Industrial Policy in China: The Role of State Capital

Chong-En Bai[1] Futian Song[2] Binzhen Wu[1]

1. Tsinghua University
2. Chinese Academy of Social Sciences

Very preliminary.

2026.6.1

Abstract:

Industrial policy is a key instrument for guiding the direction of economic development, while state capital is an important vehicle for implementing the government's will; how the two coordinate to achieve policy goals is an important issue that remains to be clarified. By analyzing equity-penetration in firm registration data and prefecture-city government work reports, this paper empirically examines the "policy function" of state capital in the implementation of industrial policy. We find that after the government explicitly designates key industries for development, state-controlled firms significantly increase their fixed asset investment; meanwhile, state capital strengthens its control over firms in the targeted industries through equity investment, raising the degree of state ownership in the industry, and firms that receive state capital participation during the policy period also raise their investment accordingly. We further find that private capital responds to industrial policy just as actively, raising its investment scale, profitability, and efficiency through debt and subsidy financing, by no less than state capital. This indicates that, in industrial policy, state capital places greater emphasis on policy orientation and strategic positioning rather than simply replacing or crowding out private investment, reflecting its distinctive attribute of serving the government's policy goals.

1 Introduction

In China's economic development and industrial catch-up, industrial policy has played an important role (He Jun, 2022; Wang Hongjian et al., 2022; Huang Qunhui, 2018; Song Wenyue and Ren Baoping, 2018). However, industrial policy is implemented through various modes, which can be grouped into three categories: using fiscal, financial, and land policies and other price-changing instruments to steer

resources toward specific industries; using government administrative restrictions (including trade controls and foreign-exchange controls) or rule-setting (such as environmental and technical standards) to guide the flow of resources; and using government investment, procurement, or other capital injections to directly steer the flow of resources. Most countries, including government-led Japan and South Korea, rely mainly on the first mode, supplemented by the second, to implement industrial policy. Quite a few countries have also adopted the procurement under the third mode to boost demand, but cases of directly deploying government funds to invest in specific industries are uncommon.[1]

A major difference between China and other countries is that China has large-scale state capital and state-controlled enterprises that can directly invest in specific industries and thereby directly intervene in the flow of resources. At the same time, state capital, like industrial policy, is an important tool through which the government steers the direction of economic development and an embodiment of the government's will; therefore, state capital investment should in principle be consistent with industrial policy, even if industrial policy may in the short run conflict with the "value preservation and appreciation" objective of state capital. However, how exactly state capital coordinates with the implementation of industrial policy, and how such coordination affects the overall effectiveness of industrial policy, has rarely been analyzed in depth, and is an important issue that remains to be clarified.

Using the establishment of prefecture-city industrial policy as a shock, this paper first analyzes the ways in which state capital supports industrial policy, and distinguishes two channels: first, taking equity stakes in firms in the related industries to increase control or influence and to promote these firms' fixed asset investment; and second, promoting fixed asset investment in firms over which it already has influence. The two have different meanings: the former is state capital supporting policy implementation by increasing its influence over the non-state economy, capturing effects along the extensive margin; the latter implements industrial policy directly within the firm system over which it already has influence, analogous to effects along the intensive margin.

Next, we analyze how state capital's support for industrial policy affects the policy's impact on private capital investment. In other words, whether the support of state capital crowds out or substitutes for private capital's enthusiasm to implement

[1] U.S. state investment in basic research and national security resembles public R&D spending more closely, and scholars still debate whether it can be categorized as industrial policy.

industrial policy. If state capital can strongly support industrial policy, the government's incentive to use other instruments may decline—for example, reduced tax incentives or a lower degree of preferential lending—which would affect private capital's investment enthusiasm.

Methodologically, we identify the industrial policies in prefecture-city government work reports through text recognition to confirm the introduction of industrial policy, and then, based on a difference-in-differences or event-study approach, compare industries not covered by industrial policy to analyze the behavioral response of state capital to industrial policy and to contrast it with the response of private capital. Regarding state capital's behavioral response in equity investment, we construct the equity-penetration relationships of industrial firms using Tianyancha, and measure state capital's control capacity—or the degree of state ownership of non-state-controlled firms—by identifying the tier at which state capital appears in a firm's equity chain. Investment data come from the National Survey of Industrial Firms.

The results show that after industrial policy is introduced, the degree of state ownership of firms in the related industries rises significantly; meanwhile, both state-controlled firms and the non-state-controlled firms in which state capital takes a stake during the period significantly raise their investment. In other words, state capital's support for industrial policy operates both along the extensive margin and along the intensive margin. This confirms that state capital plays an effective role in supporting the implementation of industrial policy, and also offers an important explanation for the “state advances, private retreats” phenomenon observed after 2012. At the same time, we find that private capital's support for industrial policy is not noticeably weaker than that of state-controlled or state-participated firms: it raises fixed asset investment using debt and subsidy funds and improves profitability, scale, and efficiency, similar to state-controlled firms. Moreover, state capital's response to industrial policy differs markedly from that of private capital: it does not demand higher subsidies and does not noticeably raise equity prices, indicating that its “policy function” outweighs value preservation and appreciation.

