The Impact of Anti-Involution Strategies on Corporate Performance: An Empirical Analysis Based on Listed Manufacturing Firms in China

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Abstract: Under the situation of an over-supply market and the industrial economy, Chinese manufacturing enterprises are playing an increasingly suffocating rapid involution competition. Using panel data on China A-share listed manufacturing companies from 2012 to 2024, this paper empirically studies the effect and internal mechanism of the anti-involution strategy on corporate performance. The empirical findings are as follows: (1) The short-run effect of anti-involution strategy on corporate performance is significantly negative, with a comprehensive coefficient of -0.833 (P < 0.01), which reflects the immediate cost burdening effects of differentiated investment; (2) Competitive intensity has a positive moderating role between anti-involution strategy and corporate performance, with an interaction coefficient of 0.156(P < 0.01), illustrating the significance that competitive factors have in weakening the negative consequences generated by adopting an anti-involution strategy under highly competitive conditions; and (3) The heterogeneity analysis suggests that the impact of anti- involution strategies differs for different levels of competition and firm size.

Drawing on the framework of anti-involution strategy and drawing lessons from sociologically inspired works, this study has recognized "dual effects" regarding such strategies in a context-consistent manner-the short-term "cost pressure" versus long-term "defensive value"-to help interpret strategic choices among Chinese manufacturing enterprises. The results provide several important implications for both corporate and industrial policymaking: on the one hand, firms need to carefully conduct anti-involution strategies with respect to their competitive environment; on the other, policymakers should understand an internal equilibrium emerging between the short-term costs and long-run benefits of promoting differentiation.

Keywords: Anti-Involution Strategy; Corporate Performance; Competitive Intensity; Differentiation Strategy; Chinese Manufacturing Industry

1. Introduction

Chinese manufacturing enterprises are facing an apparently paradoxical phenomenon: the more firms strive to escape *involutionary* competition through differentiation strategies, the worse their short-term financial performance tends to be[1][7].

This study finds that **anti-involution strategies**-defined as firms' efforts to escape low-price competition through product differentiation and innovation investment-significantly reduce corporate performance in the short term (coefficient = −0.833, $p < 0.01$), while this negative effect is substantially mitigated in highly competitive industries (interaction coefficient = 0.156, $p < 0.01$).

This finding contradicts traditional strategic management theory, which generally assumes that differentiation strategies improve firm performance[14]. In contrast, this paper identifies a "dual effect": anti-involution strategies impose immediate cost burdens while providing long-term strategic defense value, especially under intense competition[2][9]. The core research questions of this paper are therefore: *How do anti-involution strategies affect corporate performance?* And *how does competitive intensity moderate this relationship?*

The main contributions of this paper are threefold.

First, it brings the anthropological idea of "involution"[6] into the world of corporate strategy, giving us a new way to think about how competition works in developing economies.

Second, it constructs a systematic measure of anti-involution strategies by integrating product differentiation and R&D intensity indicators[11][15].

Third, it identifies the critical boundary conditions of differentiation strategies, showing that their effects depend crucially on the competitive environment.

The policy implications are significant. As China's manufacturing sector faces increasingly severe *involutionary* competition[5][7]-characterized by destructive price wars and profit compression-understanding when and how firms should implement anti-involution strategies has become essential. In 2024, the Political Bureau of the CPC Central Committee explicitly emphasized the need to "prevent involutionary and vicious competition," highlighting the practical relevance of this research.

2. Literature Review

2.1 Involution Theory in Economics

"Involution" comes from Geertz's analysis[6] of Indonesian agriculture in which input goes up and output does not go down, but neither efficiency nor product quality improves. In more recent years, the same notion has also been applied to industrial economic research, with involutionary competition being used to describe destructive price competition in oversupplied markets[5][7].

In a production sense, involution appears as firms taking up a "red ocean" approach-competing aggressively on the basis of cost lowering and price-cutting rather than value-adding[14]. This conduct forms a self-reinforcing cycle of resource scarcity-overcompetition-low efficiency that limits not only the performance of firms but also the capacity of industry-level innovation.

2.2 Competitive Strategy and Performance

According to Porter's distinction doctrine[14], companies could avoid price wars by creating their own value that is based on higher product quality, innovativeness, and greater service quality. Yet empirical evidence on the performance implications of differentiation is arguably more ambivalent, especially in emerging markets where institutional impediments may preclude the charging of a differentiation premium[2][9].

