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A Decision-Support Framework for Corporate Investment Efficiency: The Role of Social Credit Environment and Managerial Overconfidence

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ABSTRACT

This research utilizes the implementation of social credit system pilot cities as a quasi-natural experimental framework. The study examines Chinese A-share listed firms spanning 2012 to 2022. Employing a multi-period Difference-in-Differences methodology, it explores the influence of the social credit environment on managerial overconfidence and corporate investment efficiency. Findings indicate that a robust social credit framework enhances capital allocation efficiency by curbing excessive investment and mitigating funding shortages that result in underinvestment. The social credit context influences investment efficiency via external financing constraints, agency issues, and market imperfections. While managerial overconfidence can lead to both over- and under-investment, its effect on underinvestment is comparatively limited. By reinforcing corporate governance and providing both pre-event restrictions and post-event compensations, the social credit environment positively moderates the relationship between managerial overconfidence and investment efficiency. Overall, the results suggest that the ongoing development of the social credit system has yielded beneficial effects and offers significant practical guidance for reducing inefficient corporate investment behaviors.

1. Introduction

The 20th National Congress of the Communist Party of China emphasized the necessity of refining the macroeconomic governance framework and highlighted the central role of investment in optimizing supply structures. According to the 2023 Government Work Report, over the past five years, China has actively strengthened its growth potential, continuously innovating investment and financing systems. During this period, social investment, steered and amplified by public budgetary allocations, has expanded substantially. Data from the National Bureau of Statistics indicate that in 2022, gross capital formation contributed 50.1% to economic growth, supporting a 1.5-percentage-point increase in GDP. Effectively harnessing investment to stabilize growth and advance development is therefore vital for improving economic quality while maintaining sustainable

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expansion. Yet, high investment levels do not inherently guarantee efficiency. At present, China's economic recovery faces critical challenges, and certain structural contradictions remain. Enterprises frequently exhibit low investment efficiency, which misaligns with the objectives of high-quality development. Enhancing corporate investment efficiency constitutes a fundamental micro-level prerequisite for advancing supply-side structural reforms and achieving sustainable economic development [29]. Consequently, improving enterprise investment efficiency has consistently remained a central concern for policymakers and scholars alike.

Investment efficiency is shaped by multiple factors across different levels. Macroeconomic conditions, industry policies, and firm-specific characteristics significantly influence investment outcomes [28]. Within these determinants, social credit—a key informal institutional mechanism—is pivotal in shaping corporate investment efficiency. Barriers to external financing present a major constraint, as insufficient access to funds can provoke under-investment [14; 38]. Simultaneously, information asymmetry between firms and external stakeholders can give rise to moral hazard and adverse selection, potentially leading to resource misallocation and over-investment [33; 41]. High market friction costs further reduce operational and investment efficiency [8]. Establishing a robust social credit environment mitigates information asymmetry, eases financing constraints, addresses agency conflicts, and diminishes institutional market frictions, collectively creating conditions conducive to enhanced investment efficiency.

The pilot reform of the social credit system offers a unique empirical opportunity to explore the nuanced relationship between social credit conditions and firm-level investment efficiency. The Chinese government has prioritized the development of this system. In August 2015 and April 2016, the National Development and Reform Commission designated the first and second cohorts of pilot cities, encompassing 43 urban areas nationwide. Throughout the pilot process, a comprehensive credit oversight framework was implemented, combining rewards for compliance with penalties for violations. This framework fosters a culture of integrity and enforces accountability, thereby restraining opportunistic managerial behavior. While the pilot reform has reinforced governance at the micro-enterprise level, its effectiveness in addressing inefficient corporate investment remains under examination. In this context, the present study investigates the impact of China's social credit system pilot reform on enterprise investment efficiency, offering fresh insights into this pressing issue.

This research contributes to the literature in several ways. First, while prior studies on social credit system development have largely concentrated on fostering technological innovation or enhancing corporate social responsibility, the policy implications of pilot reforms for investment efficiency remain underexplored. By analyzing the reform through the lens of corporate investment efficiency, this study broadens the understanding of the economic effects of social credit initiatives, filling a significant gap in existing research. Second, previous investigations into investment efficiency have primarily emphasized corporate governance and formal regulatory oversight. By adopting an informal institutional perspective, this study examines the influence of social credit reforms on investment outcomes, thereby extending research on factors affecting enterprise investment efficiency and providing novel approaches to improving performance. Third, this study examines the mechanisms through which social credit reforms affect investment efficiency, focusing on four key dimensions: alleviating external financing constraints, reducing principal-agent conflicts, lowering market friction costs, and curbing managerial overconfidence. This comprehensive analysis elucidates the underlying causal pathways linking the pilot initiative to investment efficiency and offers practical guidance for policymakers and practitioners seeking to optimize corporate investment within a mature social credit environment.

2. Theoretical Analysis and Research Hypotheses

2.1 Social Credit Environment and Enterprise Investment Efficiency

Under the assumption of a perfectly competitive market, corporate investment decisions are assumed to be unaffected by external financing constraints and depend solely on the available investment opportunities [41]. In practice, however, actual investment levels frequently diverge from the optimal level, directly contributing to low investment efficiency. Scholars have identified three principal explanations for such inefficiencies: the financing constraint hypothesis, the agency problem hypothesis, and the transaction-cost hypothesis. The financing constraint hypothesis argues that barriers to external financing restrict the availability of funds, limiting the capacity of enterprises to pursue all viable investment opportunities. Consequently, actual investment falls below the optimal level, resulting in under-investment and reduced efficiency [14; 51]. Empirical evidence shows that many firms are unable to expand investment in projects due to restricted financing channels and high capital costs, keeping actual investment below the optimal threshold [47].

The agency problem hypothesis suggests that management may exploit information asymmetry to pursue self-interested objectives, such as overextending investment or misappropriating corporate funds, which leads to over-investment [21]. This behavior prevents firms from achieving optimal investment decisions [41]. Enhancing corporate governance Zhang [49] and mitigating information asymmetry Biddle et al. [3] are therefore critical in curbing excessive investment. The transaction-cost hypothesis posits that elevated market friction costs deplete resources during the investment process. High transaction costs can substantially reduce or even negate the expected returns on projects, thereby discouraging investment. As a result, market friction costs hinder efficient capital allocation, suppress investment enthusiasm, and undermine overall investment efficiency [46; 49]. Synthesizing these perspectives, the primary drivers of inefficient corporate investment can be summarized as follows: external financing barriers cause under-investment; misallocation of corporate funds drives over-investment; and excessive market friction costs disrupt optimal resource allocation, leading to investment inefficiencies.

By examining social credit system pilot initiatives, this study argues that an enhanced social credit environment addresses these challenges through three key mechanisms. First, it generates a financing-expansion effect: by improving creditworthiness assessment, financial institutions are more willing to extend credit to enterprises, mitigating under-investment. Second, the strengthened social credit framework enforces incentives for compliance and penalties for misconduct, effectively constraining over-investment arising from fund misallocation. Third, optimizing the social credit system reduces information asymmetry and institutional frictions, lowering market transaction costs and creating an investment-incentive effect that channels capital more efficiently towards high-return projects. Collectively, these mechanisms substantially improve enterprise investment efficiency. Building upon this rationale, the conceptual hypotheses of the current research are formulated as follows:

H1: The enhancement of the social credit environment serves as a catalyst for improving enterprises' investment efficiency.