This chapter offers a useful complement to the existing literature. On one hand, existing research focuses on the effects of industrial policy, discussing the conditions for its effectiveness (Yang Ruilong and Hou Fangyu, 2019), its impact on firms (Dai Kuizao et al., 2024), distortions in factor allocation (Jiang Guanhong, 2022), and comparisons across policy types (Ye Guangliang et al., 2022), while paying less

attention to how industrial policy is implemented and what role state capital plays in it. On the other hand, research focuses on the differing effects of nationalization or privatization, discussing their impact on firm efficiency (Li Huamin, 2023), finance (He Dexu et al., 2022), the market or government environment (Chen Yujie et al., 2022; Zhang Xunchang and Lin Jingrong, 2022), control rights (Wang Yiming and Zhao Yan, 2021), and causes (Yi Yang et al., 2021). However, owing to data limitations, this literature can hardly account for the vast phenomenon of equity penetration when using industrial-firm or listed-company databases, so its characterization of nationalization is incomplete: it overlooks the complexity of state capital in equity penetration and underestimates the scale and influence of state capital. It also overlooks that the layout of state capital may itself be one of the goals—an important embodiment of the government's objective of concentrating the state economy in key industries.

The literature most closely related to this chapter is Li Wengui and Shao Yiping (2016), who use Five-Year Plans as a policy shock and the ratio of state capital to paid-in capital in the industrial-firm database as the degree of nationalization, to study the effect of industrial policy on nationalization. However, their data overlook equity-penetration relationships, their characterization of industrial policy is not sufficiently fine-grained, they lack a comprehensive consideration of how industrial policy is implemented, and they lack in-depth reflection on the purpose of nationalization. We confirm that state equity participation is an important means of promoting firm investment in the related industries, and that it does not crowd out private investment. We provide a more comprehensive characterization of the role and channels of state capital in supporting industrial policy, linking industrial policy with nationalization, state-related investment, and private capital investment. We also measure the equity layout of state capital more precisely through penetrated equity structures.

The remainder of this chapter is organized as follows. Section 2 describes the data; Section 3 reports the empirical design of the event-study approach; Section 4 focuses on the results for state capital investment under industrial policy; Section 5 discusses fixed asset investment under industrial policy, distinguishing state-controlled, state-participated, and private-capital firms; and Section 6 concludes.

2 Data and Descriptive Statistics of Key Variables

The core dependent variables of this paper are state capital's equity investment behavior (corresponding to the firm's degree of nationalization) and the firm's fixed asset investment behavior; the core explanatory variables are the specific industries and

the timing of the shock of local government industrial policy. Our analysis of fixed asset investment is based on the industrial-firm database, focusing mainly on 2012–2015 to avoid noise from the change in the "scale" definition in 2011. Information on state capital equity comes from the distribution of state capital equity obtained after analyzing equity penetration in the Tianyancha database. Based on prefecture-city government work reports, we use text recognition to compile the timing and specific industries of government industrial policy, and analyze how the establishment of industrial policy affects the investment behavior of state and private capital. In addition, drawing on the industrial-firm database, statistical yearbooks, and other sources, this chapter defines city-level per-capita GDP, fiscal-expenditure intensity, and financial-development level, as well as firm-level leverage, number of employees, subsidy share, return on assets, and total factor productivity, for use in extended discussions.

2.1 Industrial Policy at the Prefecture-City Level

Prefecture-city industrial policy is drawn from prefecture-city government work reports covering 2011 to 2019. Through text processing of nearly 7,000 work reports, we map policies to three-digit industry codes. Specifically, this chapter identifies sentence patterns describing supported industries in the government reports, extracting phrases such as "vigorously develop the … industry," as shown in Table 1; it then compiles the emphasized industry terms, annotates them manually, and looks up their corresponding three-digit industry codes to define the industries covered by that report, after which we assume that all firms in the same three-digit industry are covered. In reality, the terms mentioned in government work reports often span multiple three-digit industries. Considering that industrial policy has a degree of continuity but may not be repeatedly mentioned in work reports, we determine from each year's government work report whether a given industry in a given region is supported in that year, and in the baseline regression we define this shock as lasting three years, while in robustness checks we try durations of two years or one year. The results of compiling the corresponding industrial-policy data are shown in Figure 1.

