508	31,548	30,508
Number of idcode	4,167	4,268	4,167	4,268	4,167
R-squared	0.516	0.192	0.193	0.266	0.261
Individual FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES

5. Mechanism analysis

To comprehensively understand how economic policy uncertainty affects enterprises 'new quality productive forces, we examine the underlying influence channels and test Hypothesis 2. According to Akerlof's [24] information asymmetry theory, economic policy uncertainty significantly widens the "policy information gap" between governments and businesses, as well as between markets and enterprises. Due to the opaque nature of policy-making processes and increased frequency of changes [25], companies struggle to accurately predict the evolution of key policies like fiscal subsidies and industry regulations. This informational disadvantage directly escalates compliance costs while increasing decision-making risks, driving enterprises to enhance their information acquisition and processing capabilities through digital transformation to mitigate information asymmetry. Consequently, companies tend to increase digital technology investments. Meanwhile, heightened economic policy uncertainty may lead to higher financing costs and market risks. These rising costs compress profit margins, compelling enterprises to adopt digital transformation to improve production efficiency and reduce costs for sustained competitiveness. Digital transformation, by introducing advanced information technologies, optimizes management processes and enhances internal control efficiency, thereby significantly boosting new quality productive forces. From the perspective of stock option theory, digital transformation exhibits pronounced "investment flexibility" [17]. Compared to traditional fixed asset investments, digital technology deployment demonstrates modular and scalable characteristics. This low irreversibility makes digital investment have the value of "real option", and this dual mechanism drives the reform of new quality productive forces of enterprises.

The growing uncertainty in economic policies increases operational risks and decision-making costs for businesses, prompting them to adopt various strategies. For instance, companies may intensify R&D investments to address challenges of information asymmetry and investment risks, thereby empowering the development of new quality productive forces. Among these, increased R&D expenditure stands as a crucial response strategy. Technological innovation helps enterprises enhance production efficiency, reduce costs, and strengthen market competitiveness, enabling them to better withstand risks from policy changes. Through risk diversification theory, technological innovation can mitigate business risks. By developing new technologies and products, companies can reduce dependence on single markets or policy environments, thereby lowering risks associated with policy uncertainties. Simultaneously, technological innovation enhances dynamic capabilities, allowing enterprises to swiftly adapt to external environmental changes and seize emerging market opportunities amid policy shifts. Technological progress serves as the core driver of economic growth. Through innovation, companies achieve breakthroughs that transform production methods. This advancement boosts production efficiency, strengthens market competitiveness, and promotes industrial upgrading, ultimately elevating new quality productive forces. Research by Gu Xiaming et al. [5] indicates that increased economic policy uncertainty generates incentive effects for corporate innovation, as it creates future revenue opportunities that motivate greater R&D investments. This study draws on research by Fang Mingyue et al. [26] and Gu Xiaming et al. [5], which employed digital transformation level (Dt) and R&D expenditure as a percentage of sales revenue (R&D) as mediating variables. As evidenced by the results in columns (2) and (4) of Table 6, the coefficient of EPU_Annual remains significantly positive at the 1% level, indicating that digital transformation and corporate R&D exert mediating effects.

Table 6. Mechanism test

	(1)	(2)	(3)	(4)
VARIABLES	Npro	Dt	Npro	R&D
EPU_Annual	0.526*** (16.53)	0.678*** (51.95)	0.735*** (21.53)	1.497*** (7.70)
control variable	YES	YES	YES	YES
Constant	-1.566** (-2.45)	-10.206*** (-41.44)	0.204 (0.08)	31.358** (2.07)
Observations	31,548	31,226	26,957	26,957
Number of idcode	4,268	4,267	0.253	0.007
Individual FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

6. Heterogeneity analysis

6.1. Enterprise property right heterogeneity

Differences in corporate property rights significantly influence business models and objectives. To examine how property right heterogeneity affects research conclusions, this study categorizes both central and local state-owned enterprises (SOE=1) and other ownership types (SOE=0) as SOEs and non-SOE enterprises respectively. As shown in regression results in Column (2) of Table 8, economic policy uncertainty coefficients demonstrate more pronounced impacts on new quality

productive forces for non-SOE enterprises. This may stem from SOEs' dual political and social responsibilities mandated by the state, where operational goals extend beyond economic efficiency to include social stability and employment security. Consequently, SOEs face tighter policy constraints and administrative interventions when navigating economic policy uncertainties, resulting in reduced operational flexibility. In contrast, non-SOE enterprises prioritize profit maximization, enabling more market-oriented and agile decision-making. They can swiftly adjust business strategies and resource allocation in response to policy changes, demonstrating greater initiative in pursuing innovation and transformation during periods of heightened policy uncertainty [16]. Additionally, SOEs enjoy informational advantages due to their larger scale, higher transparency [27], and closer ties with government and financial institutions, while non-SOE enterprises face greater challenges in information asymmetry and financing constraints [28]. In order to alleviate this problem, non-state-owned enterprises have more incentive to attract the attention of investors and financial institutions by improving their own transparency and the quality of information disclosure, so as to obtain more financing support, thus promoting the innovation and development of enterprises, and thus promoting the development of new quality productive forces of enterprises.