2.1.1 Social Credit Environment, External Financing Barriers and Enterprise Investment Efficiency

External financing constraints are a major factor limiting enterprises' investment efficiency. The Modigliani-Miller (MM) theory assumes no information asymmetry in capital markets and posits that the cost of capital for internal and external financing is identical, so firms face no external financing barriers. Under this ideal, managers maximize enterprise value and achieve optimal capital allocation automatically. In practice, however, Chinese enterprises often cannot meet their investment

requirements solely through internal funds, resulting in heavy reliance on external financing. Nevertheless, most enterprises fail to satisfy the requirements for equity or debt financing. In China's bank-dominated financial system, commercial credit has historically been the main funding channel, representing the primary source of corporate finance. Information asymmetry between banks and enterprises imposes high costs on obtaining loans [33], leading to significant external financing barriers [39]. Under such conditions, firms reduce relatively risky investments, prolong investment cycles, and demand higher returns, all of which lower investment efficiency [19; 50].

Improving the social credit environment helps narrow the information gap between lending institutions and borrowers, thereby alleviating external financing constraints and preventing under-investment. First, a stronger social credit environment enhances the information-gathering capacity of financial institutions. As information flows become more transparent, banks can evaluate investment projects more promptly and accurately [36] making them more willing to extend credit to firms with better operational performance and easing access to financing. Second, a better social credit environment increases the quality of corporate information disclosure. Studies have shown that promoting the social credit environment improves the standard of financial reporting [15]. Firms with higher social credit are more likely to fulfil commitments and less likely to engage in dishonest practices such as window-dressing, reducing information asymmetry and facilitating financing [35]. Based on this rationale, the following hypothesis is proposed:

H2: By lessening external financing impediments, the upgrading of the social credit environment bolsters enterprise investment efficiency.

2.1.2 Social Credit Environment, Principal-Agent Conflicts and Firm Investment Efficiency

Enterprise investment efficiency is strongly affected by principal-agent problems. Efficient allocation requires directing capital toward projects that maximize corporate value, such as investing in technological assets to enhance productivity [1]. However, investment behavior is frequently distorted by two types of principal-agent issues. The first arises between enterprise owners and managers. According to the "free cash flow hypothesis," separation of ownership and management can create goal divergence: owners focus on long-term value maximization, whereas managers may priorities short-term performance and personal benefits [21]. This misalignment impedes rational capital allocation to value-enhancing projects, thereby lowering investment efficiency. The second type of principal-agent problem occurs between majority and minority shareholders. In China, high equity concentration has led to instances where controlling shareholders encroach on the interests of non-controlling investors [23]. Specifically, majority shareholders often allocate funds to fixed or specialized assets, enabling them to divert resources through internal transactions and asset transfers. This behavior reduces investment in technological assets and constrains improvements in corporate investment efficiency [12].

A well-developed social credit environment can mitigate principal-agent conflicts and enhance investment efficiency [6]. Two key mechanisms underpin this effect. First, in a favorable social credit context, the incidence of opportunistic behavior among economic actors declines [42], while the cost for managers to pursue self-interest rises. Consequently, managerial decisions increasingly align with the overall interests of the enterprise, supporting more efficient investment outcomes. Second, an improved social credit environment strengthens executive self-discipline within firms. In a culture emphasizing integrity, managers experience greater moral and psychological constraints when attempting to act opportunistically, reducing moral hazard and fostering adherence to the principal-agent relationship. Collectively, these mechanisms alleviate internal agency conflicts, promoting more effective investment decision-making. Based on this reasoning, the following hypothesis is proposed:

H3: An improved social credit environment elevates corporate investment efficiency by mitigating principal-agent dilemmas.

2.1.3 Social Credit Environment, Market Friction Costs and Firm Investment Efficiency

Market friction costs play a critical role in corporate operations, often contributing to suboptimal investment. These costs encompass expenses associated with the price mechanism that governs resource allocation, including search, information, decision-making, execution, and monitoring costs [44]. When such costs are high, enterprises tend to rely on internal networks to allocate resources, avoiding expensive external transactions. This reliance limits the ability of firms to specialize in investment processes, as effective specialization depends on efficient market-based transactions. Consequently, elevated market friction costs impede specialization, reducing investment efficiency. Conversely, lowering these costs enables firms to achieve higher degrees of specialization, thereby enhancing investment efficiency.

In environments characterized by low social trust, transactional behaviors are uncertain, and incidences of fraud or default are common. Firms must invest heavily in gathering reliable information on potential partners and opportunities and engage in prolonged negotiations regarding future scenarios. After contract execution, enterprises must devote additional human and material resources to supervise performance, including data collection, analysis, and coordination, which further increases transaction costs. As the social credit environment improves, these costs decline. Transparent and accessible credit information allows firms to identify trustworthy partners efficiently, reducing information-gathering and negotiation costs. Trust further encourages contractual compliance, lowering the need for extensive supervision and dispute resolution [17]. Overall, optimizing the social credit environment decreases enterprise market friction costs, thereby facilitating higher investment efficiency. This reduction occurs through two primary mechanisms. First, ex-ante costs of information collection and negotiation are lowered, as trust reduces uncertainty in transactional behavior and limits the need for extensive verification. Second, ex-post-performance efficiency improves, as parties are more likely to honor commitments under a reliable social credit framework, lowering supervision and execution costs [17]. Together, these effects reduce market friction costs and enhance corporate investment efficiency. Based on this analysis, the following hypothesis is proposed:

H4: The enhancement of the social credit environment promotes the investment efficiency of enterprises through the reduction of market friction costs.

2.2 Managerial Overconfidence and Firm Investment Efficiency

Managerial overconfidence is a key factor contributing to inefficient enterprise investment. Analyzing corporate behavior and performance through managers' psychological traits, such as overconfidence, provides valuable insights into bounded rationality and deviations from optimal decision-making. Cognitive psychology attributes managerial overconfidence to cognitive biases, which arise when individuals overestimate their abilities relative to peers and attribute successes to personal skill while blaming failures on external factors [27]. This bias is prevalent among corporate managers, who generally exhibit higher levels of overconfidence than the broader population [9; 26].

Such cognitive tendencies have significant implications for investment decisions. Among enterprises operating within the same country, industry, and size, managerial overconfidence can lead to markedly different investment choices and management strategies [16]. Overconfident managers frequently overestimate their capabilities, ability to identify opportunities, and level of knowledge. Prior to making investment decisions, they tend to overrate potential returns and underestimate associated risks, resulting in suboptimal choices. Research indicates that excessive

managerial optimism often causes over-reliance on perceived control over corporate performance, leading to overinvestment and reduced investment efficiency [2]. Additionally, these managers may overestimate their capacity to secure necessary resources; when actual resources are insufficient, underinvestment may occur. Overall, overconfident managers are inclined to adopt aggressive financing and investment strategies, assuming they can drive rapid enterprise growth. In doing so, they often overlook risks and objective limitations, producing inefficient investments and, in some cases, exposing the enterprise to financial distress [50]. Based on these observations, the following hypothesis is proposed:

H5: Managerial overconfidence contributes to inefficiencies in corporate investment by distorting decision-making.