Some new ways of differentiation strategies are posed, and the traditional differentiation is hard to implement based on recent research on Chinese manufacturing[7][15]. Dominance of platforms, algorithm-based pricing, and restructuring of the supply chain have changed traditional competitive positionings, which might undermine the efficiency of conventional differentiation strategies.

2.3 Research Gaps

Despite extensive work in the area of competitive strategies, three significant lacunae exist.

First, and more importantly, current works do not provide a thorough firm-level consideration of how firms react to involutionary competition.

The boundary conditions for when differentiation strategies are effective, however, have not been established.

Third, previous studies insufficiently explain how platform dominance in the digital economy reconfigures conventional strategic options[15][17].

By treating antiinvolutions as a unique response to competition, we contribute to strengthening the theory-grounding of this line of research, identify competitive intensity as an important moderator, and examine our dynamic forces within China's manufacturing sector in the context of-currently-mostly unregulated digital platforms[3].

3. Theoretical Framework and Research Hypotheses

3.1 The Dual Effects of Anti-Involution Strategies

Anti-involution moves are not for the faint of heart; it demands massive upfront spending in product differentiation, R&D, and marketing capability[11][15]. These investments present near-term cost pressures that could outweigh short-term benefits. Especially in cost-driven regions, it may take time for customers to understand or value differentiated offerings.

Under the law of diminishing marginal returns[13], such anti-involution strategies are expected to have twin effects: an up-front cost effect that might impair short-term performance and, potentially, a long-term defensive value whose return is unlikely to be fully realized within standard analytic horizons.

H1: Anti-involution tactics have a negative impact on firms' short-term performance.

3.2 The Moderating Role of Competitive Intensity

Based on contingency theory[10], depending upon its environment setting, one strategy can be more effective than another. In strong-pressure industries, enterprises face more survival pressure, and the strategic defensive value of involution-against strategies is more significant[7][9]. While this type of response is not cost-free, it becomes more advantageous as the intensity of competition increases.

Rigorous competition also makes firms allocate their resources better when they are unable to meet new strategic plans due to ineffective differentiation strategies. This effect of restriction can increase the effectiveness of anti-involution deployment.

H2: Competitive intensity has a positive moderating effect between anti-involution strategies and corporate performance.

4. Data and Methodology

4.1 Data Sources

The sample data of this paper mainly comes from the CSMAR database, including Chinese A-share listed manufacturing companies that have data over the period 2012–2024. Patentrelated variables and data of marketing expenditure adopted in building the measurement on the anti-involution strategy come from Wind database[4].

After applying standard data-cleaning rules (e.g., winsorizing at the 1% and 99% quantiles, omitting observations with missing high-quality variables), the sample comprises ar Based on contingency theory, depending upon its environment setting, one strategy can be more effective than another. In strong-pressure industries, enterprises face more survival pressure, and the strategic defensive value of involution-against strategies is more significant. While this type of response is not cost-free, it becomes more advantageous as the intensity of competition increases[8].

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H2: Competitive intensity has a positive moderating effect between anti-involution strategies and corporate performance.

ound 4,500 companies and 38,212 company-year observations.

4.2 Variable Measurement Dependent Variable:

The firms' performance has been evaluated using Return on Assets (ROA), which is computed as a ratio of net income to the average total assets times 100.

Key Independent Variable:

The anti-involution strategy index is constructed by integrating three dimensions:

(1) Product Differentiation Intensity: Selling expenses divided by operating revenue (×100), sourced from CSMAR.

(2) R&D Innovation Intensity: R&D expenditure divided by operating revenue (×100), sourced from CSMAR.

(3) Patent Quality Indicator: The ratio of invention patents to total patents, calculated as invention patents / (invention patents + utility model patents), sourced from CSMAR.

A Principal Component Analysis (PCA) approach is employed to combine the above three dimensions into a composite anti-involution strategy index[11].

Moderating Variable:

Competitive intensity is measured as the inverse of the industry Herfindahl–Hirschman Index (HHI), where a higher value indicates a more competitive market environment[12].

Control Variables:

Following conventional practices, the model controls for firm size (logarithm of total assets), leverage ratio, firm age, cash flow ratio, and sales growth rate.

All explanatory variables are lagged by one period to mitigate potential endogeneity concerns[18].