Table 7. Heterogeneity analysis

	(1)	(2)	(3)	(4)
VARIABLES	SOE=1	SOE=0	Low marketization	High marketization degree
EPU_Annual	0.014 (0.67)	0.047*** (4.43)	0.032* (1.76)	0.065*** (3.07)
control variable	YES	YES	YES	YES
Constant	7.765 (1.50)	0.512 (0.13)	20.309*** (5.31)	-0.089 (-0.03)
Observations	3,088	11,484	4,426	4,327
R-squared	0.103	0.123	0.122	0.061
Numberofidcode	424	1,334	667	867
Individual FE	YES	YES	YES	YES
Time FE	YES	YES	YES	YES

6.2. Degree of marketization

The degree of marketization reflects the differences in economic environments and resource allocation mechanisms that enterprises operate within. These disparities significantly influence corporate response strategies to economic policy uncertainties and the development paths of new productive forces. Regions with higher marketization levels typically possess more sophisticated market mechanisms, which can substantially enhance corporate resource allocation efficiency and production effectiveness [29]. Therefore, when facing economic policy uncertainties, enterprises with higher marketization levels may better adapt to these challenges through flexible resource allocation adjustments, thereby promoting the development of new productive forces.

Therefore, this study employs marketization indices to categorize the top 30% of enterprises as high marketization and the bottom 30% as low marketization. As shown in the regression results in Table 8(4), enterprises with high marketization exhibit more significant impacts of economic policy uncertainty coefficients on their new quality productive forces. This is primarily because high

marketization enterprises rely more on market mechanisms for resource allocation, face fiercer market competition, depend more heavily on market information, and to some extent, rely on government policy support. High-marketization enterprises can break through factor mobility barriers and enhance price signal sensitivity, enabling them to respond more rapidly to changes in factor costs and demand structures caused by economic policy uncertainties. Regions with high marketization typically possess more sophisticated property rights trading markets, technology transfer platforms, and labor mobility mechanisms, which facilitate enterprises' quick adjustment of production factor combinations in response to policy fluctuations.

According to Chen Hong and Zhang Hang's [30] research, information asymmetry intensifies uncertainty perceptions between enterprises and markets, as well as between businesses and governments. Companies with higher marketization levels can reduce information asymmetry by enhancing transparency and improving the quality of information disclosure, thereby better addressing policy uncertainties. This informational advantage enables enterprises to allocate resources and invest in innovation more effectively when facing uncertainties, ultimately driving the development of new productive forces.

7. Conclusion and research implications

This study provides a comprehensive analysis of how economic policy uncertainty impacts the development of enterprises' new quality productive forces and its underlying mechanisms. The findings demonstrate that increased policy uncertainty significantly stimulates the growth of new quality productive forces in businesses. Specifically, heightened policy uncertainty drives companies to boost investments in technological innovation and accelerate digital transformation, thereby empowering the development of new quality productive forces. This conclusion remains valid across multiple robustness tests.

This research carries significant policy implications for maintaining economic policy stability and advancing the development of new-quality productive forces in manufacturing enterprises. First, frequent policy changes can heighten corporate uncertainty, thereby affecting investment and innovation decisions. When formulating and adjusting economic policies, governments should prioritize policy coherence and transparency while minimizing abrupt shifts to reduce business uncertainties and foster stable development. Second, authorities should incentivize enterprises to increase R&D investments through fiscal subsidies and tax incentives, particularly supporting those vulnerable to policy volatility to enhance their innovation capabilities and new quality productive forces. Third, non-state-owned enterprises (NSOs) often face greater financing constraints and market risks amid policy uncertainties. Governments should prioritize NSO development by providing financing support and policy guidance to boost new quality productive forces and drive comprehensive economic growth.

Economic policy uncertainties exacerbate information asymmetry between enterprises and markets, as well as between businesses and the government [30]. To mitigate these effects, governments should enhance communication with businesses by promptly disseminating policy updates. Concurrently, companies need to actively improve transparency and the quality of their disclosures to attract investor and financial institution attention, thereby securing more financing support. Additionally, adopting advanced information technologies can optimize management processes, boost production efficiency, and enhance innovation capabilities – all crucial for upgrading enterprises' new-quality productive forces.

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