2.3 Social Credit Environment, Managerial Overconfidence and Firm Investment Efficiency

As a key informal institution, social credit compensates for shortcomings in formal governance mechanisms. It enhances corporate governance, helps managers mitigate cognitive biases, and provides resource support for investment decisions, thereby reducing the negative impact of managerial overconfidence.

2.3.1 Governance Mechanism

The social credit environment mitigates inefficient investment stemming from managerial overconfidence by enhancing corporate governance. Excessive managerial power is a fundamental driver of overconfidence, yet a robust governance framework can moderate its negative effects on investment efficiency. An improved social credit environment reduces information asymmetry, enabling shareholders and other stakeholders to supervise and manage the firm more effectively, thereby reinforcing oversight and governance [22]. Under strengthened supervision, managerial overconfidence diminishes, opportunistic behaviors are constrained, and adverse impacts on investment are curtailed [7; 32]. Lower information asymmetry allows stakeholders to better assess the company's operational status and managerial decision-making. For instance, enhanced transparency in financial and operational reporting enables prompt detection of overconfident managerial actions. Simultaneously, heightened oversight encourages managers to act with greater caution, knowing that multiple parties are monitoring their decisions and that mistakes carry significant consequences. This supervisory pressure fosters more rational evaluation of investment projects, preventing decisions driven by overconfidence and thereby effectively curbing inefficient investment behaviors.

2.3.2 *Ex-Ante Restraint*

The social credit environment helps prevent inefficient investment resulting from managerial overconfidence. This effect primarily operates by reducing market information asymmetry and assisting managers in correcting cognitive biases. Information asymmetry is a key driver of managerial overconfidence, as limited access to accurate data can lead managers to overestimate their abilities and the potential returns of investment projects. For example, when industry prospects are unclear, managers may make uninformed investment decisions due to insufficient information. The social credit environment alleviates information asymmetry in multiple ways. First, it encourages enterprises to prioritize reputation and actively disclose accurate and reliable information. Firms aiming to maintain a good credit rating routinely publish financial and operational data, fulfilling social responsibilities and providing managers with trustworthy market information, thereby reducing cognitive biases [10]. Second, professional entities within the social credit system, such as credit rating agencies and third-party evaluators, conduct objective assessments of enterprises and

industries. The resulting evaluation reports offer managers comprehensive insights into market conditions and trends, helping correct cognitive biases and enabling more informed investment decisions. Collectively, these mechanisms prevent inefficient investments caused by managerial overconfidence.

2.3.3 Ex-Post Compensation

The social credit environment can mitigate inefficient investment caused by managerial overconfidence by providing managers with improved access to resources for their investment decisions. Overconfident managers tend to overestimate their ability to secure resources and, after making decisions, may encounter resource shortfalls, resulting in underinvestment. In traditional financial markets, institutions typically evaluate enterprise creditworthiness and repayment capacity when allocating loans. However, overconfident managers may provide inaccurate or exaggerated information due to overestimating their capabilities and project prospects, complicating accurate risk assessment by financial institutions.

Figure 1 illustrates the mechanism through which the social credit environment affects corporate investment efficiency.

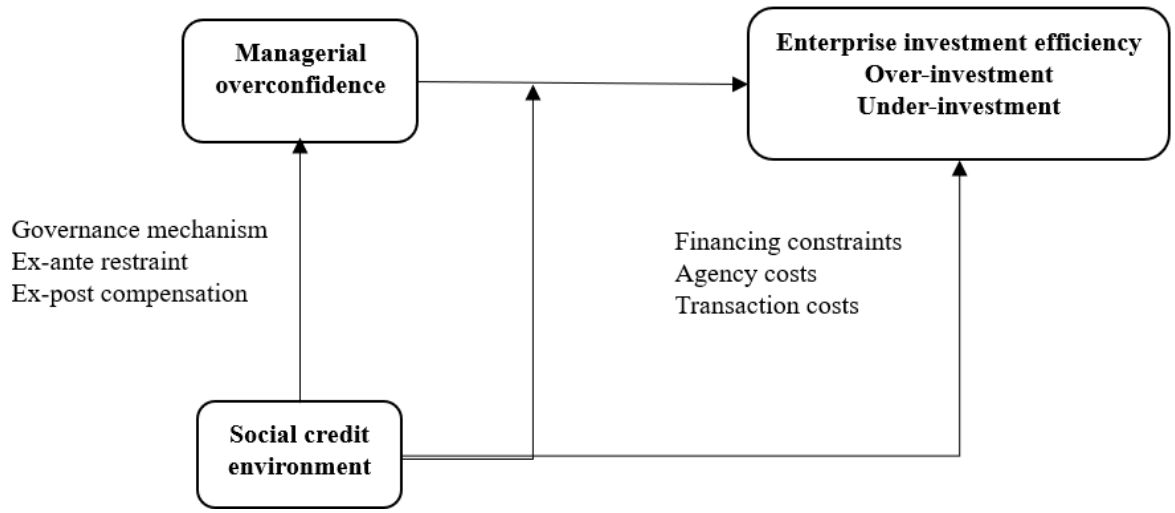

Fig.1: The Mechanism by Which the Social Credit Environment Influences Corporate Investment Efficiency

Enhancing the social credit environment addresses this issue in multiple ways. First, it enables financial institutions to access more comprehensive and accurate credit information. For instance, through credit information-sharing platforms, institutions can review firms' credit histories, tax compliance, contract performance, and other relevant data from prior business activities, allowing for a more precise assessment of credit risk [48]. Second, as the social credit environment improves, financial institutions are more willing to extend credit, as default risks are reduced. Consequently, managers gain more reliable and timely access to financing, ensuring sufficient resources to execute investment projects. This mechanism allows firms to avoid underinvestment caused by resource constraints, even when managerial overconfidence is present, and supports the uninterrupted implementation of investment initiatives. Based on this reasoning, the following hypotheses are proposed:

H6: The social credit environment exerts a moderating influence on the relationship between managerial over-confidence and corporate investment efficiency. An enhanced social credit environment lessens the negative influence of managerial overconfidence on corporate investment efficiency.

3. Research Design

3.1 Variable Setting

Social Credit Environment (Treat Post): The implementation of pilot city policies for the construction of the social credit system provides a reasonable causal identification scenario for social credit research [20]. This study follows the methodology in Cao et al. [6] and treats the establishment of pilot cities as a quasi-natural experiment to examine the microeconomic effects of the social credit environment. For the variable Treat, representing whether the enterprise is in a social credit demonstration city, a value of 1 is assigned if it is a pilot city, and 0 otherwise. For the variable Post, indicating the timing of implementation, a value of 1 is assigned in the year the city becomes a demonstration city or any subsequent year, and 0 otherwise. An interaction term (Treat Post) is created as the product of Treat and Post.