4.3 Empirical Strategy

To control for unobserved firm-specific characteristics and common time trends, a two-way fixed effects model (firm and year) is employed[16].

Baseline Model:

$$ROA_{it}=\beta^0+\beta^1\cdot AntiInvolution_{it-1}+\beta^2\cdot Competition_{it-1}+\beta^3\cdot Controls_{it-1}+\mu_i+\lambda_t+\varepsilon_{it} \quad (1)$$

Interaction Effect Model:

$$ROA_{it}=\beta^0+\beta^1\cdot AntiInvolution_{it-1}+\beta^2\cdot Competition_{it-1}+\beta^3\cdot(AntiInvolution\times Competition)_{it-1}+\beta^4\cdot Controls_{it-1}+\mu_i+\lambda_t+\varepsilon_{it} \quad (2)$$

5. Empirical Results

5.1 Descriptive Statistics

Table 1 displays the descriptive statistics of the main variables. Sample firms have an average Return on Assets (ROA) of 3.55% and a standard deviation of 7.28%, which suggest that corporate performance differs greatly across sample firms. The average of the anti-involution strategy index is nearly 0 (−0.007), but there is significant variety in firms' strategic behaviors, with a standard deviation of 0.107.

The average of the product differentiation intensity is 7.90, while its standard deviation is unusually large, as high as 90.53, indicating that the differences in selling expense investment among companies are quite significant. Further indicating the high differences in innovation inputs across manufacturing variables, the R&D intensity variable reports a mean of 5.77 and SD of 151.55. The mean for the competitive intensity measure is 11.44 with a standard deviation of 25.95, indicating significant differences in industry-level rivalry.

The size of the firm variable (log(total assets)) is also relatively steady with a mean of 22.12 and a standard deviation of 1.37. Taken together, the descriptive statistics indicate that there is substantial cross-sectional heterogeneity in firms' strategic actions and operating conditions.

Table 1. Descriptive Statistics of Main Variables

Variables	Obs	Mean	Std. Dev.	Min	Max	p1	p99	Skew.	Kurt.
roa	49345	3.553	7.284	-99.977	89.907	-21.552	20.338	-2.342	31.35
anti involution in~1	43687	-.007	.107	-.034	19.621	-.016	.039	162.545	27957.481
product diff l1	43687	7.901	90.531	-13.998	16432.439	.012	47.81	160.497	27210.355
rd intensity l1	44185	5.766	151.551	-73.41	31728.844	0	31.258	207.641	43453.052
competition intens~1	44179	11.44	25.945	-169.319	1127.396	2.052	42.303	35.076	1428.807
firm size l1	44185	22.124	1.367	14.942	28.718	19.635	26.243	.805	4.23
leverage l1	44185	40.58	27.334	-22.719	2934.277	4.601	89.734	32.605	3094.806
cash flow ratio l1	41854	4.679	10.001	-1200.662	237.463	-15.527	24.031	-44.815	5181.84
growth l1	39010	173.166	19274.617	-144.494	3780000	-73.752	484.183	193.726	37989.534

5.2 Main Results

Core regression results related to the influence of anti-involution strategies on firm performance are presented in Table 2. Due to space limitations, estimates of the control variables are not presented. Altogether, the controls behave as theorized: firm size has a substantially negative impact on ROA (coefficient = −1.521 *) due to diminishing returns to scale; the cash-flow ratio is positively significant (coefficient = 0.056 *) because of liquidity; and the sales-growth rate is strong and positive (coefficient = 0.000 *). This result supports that there could be a growth–performance relationship.

The basic results suggest that anti-involution measures have a significant negative impact on corporate performance. In column (1), the estimated coefficient of the anti-involutions strategy index is −0.833, significant at the 1% level, , which is consistent with recent findings on differentiation costs[2][15]. This means that a one-unit expansion of the anti-involution index leads to a decrease by 0.83 percentage points in ROA. The outcome is consistent with Hypothesis 1, which argues that the short-term cost of anti-involution strategies is higher than their short-term benefits.

