

Research Article

Managerial Overinvestment, Financial Constraints, Corporate Risk-Taking, and Firm Value: Evidence from the Tehran Stock Exchange

Running title: Overinvestment, Constraints, and Risk-Taking

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ABSTRACT

PURPOSE: This study examines whether managerial overinvestment is associated with corporate risk-taking, whether financial constraints alter this relationship in an emerging, bank-dependent capital market, and whether corporate risk-taking is associated with firm value.

DESIGN/METHODOLOGY/APPROACH: We use a balanced panel of 94 non-financial firms listed on the Tehran Stock Exchange over fourteen fiscal years (1389–1402 in the Iranian calendar, corresponding to 2010/11–2023/24), yielding 1,316 firm-year observations. Managerial overinvestment is measured as the positive component of firms' investment deviation, corporate risk-taking as the three-year rolling standard deviation of annual stock returns, financial constraints as a standardized liquidity-based measure (the negative logarithm of one plus the current ratio), and firm value as Tobin's Q. Two-way firm and year fixed-effects models with firm-clustered standard errors are estimated using one-year-lagged explanatory variables.

FINDINGS: In the risk-taking model, the coefficient on managerial overinvestment is negative but statistically insignificant, and neither the financial-constraint measure nor its interaction with overinvestment is significant. In the firm-value model, lagged corporate risk-taking is positively associated with Tobin's Q, whereas managerial overinvestment is negatively associated with firm value.

RESEARCH IMPLICATIONS: Managerial investment behavior and the financing environment should be considered jointly when examining corporate risk-taking and valuation in emerging markets. The market consequences of excessive investment may be visible in firm value even when the direct risk-taking channel is not statistically strong.

ORIGINALITY/VALUE: The study provides an integrated panel analysis that links managerial overinvestment, financial constraints, market-based corporate risk-taking, and firm value for firms listed on the Tehran Stock Exchange.

RESEARCH HIGHLIGHTS

- Managerial overinvestment is not significantly related to stock-return volatility.
- Liquidity-based financial constraints do not moderate the overinvestment–risk link.
- Risk-taking predicts higher Tobin's Q, whereas overinvestment predicts lower Q.

1. Introduction

Corporate investment decisions are central to both risk-taking and firm value. When managers allocate resources beyond the level justified by available investment opportunities, excessive investment can arise and may destroy shareholder value. The agency literature links such overinvestment to managerial discretion and the use of internally generated resources in projects whose expected benefits do not adequately compensate for their risks (Richardson, 2006). Behavioral corporate-finance research adds that managerial characteristics can further shape investment decisions, particularly when managers are optimistic about the expected returns of projects (He *et al.*, 2019; Malmendier & Tate, 2005).

The relationship between excessive investment and corporate risk-taking is particularly relevant in emerging capital markets. Firms listed on the Tehran Stock Exchange (TSE) operate in an environment characterized by substantial financing frictions, concentrated ownership, bank-oriented external finance, and considerable macroeconomic uncertainty. Under such conditions, managers may face simultaneous incentives to expand investment and constraints on their ability to obtain external funds. Financial constraints can therefore influence not only the amount of investment undertaken but also the degree of risk embedded in corporate decisions (Fazzari *et al.*, 1988; Hadlock & Pierce, 2010; Tang & Chang, 2024).

A related issue is the measurement of corporate risk-taking. Research and development (R&D) intensity is frequently used in the international literature because R&D projects are uncertain and difficult to reverse (Coles *et al.*, 2006). In the TSE, however, a large proportion of firm-years report zero R&D expenditure, so relying on this measure would make the analysis highly dependent on a relatively rare activity. A market-based measure based on the volatility of annual stock returns provides a broader indicator of firm-level risk exposure and can be constructed for substantially more firm-years.

This study contributes to the literature in three ways. First, it places managerial overinvestment, measured directly from firms' investment deviation, at the center of an integrated investment–risk–value framework. Second, it uses a market-based risk-taking measure that avoids the zero-inflation problem of R&D intensity in emerging markets. Third, it connects investment behavior, financial constraints, risk exposure, and firm value within a two-way fixed-effects panel framework with lagged explanatory variables. The remainder of the paper is organized as follows. Section 2 reviews the literature and develops the hypotheses, Section 3 describes the data and methodology, Section 4 reports the results, Section 5 discusses the findings, and Section 6 concludes.