Managerial Overconfidence (Overconfidence): Various methods exist for measuring managerial overconfidence:

1. Managerial Compensation Method: Higher managerial compensation reflects the importance of the position and indicates a higher likelihood of overconfidence [18].
2. Stock Option Method: Overconfidence is assessed by whether managers increase their holdings of stocks or stock options during the exercise period [32].
3. Earnings Forecast Method: Managers whose annual earnings forecasts exceed actual earnings are considered overconfident [30]. Following Jiang et al. [24], forecasts are classified into pre-loss, pre-profit, pre-increase, loss-reduction, and pre-decrease categories. If a firm's forecasted earnings exceed actual earnings at least once during the sample period, the managers are regarded as overconfident.
4. Content Analysis Method: Media reports are used to determine whether managers are overconfident by analyzing how management is described during the sample period [4].
5. Number of Mergers and Acquisitions Method: Managers initiating five or more mergers or acquisitions within three years are identified as overconfident [11].

This study adopts the earnings forecast deviation approach Jiang et al. [24] to measure managerial overconfidence.

Firm Investment Efficiency (Inv_eff): Corporate investment efficiency is typically measured using the Richardson model [40]. In this approach, a firm's actual investment level is regressed on factors influencing investment. The residual from this regression represents abnormal investment, which reflects corporate investment efficiency. A positive residual indicates over-investment, whereas a negative residual indicates under-investment. The model is expressed in formula (1) as follows:

$$Inv_{i,t} = \beta_0 + \beta_1 TobinQ_{i,t-1} + \beta_2 Lev_{i,t-1} + \beta_3 Cash_{i,t-1} + \beta_4 Age_{i,t-1} + \beta_5 Size_{i,t-1} + \beta_6 \mathrm{Re}ts_{i,t-1} + \beta_7 Inv_{i,t-1} + \sum Year + \sum Industry + \varepsilon_{i,t} \quad (1)$$

Among them, $inv_{i,t}$ stands for the new investment expenditure of the enterprise in year t. $TobinQ_{i,t-1}$ is the Tobin's Q value, $Lev_{i,t-1}$ represents the enterprise's debt-to-asset ratio, $Cash_{i,t-1}$ is the ratio of the enterprise's year-end cash to its total assets, $Age_{i,t-1}$ is the number of years elapsed since the enterprise went public, counted as of the end of the year, $Size_{i,t-1}$ is the natural logarithm of the enterprise's total assets, $Rets_{i,t-1}$ is the stock return rate. Notice that $Inv_{i,t-1}$ also represents the enterprise's new investment expenditure in year t. ΣYear is an annual dummy variable, if the enterprise belongs to this particular year, ΣYear takes the value of 1. Otherwise, it is 0. ΣIndustry is an industry dummy variable, if the enterprise is in this industry, ΣIndustry equals 1, if not, it is 0. The regression residual $\varepsilon_{i,t}$ is what we define as the enterprise's investment efficiency (Inv_eff). When $\varepsilon_{i,t}>0$, it means the enterprise is over-investing (Over_inv). When $\varepsilon_{i,t}<0$, it indicates under-investment

(Under_inv).

3.1.1 Mediating Variables

External Financing Barriers (SA): Following the methodology of Xu et al. [45], financing constraints are measured using the SA index. A higher SA index indicates more severe financing constraints.

Principal-Agent Conflicts (AC): Based on the approach of Qiu et al. [37], enterprise agency costs are measured through the excessive on-the-job consumption of senior executives. Higher index values correspond to greater agency-related inefficiencies within the firm.

Market Friction Costs (TC): Adopting the method of Pang et al. [34], the measurement begins with the proportion of management expenses, selling expenses, and financial expenses relative to main business income. A comprehensive index of market friction costs is then constructed using principal component analysis to capture the enterprise's transaction costs.

Control Variables: To account for other factors influencing enterprise investment efficiency, and following the designs of [31; 43], several control variables are included. These comprise enterprise size (Size), shareholding ratio of the largest shareholder (Fir), cash-flow level (Cash), return on total assets (ROA), debt-to-asset ratio (Lev), and enterprise growth (Growth). Detailed definitions of these variables are provided in Table 1.

Table 1
Variable Explanation and Statistical Description

Meaning of Variables	Definition	Observation	Mean	Standard Deviation
Enterprise Investment Efficiency	In Model (1), the absolute value of the residual. As this value increases, the investment efficiency decreases.	19921	0.0703	0.0796
Over-Investment	The positive residual in Model (1). The larger this value is, the more severe the over-investment.	9005	0.0813	0.0971
Under-Investment	The absolute value of the negative residual in Model (1). The larger this value is, the more severe the under-investment.	10916	0.0617	0.0645
Social Credit Environment	Dummy variable for pilot cities in the construction of the social credit system.	19921	0.3577	0.4793
Managerial Over-Confidence	Drawing on Jiang et al. [53], it is measured by the managers' earnings forecast deviation.	19921	0.5018	0.5000
External Financing Barriers	Referring to Xu et al. [45], it is measured by the SA index.	19921	-3.8240	0.2668
Principal-Agent Conflicts	Referring to Qiu et al. [37], it is measured by the excessive on-the-job consumption of senior executives.	19921	0.0416	0.0290
Market Friction Costs	Drawing on Pang et al. [34], it is constructed using the principal component analysis method.	19921	0.0685	0.0864
Enterprise Size	Take the logarithm of the enterprise's total assets.	19921	22.4963	1.3112
Shareholding Ratio of the Largest Shareholder	Shareholding ratio of the largest shareholder.	19921	34.1737	14.8522
Cash-Flow Level	Net cash flow from operating activities divided by total assets.	19921	0.0472	0.0662
Return on Total Assets (ROA)	Net profit divided by average total assets.	19921	0.0319	0.0610
Debt-to-Asset Ratio	Total liabilities divided by total assets.	19921	0.4586	0.1966
Enterprise Growth	Year-on-year growth rate of the enterprise's total operating revenue.	19921	0.3802	0.9859

3.2 Benchmark Regression Model

The construction of the social credit system is used as a quasi-natural experiment to assess the state of the social credit environment. Following the methodology of [51], a multi-period DID model

is developed to examine the impact of the social credit environment on enterprises' investment efficiency. The model is specified as follows:

$$Inv\_eff_{i,t} / Over\_inv_{i,t} / Under\_inv_{i,t} = \alpha_0 + \alpha_1 Treat\_Post_{i,t} + \Sigma_j \alpha_j control_{i,t} + \nu_m + \mu_i + u_t + \varepsilon_{i,t} \quad (2)$$

Among these, the dependent variable $Treat\_Post_{i,t}$ stands for the social credit environment. Variables $Inv\_eff_{i,t}$ 、 $Over\_inv_{i,t}$ and $Under\_inv_{i,t}$ represent the investment efficiency of enterprises, enterprise over-investment, and enterprise under-investment respectively. Variable $control_{i,t}$ represents the control variables. ν_m μ_i and u_t represent the industry fixed effect, individual fixed effect, and time fixed effect respectively. Variable $\varepsilon_{i,t}$ represents the residual term. a_1 denotes the estimated slope coefficient reflecting the relationship between the social credit environment and enterprise investment efficiency. If $a_1<0$, it means that the refinement of the social credit environment facilitates greater capital allocation efficiency for businesses.