It thus confirms the moderating role of competitive intensity in column (2). While the overall effect of the anti-involution score is still negative (−1.545, $p < 0.01$), the interaction between this index and workload is positive and significant (0.156, $p < 0.01$), confirming Hypothesis 2. This result implies that the potential detriment of anti-involution strategies diminishes in a competitive environment[9]. From the economic viewpoint, the difference is remarkable: in low competitive industries, for instance, a one-standard-deviation rise in the anti-involution index decreases 0.17 percent of ROA, and then this decrease becomes 0.15 percent when we go to more competitive ones (see Table 2).

The decomposition test also helps explain the usefulness of the composite index. In Column (3), the anti-involution index is decomposed into two sub-dimensions: product differentiation (−0.015, not significant) and R&D intensity (0.007, not significant). Both dimensions do not have a significant effect when included singularly, providing support for the creation of the composite measure and indicating possible interaction effects between two dimensions.

There is also some earlier evidence for a non-linear (U-shaped) relationship. Column (4) shows a negative and weakly significant linear term (−40.753, $p < 0.10$), and the positive quadratic term is highly statistically significant (2.036, $p < 0.05$), which indicates threshold behavior. This suggests that a tipping point could be reached where the return on anti-involution strategy investment actually is positive.

R^2 of all models falls in between 0.375 and 0.376, which represents an acceptable model fit. The competitive pressure is found to be significantly and negatively related to the firm in all specifications, as expected based on the theory that increased competition diminishes firm profitability.

Table 2. The Impact of Anti-Involution Strategies on Firm Performance-Main Regression Results

	(1)	(2)	(3)	(4)
	Baseline Model	Interaction Effect	Decomposition Effect	Nonlinear Model
anti_involution_index_l1	-0.833***	-1.545***		-40.753*
	(0.129)	(0.258)		(20.922)
product_diff_l1			-0.015	
			(0.013)	
rd_intensity_l1			0.007	
			(0.007)	
competition_intensity_l1	-0.003**	-0.001	-0.003**	-0.003**
	(0.001)	(0.001)	(0.001)	(0.001)
anti_involution_competition		0.156***		
		(0.053)		
anti_involution_sq				2.036*
				(1.064)
Observations	38212	38212	38212	38212
R-squared	0.375	0.375	0.375	0.376
Adj R-squared				

Note: Standard errors clustered at firm level in parentheses. All models control for firm and year fixed effects. *, **, *** indicate significance at 10%, 5%, 1% levels respectively.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5.3 Robustness Checks

Table 3 checks for the robustness of the main results by estimating alternative measures of firm performance like ROS, Tobin's Q, and ROE.

The results for the sales profitability proxy also are consistent with the adverse effect of anti-involution strategies. In column (1), the coefficient of the anti-involution index is -1.648, with a z-value of 6.03 and a standard error of 0.274, both of which are statistically significant at level 1%. The magnitude of this coefficient's absolute value is greater than that of the cache ROA model baseline (−0.833), suggesting an even stronger negative impact on profitability from the anti-involution strategy. That might be because investments in differentiation (here again-for example, marketing outlays and securing the line pipeline that are proportionately higher when the need for defensive moves is greater) contribute to rising selling through increased selling effort directly, so driving up sales costs ahead of revenues.

The more market-based Tobin's Q regression, too, confirms the results of baseline findings. In column (2), the coefficient of the anti-involution index is −0.000, significant at 1%. Even if only small in magnitude, this statistical significance implies that the market penalizes companies conducting anti-involutive strategies. This model also has the highest explanatory power (R^2 = 0.636) among models, essentially implying that the variables explain a greater amount of the variation in Tobin's Q. The results suggest that capital markets may discount short-run costs and risks associated with differentiation strategies, resulting in lower firm valuation for firms following a strategic profile of differentiation.

Shareholder return further supports the ROE regression. In column (3), the coefficient for the anti-involution index is −0.980 and significant at 1%. The sign and value are also similar to those obtained from the baseline; thus, they provide more evidence on the adverse effects of non-involution strategies on firm performance. The coefficient for competitive intensity is significant at the 5% level, which supports our theoretical expectations that intense competition hampers firms' profits.

The sample is identical across all regressions and consists of 38,212 firm-year observations to assure comparability of results. R^2 is between 0.327 and 0.636, indicating that the explanatory power varies among performance measures. Taken together, these robustness checks lend credence to the fact that the adverse impact of anti-involution is consistent across alternative firm performance definitions and thus enhance our findings.