2. Theoretical Background and Literature Review

2.1. Conceptual and theoretical foundations

Managerial overinvestment occurs when a firm's actual investment exceeds the level justified by its observable investment opportunities and operating characteristics. The agency perspective emphasizes that managers may have incentives to expand the scale or scope of the firm beyond the point that maximizes shareholder value. Richardson (2006) develops an accounting-based framework for identifying excessive investment and shows that overinvestment is concentrated where agency problems and excess internal resources give managers greater discretion. In the present study, the positive component of firms' investment deviation is used to capture this behavior.

Corporate risk-taking refers to the extent to which a firm's operating and financial decisions expose shareholders to uncertain outcomes. Market-based measures based on stock-return volatility capture the aggregate uncertainty reflected in investors' assessments of the firm's future cash flows and operating prospects. The corporate-governance literature emphasizes that managerial incentives, creditor discipline, ownership structure, and governance arrangements affect firms' willingness to undertake risky projects (Acharya *et al.*, 2011; Boubakri *et al.*, 2013; Faccio *et al.*, 2011; John *et al.*, 2008). Accordingly, risk-taking is treated here as a broad firm-level outcome rather than as a narrow synonym for R&D spending.

2.2. Empirical evidence and unresolved gap

Financial constraints are frictions that make external financing more costly or less available than internal funds. Classic work links financing frictions to corporate investment, while subsequent research emphasizes that no single

accounting ratio perfectly captures the underlying construct (Fazzari *et al.*, 1988; Hadlock & Pierce, 2010; Kaplan & Zingales, 1997; Whited & Wu, 2006). Because the data do not contain all inputs required to construct the standard Kaplan–Zingales (KZ), Whited–Wu (WW), or size–age (SA) indices, the study uses a transparent liquidity-based proxy: the negative logarithm of one plus the current ratio, standardized after winsorization, so that lower liquidity corresponds to tighter financing conditions. Book leverage is used as an alternative measure.

The link between overinvestment and risk-taking can be explained through managerial discretion. Excessive investment commits resources to projects with uncertain or weak expected payoffs and can increase the dispersion of future firm outcomes. The relationship need not be positive, however, because financing constraints may prevent firms from implementing risky projects even when managerial investment intensity is high (Chiu *et al.*, 2022). Evidence on the valuation consequences of risk-taking is also mixed, because its effect depends on whether the underlying risks are value-enhancing or value-destroying (Tang & Chang, 2024). The joint effect of managerial overinvestment and financial constraints on risk-taking, and the valuation consequences of risk-taking in a bank-dependent emerging market, therefore remain empirical questions.

2.3. Hypothesis development

Prior studies provide two complementary lines of reasoning. First, excessive investment can arise from managerial discretion and agency conflicts, particularly when internal resources are available and monitoring is imperfect (Richardson, 2006). Second, financial constraints can restrict investment and alter the sensitivity of investment decisions to internal resources (Chiu *et al.*, 2022; Fazzari *et al.*, 1988). Research on corporate risk-taking further indicates that governance and financing arrangements influence the amount of risk firms are willing to bear (John *et al.*, 2008). Because the theoretical literature permits competing predictions—financial constraints may restrict risky investment, whereas stronger financial discipline may also reduce inefficient risk avoidance, and the valuation effect of risk-taking depends on the nature of the underlying risks—the hypotheses are stated without imposing a sign:

H1. Managerial overinvestment is associated with corporate risk-taking.

H2. Financial constraints are associated with corporate risk-taking.

H3. Financial constraints moderate the relationship between managerial overinvestment and corporate risk-taking.

H4. Corporate risk-taking is associated with firm value.

3. Data and Methodology

3.1. Research design and analytical framework

The study uses a firm-year panel design and estimates two-way firm and year fixed-effects models. Firm fixed effects absorb time-invariant differences across firms, and year fixed effects absorb common macroeconomic shocks. To reduce simultaneity between managerial decisions, financing conditions, risk exposure, and valuation, the explanatory variables enter the regressions with a one-year lag, and standard errors are clustered at the firm level.

3.2. Population, sample, data sources, and study period

The population consists of non-financial, non-utility firms listed on the TSE. The sample comprises 94 firms observed in each of fourteen fiscal years from 1389 to 1402 in the Iranian calendar, yielding a balanced panel of 1,316 firm-year observations; the balanced structure permits firm fixed-effects estimation. Data were obtained from audited financial statements and TSE trading records. Because the risk-taking variable requires three consecutive annual return observations, the risk-taking model contains 1,128 firm-year observations after construction of the rolling volatility measure and the one-year lag, and the firm-value model contains 1,034 observations because it additionally requires lagged risk-taking.

3.3. Variables, constructs, and measurement

Managerial overinvestment (UPINV) is measured as the positive component of firms' investment deviation: observations with a positive investment deviation take its value, and non-positive deviations are coded as zero.