To examine the impact of managerial overconfidence on enterprise investment efficiency, the following equation is specified:

$$Inv\_eff_{i,t} / Over\_inv_{i,t} / Under\_inv_{i,t} = b_0 + b_1 Overconfidence_{i,t} + \Sigma_j b_j control_{i,t} + \nu_m + \mu_i + u_t + \varepsilon_{i,t} \quad (3)$$

Among them, the dependent variable $Overconfidence_{i,t}$ represents management over-confidence, b1 serves as the estimated coefficient. This parameter measures the extent to which managerial overconfidence affects enterprise investment outcomes. A positive value of b1 indicates that managerial overconfidence reduces investment efficiency. The definitions and interpretations of the remaining variables are consistent with those provided above.

3.3 Mechanism Analysis Model

Theoretical analysis suggests that external financing barriers, principal-agent conflicts, and market friction costs may serve as mediating channels through which the social credit environment influences enterprise investment efficiency. Accordingly, following the mediating-mechanism testing approach of Zhu and Tang [52], the following equations are established to examine the significance of these mechanisms.

$$MED_{i,t}(SA_{i,t}, AC_{i,t}, TC_{i,t}) = c_0 + c_1 Treat\_Post_{i,t} + \Sigma_j c_j control_{i,t} + \nu_m + \mu_i + u_t + \varepsilon_{i,t} \quad (4)$$

Among them, $MED_{i,t}$ ($SA_{i,t}$,$AC_{i,t}$,$TC_{i,t}$) represents the mediating variable, $SA_{i,t}$ stands for the financing constraint, $AC_{i,t}$ is the agency cost, $TC_{i,t}$ is the transaction cost, c_1 is the coefficient that measures how the social credit environment impacts the mediating variable.

As indicated by the preceding theoretical analysis, the social credit environment functions as a moderator in the relationship between managerial overconfidence and enterprise investment efficiency. Following the modelling approach of Jiang [25], the moderating effect is tested by incorporating two additional terms into Model (3): the social credit environment variable and the interaction term between the social credit environment and managerial overconfidence. The significance of the interaction term's coefficient is then assessed to determine how the social credit environment moderates the effect of managerial overconfidence on enterprise investment efficiency. The model is specified as follows:

$$\begin{aligned} Inv\_eff_{i,t} &= e_0 + e_1 Overconfidence_{i,t} + e_2 Treat\_Post_{i,t} \\ &+ e_3 Overconfidence_{i,t} \times Treat\_Post_{i,t} + \Sigma_j e_j control_{i,t} + \nu_m + \mu_i + u_t + \varepsilon_{i,t} \end{aligned} \quad (5)$$

Among them, $Overconfidence_{i,t}$ × $Treat\_Post_{i,t}$ is the interaction term between management over-confidence and the social credit environment. e_3 represents its regression coefficient. Two scenarios can arise: if $e_3 < 0$, an improvement in the social credit environment weakens the negative impact of managerial overconfidence on enterprise investment efficiency. Conversely, if $e_3 > 0$, enhancements in the social credit environment amplify the adverse effect of managerial overconfidence on corporate investment efficiency.

3.4 Data Sources and Sample Selection

The first batch of pilot cities for the social credit system was designated in 2015. Considering data availability and transparency, the research sample spans from 2012, three years prior to the pilot selection, to 2022. This yields a total of 19,921 corporate-year observations. The list of pilot cities is obtained from the National Development and Reform Commission, while the basic financial data of listed companies are sourced from the Wind database and their financial statements. Sample processing is conducted as follows. First, financial listed companies and ST/*ST companies are excluded. Second, observations with missing values for key variables are removed, retaining only enterprises continuously listed for at least three years. Finally, top and bottom 1% winsorization is applied to all continuous variables. Variable calculations, measurement of enterprise investment efficiency, and estimation and testing of model parameters are conducted using Stata 17.0.

4. Empirical Analysis

4.1 Benchmark Regression Analysis

This paper employs Model (2) to examine how the social credit environment influences corporate investment efficiency, over-investment, and under-investment. The corresponding regression outcomes are reported in Table 2. The estimated coefficient for the social credit environment in relation to overall investment efficiency is -0.0087 and is significant at the 1% level, indicating that improvements in the social credit environment meaningfully enhance the investment efficiency of firms. In addition, the estimated coefficients for its effects on over-investment and under-investment are likewise significantly negative. This reveals that a stronger social credit environment alleviates both forms of inefficient investment. The magnitude of the coefficient for over-investment (0.0176 in absolute value) exceeds that for under-investment (0.0070 in absolute value), suggesting that the social credit environment plays a stronger role in restraining excessive investment than in reducing insufficient investment. In sum, strengthening the social credit environment curbs over-investment, diminishes under-investment, and promotes higher corporate investment efficiency. Consequently, Hypothesis 1 (H1) is supported.

Table 2
Regression Results of Model (2)

Variable	Inv_eff (Enterprise Investment Efficiency)	Over_inv (Over-Investment)	Under_inv (Under-Investment)
Treat_Post	-0.0087*** (-4.81)	-0.0176*** (-4.85)	-0.0070*** (-3.3)
Size	0.0131*** (9.68)	0.0204*** (7.39)	0.0093*** (5.84)
Fir	0.0008*** (7.72)	0.0011*** (5.41)	0.0006*** (5.47)
Cash	-0.0422*** (-3.99)	-0.1118*** (-4.88)	-0.0169 (-1.45)
ROA	0.0939*** (7.51)	0.2143*** (7.27)	0.0546 (4.03)
Lev	0.0157** (2.43)	0.0557*** (4.16)	-0.0143* (-1.88)
Growth	0.0110*** (15.48)	0.0211*** (15.43)	0.0019** (2.16)
_cons	-0.2131*** (-5.50)	-0.3109*** (-3.69)	-0.1066** (-2.41)
Industry FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	19921	9005	10916
adj. R-sq	0.0389	0.0882	0.0414

Note: The values in parentheses are the regression t-values of the coefficients. ***, **, and * denote significance at the 1%, 5%, and 10% levels respectively. The same notation applies hereinafter.

Model (3) is employed to assess how managerial overconfidence influences corporate investment efficiency, with the corresponding results summarised in Table 3. The estimated coefficients for managerial overconfidence in relation to investment efficiency, over-investment, and under-investment are 0.0213, 0.0436, and 0.0029 respectively, each reaching statistical significance. These results indicate that managerial overconfidence gives rise to both excessive and insufficient

investment, thereby diminishing overall investment efficiency, aligning with the theoretical expectations.