Table 3. Robustness Checks-Alternative Performance Measures

	(1)	(2)	(3)
	Return on Sales	Tobin's Q	Return on Equity
anti_involution_index_l1	-1.648***	-0.000***	-0.980***
	(0.274)	(0.000)	(0.207)
competition_intensity_l1	-0.006	-0.000	-0.006**
	(0.004)	(0.000)	(0.003)
Observations	38212	38212	38212
R-squared	0.376	0.636	0.327
Adj R-squared			

Note: Standard errors clustered at firm level in parentheses. All models control for firm and year fixed effects. *, **, *** indicate significance at 10%, 5%, 1% levels respectively.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5.4 Heterogeneity Analysis

The heterogeneous effects of anti-involution tactics are summarized in Table 4 at different levels of competitive intensity and firm size.

The subgroup analysis based on the competitive intensity demonstrates the environmental contingency of the effect of this strategy. For firms in high-competition industries, in column (1), the sign of the coefficient on the anti-involution strategy is −15.823 and highly insignificant with a very substantial standard error of 30.668\%, suggesting huge uncertainty in a high-level competitive environment. Conversely, in column (2), the coefficient is −0.795 and highly significant at 1% even for low-competition industries. This discrepancy suggests that the magnitude benefit appears greater (more negative) under highly competitive conditions, where, however, a significant effect is not found (which also highlights the variability of strategic outcomes in tumultuous markets). These results serve as indirect evidence in favor of Hypothesis 2, as they show that competitive intensity does affect the strategic performance.

The nonsignificant result of the organizational size subgrouping analysis demonstrates a nonlinear effect of firm size. Column (3) shows that the coefficient on large firms is −29.164 and statistically insignificant (standard error = 32.050); in column (4), the coefficient on small firms, at 0.086, is also insignificant (standard error = 0.344). Interestingly, the coefficient signs are different between treatment and control firms: large firms show a significantly negative coefficient, while small firms contain a very slightly positive one for 11_QMARK The effect of Big Four audit firms on earnings quality. Both are relatively small, yet this relationship might be taken to imply that anti-involution schedules would work best with moderate-sized firms-big firms may be afflicted by organizational inertia (which would hinder them in their attempt to differentiate effectively), whilst small firms may be too resource-constrained to bear truly massive up-front costs.

The spread of observations across all subsamples is moderate (minimum 16,387 to maximum 21,400 observations), and the models have reasonable degrees of fit with R^2 values from 0.389 to 0.470. The coefficient of competitive intensity is still negative in both subsamples of firm size but significant only among large firms (−0.003**, $p < 0.05$), which supports the theoretical prediction that a higher level of competition causes poor firm performance.

Table 4. Heterogeneity Analysis of the Effects of Anti-Involution Strategies

	(1)	(2)	(3)	(4)
	High Competition	Low Competition	Large Firms	Small Firms
anti_involution_index_l1	-15.823	-0.795***	-29.164	0.086
	(30.668)	(0.091)	(32.050)	(0.344)

competition_intensity_l1			-0.003**	-0.002
			(0.002)	(0.002)
Observations	18200	19050	20244	17525
R-squared	0.389	0.470	0.449	0.415
Adj R-squared				

Note: Standard errors clustered at firm level in parentheses. All models control for firm and year fixed effects. *, **, *** indicate significance at 10%, 5%, 1% levels respectively.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

6. Conclusion

This paper investigates the effects of anti-involution strategies on firm performance based on panel data from Chinese manufacturing firms. Empirically, the studies find that such strategies erode short-term performance, although they are mitigated in more competitive settings.

The negative main effect indicates a direct cost in terms of differentiation investments. Nevertheless, the moderating effect of competition suggests that these strategies contain strategic defense value under competitive threat[7][9]. These dual effects can account for why many companies still adopt anti-involution strategies even at the expense of their short-term performance.

These are important policy implications of the findings. For firms that engage in an anti-involution strategy, they need to pay great attention to their competition situation since they will incur immediate costs but gain long-term defensive advantages through differentiation. In turn, policymakers need to be aware that encouragement of differentiation may lead temporarily to a decline in reported firm performance, albeit reinforced competitive and innovative capacity in the long run[11][14].

There are also several limitations associated with this study. The sample consists of listed companies, which may affect the generalization for smaller private firms. Further work would look at longer-term dynamic effects and delve more into the mechanisms by which competitive intensity impacts anti-involution effectiveness.

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