Corporate risk-taking (RT) is measured as the three-year rolling standard deviation of annual stock returns. Financial constraints (FC) are measured as the standardized value of the negative logarithm of one plus the winsorized current ratio, so that higher values indicate tighter liquidity conditions; book leverage (LEV) is used as an alternative measure. Firm value (FV) is measured as Tobin's Q, calculated as total liabilities plus the market value of equity, divided by total assets. The control variables are operating cash flow scaled by total assets (CF), return on assets (ROA), the market-to-book ratio (MTB), firm size measured as the natural logarithm of total assets (SIZE), and CEO–chair duality (ChairCEO). R&D intensity is used as an alternative risk-taking measure. All continuous variables are winsorized at the 1st and 99th percentiles. Table 1 summarizes the variable definitions.

Table 1. Variable definitions and measurement

Variable	Role	Operational definition	Data source	Expected sign
UPINV	Main predictor	Positive component of the investment deviation; zero otherwise	Financial statements	±
RT	Dependent (Model 1)	Three-year rolling standard deviation of annual stock returns	TSE trading records	—
FV	Dependent (Model 2)	(Total liabilities + market value of equity) ÷ total assets	Financial statements; TSE trading records	—
FC	Main predictor	Standardized $-\ln(1 + \text{winsorized current ratio})$; higher = tighter constraints	Financial statements	±
UPINV × FC	Interaction	Product of UPINV and FC	Constructed	±
CF	Control	Operating cash flow ÷ total assets	Financial statements	±
ROA	Control	Net income ÷ total assets	Financial statements	±
MTB	Control (Model 1)	Market value of equity ÷ book value of equity	Financial statements; TSE trading records	±
SIZE	Control	Natural logarithm of total assets	Financial statements	±
ChairCEO	Control	1 if the CEO also chairs the board, 0 otherwise	Corporate governance disclosures	±
R&D	Alternative dependent variable	R&D expenditure ÷ net sales	Financial statements	—
LEV	Alternative FC measure	Total liabilities ÷ total assets	Financial statements	—

Notes: All continuous variables are winsorized at the 1st and 99th percentiles. Explanatory variables enter the main models with a one-year lag. UPINV = managerial overinvestment; RT = market-based corporate risk-taking; FC = liquidity-based financial constraints; FV = Tobin's Q; R&D = research and development.

3.4. Model specification and estimation procedure

Two models are estimated. Model (1) tests H1–H3:

$$RT_{i,t} = \alpha + \beta_1 UPINV_{i,t-1} + \beta_2 FC_{i,t-1} + \beta_3 (UPINV \times FC)_{i,t-1} + \gamma' \text{Controls}_{i,t-1} + \mu_i + \lambda_t + \varepsilon_{i,t} \quad (1)$$

Model (2) tests H4 and examines the valuation consequences of risk-taking:

$$FV_{i,t} = \alpha + \delta_1 RT_{i,t-1} + \delta_2 UPINV_{i,t-1} + \delta_3 FC_{i,t-1} + \gamma' \text{Controls}_{i,t-1} + \mu_i + \lambda_t + \varepsilon_{i,t} \quad (2)$$

where Controls is the vector {CF, ROA, MTB, SIZE, ChairCEO} in Model (1); MTB is omitted from Model (2) because of its substantial mechanical overlap with market-based firm value. μ_i is a firm fixed effect; λ_t is a fiscal-year fixed effect; and $\varepsilon_{i,t}$ is the error term. Both models are estimated by within (fixed-effects) least squares with standard errors clustered by firm to allow for arbitrary within-firm serial correlation and heteroskedasticity. Book leverage is not included as a control because it serves as the alternative financial-constraint measure.

3.5. Validity, robustness, and reproducibility

One-year-lagged explanatory variables are used as a basic safeguard against simultaneity and reverse causality, although the design does not establish causal effects. Multicollinearity is assessed with variance inflation factors

(VIFs): in the risk-taking specification, VIF values range from 1.01 to 1.35, and in the firm-value specification, from 1.00 to 1.35. R&D intensity and book leverage are identified as alternative measures of risk-taking and financial constraints, respectively. The results are interpreted as conditional associations rather than causal effects.

4. Results

4.1. Descriptive statistics and preliminary analysis

Table 2 reports descriptive statistics. After winsorization, the mean of managerial overinvestment is 0.038 and its median is zero, indicating that positive investment deviations are concentrated in a subset of firm-years. The standardized financial-constraint measure has a mean of zero by construction. The three-year stock-return volatility measure has a mean of 1.226 and a median of 0.767, and Tobin's Q has a mean of 2.248 and a median of 1.529. The correlation between risk-taking and Tobin's Q is 0.407, whereas the correlation between Tobin's Q and MTB is 0.806; consequently, MTB is excluded from the firm-value regression.