Table 3
Regression Results of Model (3)

Variable	Inv_eff (Enterprise Investment Efficiency)	Over_inv (Over-Investment)	Under_inv (Under-Investment)
Overconfidence	0.0213*** (17.1)	0.0436*** (18.33)	0.0029* (1.89)
Size	0.0095*** (7.85)	0.0122*** (4.96)	0.0069*** (4.84)
Fir	0.0008*** (7.86)	0.0010*** (5.45)	0.0007*** (5.91)
Cash	-0.0210** (-1.99)	-0.0550** (-2.44)	-0.0154 (-1.31)
ROA	0.0363*** (2.82)	0.0786*** (2.64)	0.0520*** (3.69)
Lev	0.0022 (0.35)	0.0295** (2.24)	-0.0155** (-2.01)
Growth	0.0103*** (14.51)	0.0195*** (14.62)	0.0019** (2.12)
_cons	-0.1457*** (-3.98)	-0.1469* (-1.85)	-0.0607 (-1.44)
Industry FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	19921	9005	10916
adj. R-sq	0.0543	0.1312	0.0405

Moreover, the substantially larger coefficient associated with over-investment (0.0436) compared with that for under-investment (0.0029) demonstrates that the over-investment behavior prompted by managerial overconfidence is considerably more evident. Taken together, managerial overconfidence reduces firms' investment efficiency, and Hypothesis 5 (H5) is confirmed.

4.2 Robustness Tests

4.2.1 Parallel Trends Test

The application of the DID framework requires that the treatment and control groups exhibit comparable trends prior to the introduction of the policy, meaning the parallel trend condition must be satisfied. Following the procedure in Dyreng et al. [13], three pre-policy treatment-effect dummy variables—Pre3, Pre2, and Pre1—are introduced. In addition, one dummy representing the policy-implementation year, Current, and three post-policy treatment-effect indicators—Post1, Post2, and Post3—are included. These variables replace the original interaction term, Treat_Post, within the regression specification. To fulfil the parallel trend requirement, the coefficients associated with Pre3, Pre2, and Pre1 should not be statistically significant. The results, shown in Figure 2, confirm this condition. Before 2015, the coefficients for Pre3, Pre2, and Pre1 were statistically insignificant, demonstrating that the treatment and control groups shared similar temporal patterns. In contrast, the coefficients for Current, Post1, Post2, and Post3 from 2015 onward were significantly negative, indicating that a divergence between the two groups emerged only after the policy was introduced. This outcome verifies that the parallel trend assumption holds.

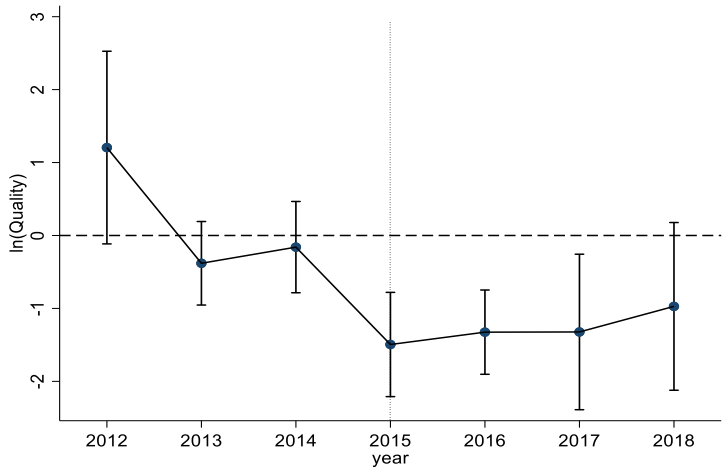

Fig.2: Graph of Parallel Trend Test

4.2.2 Placebo Test

This study employs a placebo test to verify that the documented improvement in corporate investment efficiency is genuinely driven by the introduction of the social credit system rather than by unobserved confounders or random fluctuations. Drawing on the testing approach in Cantoni et al. [5], 43 cities are randomly designated as the experimental group, with all remaining cities treated as the control group. Model (2) is then re-estimated under this random assignment, effectively treating the policy exposure as arbitrary. To reinforce the credibility of the placebo design, this randomization process is repeated 500 times. For each iteration, the estimated coefficients and corresponding t-statistics are recorded, and their empirical distributions are plotted to determine whether corporate investment efficiency responds to factors unrelated to the development of the social credit system.

Figure 3 reports the outcomes of this exercise. Across the 500 random replications, the estimated coefficients and t-statistics associated with the social credit environment variable Treat_Post are approximately normally distributed and centered around zero. This pattern demonstrates that, in the absence of the actual policy intervention, no systematic effect emerges. Accordingly, the placebo test is satisfied. The rise in investment efficiency identified in the main analysis is therefore attributable to the implementation of the social credit system pilot program in designated cities rather than to random shocks or omitted influences. These findings confirm that the empirical strategy effectively mitigates concerns regarding unobserved heterogeneity, thereby reinforcing the reliability and interpretative strength of the study's principal conclusions.

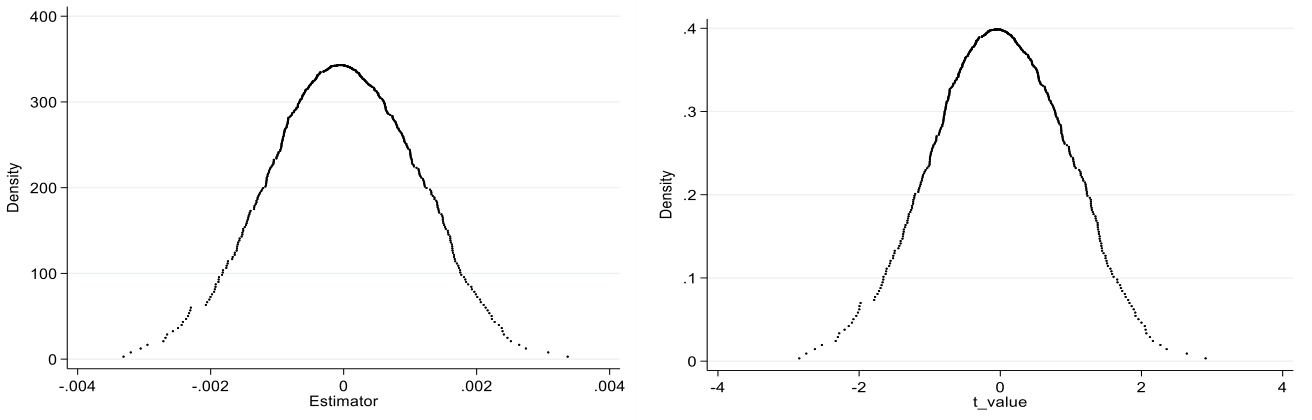

Fig.3: Graph of Placebo Test

4.2.3 Test Based on PSM-DID Method

The designation of pilot cities for the development of the social credit system is unlikely to be purely random, as it may be shaped by pre-existing differences in regional economic conditions and geographical characteristics. Such non-random assignment introduces a sample selection bias, giving rise to endogeneity concerns that may compromise the credibility of the baseline regression results.