It should be noted that the greatest advantage of using work reports is their comprehensiveness and objectivity: they are unlikely to omit industries that the government prioritizes for support. Government work reports are the most broadly covering government documents with the highest disclosure requirements that embody the government's development will, so the completeness and reliability of the data are

stronger. At the same time, using prefecture-city government work reports ensures comparability across prefecture-cities. Nevertheless, it must be acknowledged that this text-recognition approach can only reveal the names of the industries the government prioritizes for development; as for the specific means of support, the degree of importance, and whether an actionable industrial policy has already taken shape, this chapter can hardly distinguish.

2.2 State Capital Shareholding Behavior: An Equity-Penetration Perspective

This chapter first obtains equity-penetration relationships through Tianyancha and builds a massive database to analyze the equity distribution of state capital, spanning 1992 to 2022. The specific implementation is as follows. Step 1: based on firm names and tax identification numbers, we query the Tianyancha database firm by firm and record their current (first-tier) shareholders, historical shareholders, and shareholder changes. Step 2: taking the shareholder list as a new base list of firms, after removing natural persons and government agencies (since these shareholders have no higher-tier shareholders), we query each again and record their shareholders, which we call the second-tier shareholders of the original firm. Iterating in this way, we query a total of eight tiers of penetrated shareholders; excluding the original firms, the new shareholders at each tier total about 500,000.

After completing all shareholder queries and shareholder changes, we construct, on an annual basis, a database of investment events (equity changes). In addition, considering possible mergers, restructurings, and name changes, we also use the Tianyancha database to verify firms' historical changes. After the equity-change database is built, we can query the penetrated shareholders of any industrial firm, learn at which tier state capital is a shareholder of a firm, and usually also obtain the share size at each tier. However, because in business registration some firms' registered shares or entities are not publicly disclosed or are missing, the penetration chain may break or coverage may be incomplete; but the proportion of such firms is not large.

As for whether a particular shareholder is state capital, on one hand we use keyword recognition—government-exclusive terms such as “government, SASAC, Development and Reform Commission”—and on the other hand, because government agencies have distinctive features under the registration rules for tax identification codes, we also identify them via tax identification codes. That is, the data can distinguish whether a shareholder is state capital.

Following the method of Bai et al. (2020), we use the tier of the state shareholder to define "distance," i.e., how close a firm is to state capital. Specifically, for each firm, the distance to state capital is the minimum number of steps needed to reach a state shareholder via equity penetration. A distance of 1 means state capital is a direct shareholder of the firm; a distance of 3 means state capital appears only at the shareholder of the shareholder of the firm's shareholder, and so on. Intuitively, holding other factors constant, a greater distance means state capital has weaker influence over the firm. It should be noted that state capital's influence over a firm is not significant only when it is a direct shareholder. Take government guidance funds as an example: fiscal funds (which we classify as a form of state capital) and various private capital jointly establish a partnership—i.e., set up a fund—and the partnership, as a shareholder, makes equity investments in firms. Because the government agency behind the fiscal funds is a shareholder of the guidance fund, its will or investment preferences influence the guidance fund's behavior, and the guidance fund, as a shareholder of the firm, in turn influences the firm, thereby transmitting the influence of the government agency or state capital onto the firm. Ignoring equity penetration and considering only direct shareholders would underestimate the influence of state capital.

In the baseline analysis, we treat firms with a distance of 6 or more as purely private firms, because such firms are extremely few—accounting for less than 0.05%—and their corresponding penetrated shares are extremely low, averaging less than 0.001%; intuitively, it would require penetrating six tiers of shareholders for a government agency to reach the firm, so it is hard to regard state capital as having influence over it.

Undoubtedly, state capital's ultimate influence over a firm depends not only on distance but also on state capital's final equity share. It is therefore necessary to define and compute the firm's penetrated state share. Our calculation is straightforward: we compute the state-equivalent equity on each equity-penetration chain (converted based on the share at each tier of shareholders) and sum them up. This estimate directly evaluates state capital's equity influence over the firm, but we use it mainly as a robustness measure. The main reason is data limitations. Accurately computing the final converted equity requires complete shareholder and share information for every penetration chain; if any link in the chain conceals its share information, that chain's state share cannot be aggregated into the firm. A registered entity in the business-registration database may choose to disclose only its shareholders' identities but not

their shareholdings. In that case, we can still define the state-equity distance but cannot infer the share. Such cases are not rare: the sample for which share information is available accounts for only 68% of the sample for which state-capital distance is available. It can therefore be said that the sample with share information is subject to selection. To avoid the interference of selection and the loss of estimation precision from a smaller sample, in the main regressions we mainly analyze the effect of state-capital distance and use penetrated equity as a robustness check.