Table 2. Descriptive statistics

Variable	N	Mean	SD	P25	Median	P75
UPINV	1,316	0.038	0.114	0.000	0.000	0.016
FC (standardized)	1,316	0.000	1.000	-0.934	-0.482	1.060
RT (3-year volatility)	1,128	1.226	1.253	0.393	0.767	1.584
FV (Tobin's Q)	1,316	2.248	1.978	1.203	1.529	2.408
CF	1,316	0.126	0.130	0.044	0.113	0.200
ROA	1,316	0.144	0.145	0.047	0.119	0.224
MTB	1,316	4.063	5.458	1.504	2.393	4.098
SIZE (ln assets)	1,316	6.248	0.649	5.829	6.176	6.603
ChairCEO	1,316	0.178	0.383	0.000	0.000	0.000

Notes: SD = standard deviation; P25/P75 = 25th/75th percentile. Continuous variables are winsorized at the 1st and 99th percentiles. FC is standardized. RT is the three-year rolling standard deviation of annual stock returns and is available for 1,128 firm-years.

Pairwise correlations do not indicate strong dependence among the regressors in the risk-taking model; the largest correlations are modest, and the VIFs remain close to one. The strong association between Tobin's Q and MTB is treated as a measurement-overlap issue rather than a general multicollinearity problem, and MTB is therefore excluded from the valuation model.

4.2. Main findings

Table 3 reports the fixed-effects estimates. In **Model (1)**, managerial overinvestment has a negative coefficient ($\beta = -0.364$) that is not statistically significant ($p = 0.261$), so the data provide no significant evidence of a systematic association between overinvestment and subsequent stock-return volatility. The financial-constraint measure is positive but insignificant ($\beta = 0.071$, $p = 0.191$), as is the interaction between overinvestment and financial constraints ($\beta = 0.352$, $p = 0.312$). H1–H3 are therefore not supported.

In **Model (2)**, lagged corporate risk-taking is positively and significantly associated with Tobin's Q ($\beta = 0.177$, $p = 0.002$), supporting H4. Managerial overinvestment is negatively associated with firm value ($\beta = -0.904$, $p = 0.022$), indicating that higher excessive investment is followed by lower valuation after controlling for firm and year fixed effects and other covariates. The financial-constraint coefficient is negative but insignificant ($\beta = -0.055$, $p = 0.499$). Among the controls, firm size and ROA are positively associated with Tobin's Q.

Overall, the market-based risk measure is closely connected to firm value, and the negative coefficient on managerial overinvestment in the valuation model is consistent with an agency interpretation in which investment beyond the level supported by firm characteristics reduces shareholder value. The insignificant interaction in the risk-taking model indicates that the data do not establish a conditional effect of financial constraints on the overinvestment–risk relationship.

Table 3. Fixed-effects panel estimates

Variable	: DV = RT	: DV = FV
RT	—	0.1772*** (0.0583)
UPINV	−0.3637 (0.3233)	−0.9043** (0.3942)
FC	0.0708 (0.0541)	−0.0546 (0.0809)
UPINV × FC	0.3524 (0.3488)	—
CF	−0.7881* (0.4569)	0.3103 (0.6760)
ROA	1.1386** (0.5303)	1.7020*** (0.6012)
MTB	0.0747*** (0.0120)	—
SIZE	0.4317*** (0.1561)	0.8518*** (0.1933)
ChairCEO	0.1327 (0.1507)	0.0432 (0.2288)
Constant	0.1160***	—
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Observations	1,128	1,034
Firms	94	94
R ² (within)	0.348	0.156

Notes: Firm-clustered standard errors are in parentheses. *, **, and *** denote significance at $p < 0.10$, $p < 0.05$, and $p < 0.01$, respectively. Both models include firm and year fixed effects. Explanatory variables are lagged one fiscal year. Continuous variables are winsorized at the 1st and 99th percentiles. — = not included.

4.3. Robustness, sensitivity, and additional analyses

R&D intensity (as an alternative dependent variable) and book leverage (as an alternative financial-constraint proxy) can be used to assess the sensitivity of the risk-taking results. These alternatives are treated as secondary because the R&D measure is heavily concentrated at zero and leverage is conceptually broader than financial constraints; the primary conclusions are therefore based on the market-based risk measure and the liquidity-based financial-constraint proxy.