Table 4
Results of Robustness Tests

Variable	Inv_eff (PSM-DID Estimation)	Inv_eff (Chen Model)	Inv_eff (Biddle Model)	Eliminate the Interference of Other Policies (Intellectual Property Strategy)
Treat_Post	-0.0125*** (-4.44)	-0.0051*** (-4.22)	-0.0056*** (-4.61)	-0.0093*** (-4.87)
IP_strategy				0.0007 (0.08)
Control	Yes	Yes	Yes	Yes
_cons	-0.1535** (-2.46)	-0.0449* (-1.67)	-0.0384 (-1.41)	-0.2317*** (-5.09)
Industry FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
N	9934	18842	18842	19921
adj. R-sq	0.0466	0.0348	0.0364	0.0422

To address this issue, this study employs the PSM-DID framework as a robustness-enhancing procedure. First, a Logit model is estimated to assess the likelihood that a given city becomes a pilot city for the social credit system. Using the estimated propensity scores, a 1:1 nearest-neighbor matching procedure with replacement is conducted to match treated and untreated cities exhibiting comparable characteristics. The matched sample generated through PSM is then used to re-estimate the DID model, thereby reducing inter-city disparities and mitigating potential biases arising from non-random policy assignment. The estimation outcomes are reported in Table 4. Under the PSM-DID specification, the coefficient of Treat_Post is -0.0125 and remains notable at the 1% level. This result further corroborates that improvements in the social credit environment contribute to enhancing the investment efficiency of enterprises, reinforcing the robustness of the primary empirical findings.

4.2.4 Other Robustness Tests

To strengthen the reliability of the empirical findings, this study undertakes a series of additional robustness checks, all of which yield results that remain consistent with the baseline conclusions.

4.2.4.1 Altering the Explained Variable

To address potential measurement errors in corporate investment efficiency, this study recalculates the indicator using the methodologies outlined in [3; 8]. These recalculated measures are employed as a supplementary test for Model (1), with the results reported in Table 4. Across both the approaches of Chen et al. [8] and Biddle et al. [3], the estimated coefficient capturing the effect of the social credit environment on investment efficiency remains consistently negative and statistically meaningful. This robustness check, which involves substituting the dependent variable, confirms that the finding—that an enhanced social credit environment promotes higher corporate investment efficiency—remains robust.

4.2.4.2 Excluding the Interference of Other Policies

When evaluating the effect of social credit system development on corporate investment efficiency, it is inevitable that other concurrent policies may exert some influence, potentially leading

to an overestimation or underestimation of the impact of social credit pilot cities. In particular, between 2012 and 2022, the Chinese government designated 77 intellectual property (IP) pilot cities in six batches, some of which overlap with the social credit pilot cities. To control for the potential effect of the IP demonstration city policy, the IP policy dummy variable, IP_strategy, is incorporated into Model (2). The corresponding regression results are reported in Table 4. Following the inclusion of IP_strategy, the coefficient of Treat_Post remains significantly negative, while the coefficient for the IP policy is statistically insignificant. This indicates that the observed improvement in corporate investment efficiency is not driven by other simultaneous policies, confirming that the positive impact of the social credit environment on enterprise investment efficiency is robust.

4.3 Mechanism Tests

4.3.1 Mediating Mechanism Test

The test, conducted using Model (4), seeks to determine whether the mediating mechanisms through which the social credit environment affects corporate investment efficiency are present. The results are reported in Table 5. The regression coefficient of the social credit environment on external financing barriers is -0.0997, significant at the 1% level, indicating that improvements in the social credit environment alleviate the financing constraints faced by enterprises. Similarly, the regression coefficient for principal-agent conflicts is significantly negative, suggesting that the social credit environment reduces agency-related issues within firms and thereby strengthens corporate governance. The coefficient of the social credit environment on market friction costs is also significantly negative, demonstrating that enhancements in the social credit environment lower market friction costs and promote higher corporate investment efficiency. Overall, H2, H3, and H4 are supported, confirming that the mediating roles of external financing barriers, principal-agent conflicts, and market friction costs in the effect of the social credit environment on investment efficiency are indeed present.

Table 5
Results of the Mediating Mechanism Test

Variables	Financing Constraint (SA)	Agency Cost (AC)	Transaction Cost (TC)
Treat_Post	-0.0997*** (-46.22)	-0.0063*** (-15.06)	-0.0022*** (-2.83)
Control	Yes	Yes	Yes
_cons	-1.5979*** (-34.59)	0.2960*** (32.81)	0.6003*** (36.36)
Industry FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	19,912	19913	19688
adj. R-sq	0.4901	0.2188	0.1569

4.3.2 Moderating Mechanism Test

As indicated in the preceding analysis, the social credit environment functions as a moderator between managerial overconfidence and corporate investment efficiency. This moderating effect is tested using Model (5), with the results reported in Table 6. At the 1% significance level, the regression coefficient of the interaction term between the social credit environment and managerial overconfidence is significantly negative for both overall corporate investment efficiency and over-investment. This indicates the presence of a moderating effect: improvements in the social credit environment can curb over-investment behaviors driven by managerial overconfidence, thereby mitigating its adverse effect on corporate investment efficiency.

Table 6
Results of the Moderating Mechanism Test

Variables	Inv_eff (Comprehensive Investment Efficiency)	Over_inv (Over-Investment)	Under_inv (Under-Investment)
Overconfidence	0.0044*** (3.07)	0.0058** (2.07)	-0.0026 (-1.41)
Treat_Post	0.0019 (0.86)	-0.0106** (-2.40)	-0.0125*** (-4.71)
Overconfidence*Treat_Post	-0.0081*** (-3.99)	-0.0204*** (-5.05)	0.0020 (0.71)
Control	Yes	Yes	Yes
_cons	-0.4691*** (-11.26)	-0.6102*** (-6.75)	-0.1130*** (-3.95)
Industry FE	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
N	19921	9005	10916
adj. R-sq	0.0597	0.1118	0.0499

Consequently, Hypothesis 6 (H6) is supported. By contrast, the coefficient of the interaction term for under-investment is not statistically significant. A likely explanation is that managerial overconfidence has a minimal effect on under-investment in Chinese enterprises. As shown in Table 6, the impact of managerial overconfidence on under-investment is only 0.0026, substantially smaller than its effect on over-investment. Hence, the moderating influence of the social credit environment on the link between managerial overconfidence and under-investment is limited.

5. Decision Support Framework: A Joint Evaluation Model of Social Credit Environment and Managerial Overconfidence

Drawing on the empirical results of this study, a practical decision-support framework is developed (see Figure 1) to aid corporate managers, boards of directors, and regulators in systematically evaluating the risks associated with managerial overconfidence and estimating the potential effects of enhancements in the social credit environment on investment efficiency. This framework combines theoretical mechanisms with empirical evidence, providing high operational applicability and wide-ranging relevance.

5.1 Framework Composition and Evaluation Dimensions

5.1.1 Managerial Overconfidence Risk Diagnosis Module

This module utilizes multidimensional indicators to assess the level of managerial overconfidence, comprising:

1. (1) Earnings Forecast Bias: Managers are classified as overconfident (Managerial overconfidence = 1) if their earnings projections exceed actual results for two consecutive years.
2. (2) Media Sentiment Analysis: Natural language processing (NLP) methods are applied to examine the frequency of excessively optimistic terms in annual reports or public statements.
3. (3) Aggressiveness of Investment Decisions: A merger and acquisition (M&A) frequency surpassing 50% above the industry average over the preceding three years is regarded as indicative of overconfidence.
4. (4) Shareholding Behavior: An increase in management shareholdings when stock prices are historically high is interpreted as a signal of overconfidence.