5. Discussion

5.1. Interpretation relative to theory and prior evidence

The findings clarify the investment–risk–value framework. First, the absence of a significant association between managerial overinvestment and stock-return volatility suggests that excessive investment does not automatically translate into higher observable market risk in this sample. This is compatible with the possibility that managers overinvest in projects whose uncertainty is not immediately reflected in annual return dispersion, or that financing and governance mechanisms limit the risk consequences of excessive investment. Second, the positive association between risk-taking and Tobin's Q indicates that higher market-based risk exposure is, on average, associated with higher subsequent valuation after controlling for firm- and year-specific effects. This result is consistent with the view that some corporate risk-taking reflects value-creating growth opportunities rather than purely inefficient risk.

The financial-constraint results should be interpreted cautiously. The liquidity-based measure is not significantly related to risk-taking, and its interaction with overinvestment is also insignificant. This does not imply that financing constraints are economically irrelevant; rather, the available variables do not provide strong evidence that liquidity conditions systematically change the marginal association between excessive investment and market-based risk exposure.

The negative association between managerial overinvestment and firm value is the clearest valuation result. It is consistent with agency-based explanations of excessive investment, under which resources are committed to projects whose expected benefits do not compensate shareholders for their costs and risks (Richardson, 2006). The result

should nevertheless be interpreted as an association, because the fixed-effects and lagged-variable design cannot eliminate all time-varying omitted variables.

5.2. Theoretical and methodological contributions

The study contributes methodologically by aligning the empirical constructs with variables that can be measured consistently for an emerging-market sample. Managerial overinvestment is treated as an investment-behavior construct, risk-taking is measured with a market-based volatility measure that covers substantially more observations than R&D intensity, and firm value is calculated with the conventional debt-plus-equity Tobin's Q, while MTB is excluded from the valuation model to avoid mechanical overlap.

5.3. Managerial, regulatory, investment, and policy implications

For corporate boards and investors, the negative association between excessive investment and firm value highlights the importance of monitoring investment decisions relative to firms' underlying opportunities. For creditors, the absence of a significant direct or interaction effect of the liquidity-based constraint measure suggests that financing discipline may not translate mechanically into observable stock-return risk. More broadly, the positive risk–value association indicates that risk should not be regarded as inherently value-destroying; its economic effect depends on the nature and expected payoff of the underlying corporate decisions.

6. Conclusion

This study examined the relationships among managerial overinvestment, financial constraints, corporate risk-taking, and firm value using a balanced panel of 94 TSE firms over fourteen fiscal years. The results show no significant association between managerial overinvestment and market-based risk-taking and no significant direct or moderating effect of the liquidity-based financial-constraint measure on risk-taking. In contrast, stock-return volatility is positively associated with subsequent firm value, whereas managerial overinvestment is negatively associated with firm value. Taken together, the findings suggest that excessive investment is more clearly reflected in valuation than in observed market risk in this sample.

6.1. Limitations and future research

Several limitations remain. First, the overinvestment measure is based on an existing investment-deviation construction; future studies with complete firm-level information on investment opportunities could reconstruct overinvestment directly from a fully documented Richardson (2006) or investment-expectations model. Second, the liquidity-based financial-constraint measure is a transparent proxy rather than a canonical KZ, WW, or SA index, because several inputs required for those indices are unavailable. Third, stock-return volatility captures market-based risk exposure rather than every dimension of corporate risk-taking. Fourth, the fixed-effects and lagged-variable design reduces, but does not eliminate, endogeneity. Future research with richer financing, governance, executive, and project-level data could test these relationships using stronger identification strategies and alternative measures of financial constraints and risk-taking.

Declarations and Transparency Statements

Author contributions (CRediT)

Conceptualization, J.J. and S.D.; methodology, J.J.; data curation and formal analysis, J.J. and S.D.; writing—original draft, J.J.; writing—review and editing, S.D. All authors approved the final manuscript.

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Conflict of interest

The authors declare no competing interests.

Ethics approval

Not applicable. The study uses publicly available archival financial-statement and market data on listed firms and does not involve human participants or animals.

Informed consent

Not applicable.

Data availability

The archival data were assembled from audited financial statements and Tehran Stock Exchange trading records and are available from the corresponding author upon reasonable request, subject to data-provider restrictions.

Code availability

The estimation code (Python, linearmodels package) is available from the corresponding author upon reasonable request.

Use of generative AI and AI-assisted technologies

An AI-assisted writing and data-analysis tool was used to help construct and estimate the panel regressions reported in Sections 3–4 and to draft portions of the manuscript text under the authors' direction. An AI-assisted tool was also used for language editing, formatting to the journal template, and checking the bibliographic details of the references. The authors reviewed and verified all content and take full responsibility for the accuracy, originality, and interpretation of all reported results.

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