5.1.2 Social Credit Environment Assessment Module

This module assesses the credit environment of the city in which the firm operates through the following indicators:

1. (1) Inclusion in Social Credit Pilot Cities (Treat_Post = 1): Denotes whether the city participates in a government-led social credit system pilot initiative.
2. (2) City Credit Index: Annual credit ratings issued by local authorities or third-party credit rating agencies.
3. (3) Completeness of Corporate Credit Records: Indicates whether the firm is integrated with the national credit information sharing platform and discloses essential operational data.

5.1.3 Investment Efficiency Impact Prediction Module

This module forecasts deviations in investment efficiency (Inv_eff) utilizing outputs from the regression models and determines whether the primary concern is over-investment or under-investment.

5.2 Model Application and Decision-Making Process

Enterprises can implement this framework through the following procedure:

Step 1: Input Enterprise Data

Gather all pertinent data, including corporate financial metrics and investment behavior, managerial behavioral indicators (e.g., earnings forecasts, share transactions, M&A activities), and local social credit environment information (e.g., pilot city status, credit index scores).

Step 2: Compute Overconfidence Index and Credit Environment Score

Calculate the enterprise's managerial overconfidence measure and the social credit environment score using the relevant indicators.

Step 3: Run the Prediction Model

Insert the variables into the model below to estimate Investment Efficiency Deviation (Inv_eff):

Inv_eff = 0.0044 × Overconfidence + 0.0019 × Treat_Post − 0.0081 × (Overconfidence × Treat_Post) + Control Variables

Step 4: Output Results and Risk Alerts

Interpret the predicted Inv_eff as follows:

If Inv_eff > 0: Suggests a risk of over-investment. Recommended actions include reinforcing internal governance and enhancing external supervision.

If Inv_eff < 0: Suggests a risk of under-investment. Recommended actions include broadening financing sources and optimizing resource allocation.

Step 5: Develop Response Strategies

Based on the assessment, design tailored strategies consistent with the policy recommendations outlined in Section VI of this paper.

5.3 Applicability and Value of the Framework

This decision support framework is intended for application by:

1. Corporate Boards and Governance Bodies: To evaluate the risk of psychological biases among CEOs or management teams.
2. Investors and Analysts: As a supplementary tool to appraise the quality of corporate investment choices.
3. Regulatory Authorities: To detect high-risk firms or regions and optimize the targeting of credit policy measures.

By transforming theoretical findings into actionable management instruments, this framework offers a quantifiable tool to assess how the interplay between social credit environments and managerial behavior affects corporate investment decisions.

6. Conclusion and Suggestions

6.1 Conclusion

This paper draws three main conclusions. Firstly, the social credit environment improves corporate investment efficiency by restraining over-investment and mitigating under-investment, with its effect operating through three key mechanisms: financing frictions, principal-agent conflicts, and market inefficiencies. Secondly, managerial overconfidence can lead to both over-investment and under-investment in enterprises, although its influence on under-investment is comparatively limited. Thirdly, the social credit environment positively moderates the impact of managerial overconfidence on corporate investment efficiency by strengthening corporate governance, enforcing pre-event constraints, and providing post-event support.

6.2 Policy Recommendations

6.2.1 Corporate Governance Level: Curbing Overconfidence and Enhancing Decision Rationality

6.2.1.1 Establish a Mechanism for Assessing and Balancing Managerial Cognitive Biases

Enterprises should routinely evaluate the cognitive biases of senior executives and integrate these assessments into performance appraisal systems. The board of directors should establish a "Behavioral Risk Committee" that includes external experts to assess the rationality of major investment decisions, thereby preventing resource misallocation arising from managerial overconfidence.

6.2.1.2 Improve Internal Credit Management Systems

Companies should establish an internal credit record system to monitor the credit-related behaviors of managers and business units, linking these records to promotion and incentive mechanisms. Simultaneously, they should improve the transparency of information disclosure to reduce information asymmetry between internal management and external stakeholders.

6.2.1.3 Strengthen Internal Control and Oversight Mechanisms

Optimize the corporate governance structure by raising the proportion of independent directors and strengthening the supervisory role of the audit committee. For executives exhibiting overconfident tendencies, enforce stricter capital approval limits and implement rigorous post-project evaluation procedures.

6.2.2 Investment Planning Level: Scientific Decision-Making and Dynamic Optimization

1. Introduce Investment Decision Models Based on Credit Environment

When developing investment plans, enterprises should consider the credit environment of their location. Firms in social credit pilot cities can proactively utilize external financing channels, whereas those outside such areas should rely more on internal funds or pursue conservative, lower-risk projects.

2. Establish an Investment Efficiency Monitoring and Feedback System

Enterprises should perform quarterly evaluations of cash flows, returns, and projected outcomes for investment projects, promptly identifying deviations and adjusting strategies as needed. The decision support framework presented in Section 6 can be employed for regular self-assessment of investment efficiency.

3. Diversify Financing Channels to Reduce Reliance on External Finance

Enterprises located in non-pilot cities should proactively explore alternative financing channels, including equity financing, supply chain finance, and green credit, to alleviate investment constraints caused by a less developed credit environment.

6.2.3 Regulatory Policy Level: Deepening the Construction of the Social Credit System and Optimizing Policy Guidance

1. Expand the Scope of Social Credit System Pilots and Strengthen Their Demonstrative Effect

It is recommended to broaden the scope of social credit pilot programs to include manufacturing hubs, science and technology innovation corridors, and central and western regions, while establishing "Social Credit Demonstration Zones" that benefit from policy incentives and financial support.

2. Build Cross-Sector Credit Information Sharing and Joint Reward-Punishment Mechanisms

Promote data interconnectivity across departments including industry and commerce, taxation, banking, and the judiciary to accurately identify non-compliant enterprises and implement coordinated disciplinary actions. Simultaneously, offer incentives such as expedited approvals and preferential interest rates for enterprises with strong credit records.

3. Issue National Standards and Guidelines for Corporate Credit Management

It is recommended that the National Development and Reform Commission (NDRC) take the lead in developing a "Guideline for Corporate Credit Management Systems," encouraging enterprises to incorporate credit management into their core corporate governance practices.

4. Strengthen Investor Education and Market Supervision

Strengthen investors' capacity to recognize corporate credit and governance risks by providing case studies, training programs, and public awareness initiatives. The China Securities Regulatory Commission (CSRC) and stock exchanges should reinforce disclosure requirements concerning the investment efficiency of listed companies.

Author Contributions

Conceptualization, M.W. and F.M.; methodology, M.W.; software, L.D.; validation, M.W.; formal analysis, M.W.; investigation, M.W.; resources, M.W.; data curation, L.D.; writing—original draft preparation, M.W.; writing—review and editing, M.W. and F.M.; visualization, M.W.; supervision, L.D.; project administration, M.W. All authors have read and agreed to the published version of the manuscript.

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Data Availability Statement

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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