Table 2 reports the average state share at each distance, giving quantitative meaning to using distance as a measure of state capital's influence over firms. On average, taking 33% as the threshold for relative control, firms at distance 1 are on average state-controlled; firms at distance 3 or less have, on average, a large-shareholder position with a state share above 5%. Intuitively, state capital at distance 1 has, on average, controlling capacity; state capital at distance 3 or below is, on average, a large shareholder above 5%; and the state share of firms at distance 4–5 is small. Firms at distance 6 or more have almost no state shares, so this chapter treats firms with a distance of 6 or more as purely private firms.

Table 3 gives the distribution of firm types. By firm count, firms at distance 1 average 1.6%, about 4,000 per year; firms at distance 3 or below account for more than 95%, over twenty thousand. The total number of firms gradually declines because some firms are deregistered or merged over time, and we do not consider newly entering firms. In proportion terms, firms with a state background have stronger survival ability, consistent with intuition. The table also shows that the number of firms in which the state is a 2nd- or 3rd-tier shareholder is 1.7 times the number of state-controlled firms, so state-controlled firms account for less than 50% of the firms over which state capital has influence.

Tables 4a and 4b present the characteristics of firms at different tiers of state capital; combined with the industrial-firm survey, we use only the comparable data for 2011–2015. The results show that, in terms of size, firms closer to state capital are larger, with larger average assets and more employees. In addition, treating distance 1–5 as having a state component, the average differences from private firms are also consistent with intuition: firms with a state background have larger scale, higher leverage, lower debt costs, lower profit margins, higher taxes, and higher subsidies, consistent with phenomena described in the literature.

It is worth noting that Table 2 and Figure 2 describe, from the perspective of

industrial firms, how the layout of China's state capital has changed over time. At each given distance, state capital's influence over firms gradually strengthens, especially after 2012. This feature is consistent with what Yu Jingwen (2018) points out. Considering the overall layout and process of state capital, as well as government turnover, the data used in the remainder of this chapter are all from 2012 onward. In terms of the magnitude of change, among state capital at distances 1–5, the smaller the distance, the relatively smaller the change in share, indicating that state capital's expansion occurs more along the extensive margin, and that the reach of state capital grows most markedly at tiers 2–4.

In addition, Figure 3 describes, by distance, the number and share characteristics of firms with a state background. In terms of the proportion of state-capital investment, the share of distance-1 firms raising their state equity is about 6%+ per year; the share of distance-2 and -3 firms raising state influence is about 8%+ per year; the share of distance-4 and -5 firms raising state influence is about 10%+ per year; while for distance-6 private firms, the share raising the state ratio is only about 0.6% per year. This can be understood as follows: it is relatively difficult for a private firm to move from having no state component to having one, but once it has a state component, the firm's state attribute strengthens, and the speed of this strengthening also exhibits a tier-by-tier decline. The figure also clearly shows that 2012 was a low point for the speed of state-capital layout, after which the pace of layout continued to increase.

3 Empirical Design

This section describes the firm's degree of nationalization through the defined distance and equity share, defines the shocked industries, regions, and timing of industrial policy via the key development industries mentioned in prefecture-city work reports, measures the firm's investment level by fixed asset investment, and identifies the differing responses across industries by the industry to which a firm belongs.

3.1 Identification Strategy and Model Specification

This chapter identifies the response of state or private capital to local industrial policy using difference-in-differences and an event-study approach. Specifically, we take firms whose industry in a given prefecture-city is announced as a key development industry in the government work report as the treatment group, take the first year of the announcement as time 0, and take firms whose industry in that region is not announced as a key industry as the control group, to construct difference-in-

differences and event-study estimates that capture the effect of government key industries on firms. The DID model is as follows:

$$Y_{it} = \alpha + \beta_y \times treat_{ind,c} * post_t + \lambda_t + \lambda_i + \varepsilon_{it} \qquad (1)$$

where the subscripts i, t, ind, c denote firm, year, industry, and city, respectively. Y denotes the outcome variable of interest, including the degree of nationalization and fixed asset investment. $treat * post_{ind,c,t}$ indicates whether the city–industry has a policy shock in that year; λ_t is the year fixed effect; λ_i is the firm fixed effect. Because firms rarely change location or industry within the sample period, controlling for firm fixed effects subsumes industry and city fixed effects and also controls for time-invariant firm characteristics.

Under this identification strategy, we focus on the following behavioral responses: (1) whether industrial policy raises the degree of nationalization of firms in the related industries, i.e., whether it increases state capital's (equity) investment in firms; we use dis_{it} to denote the firm's distance; a negative β_{dis} means that industrial policy raises the degree of nationalization of firms in the related industries. (2) Whether industrial policy raises the fixed asset investment of firms with state capital participation. inv_{it} denotes the firm's fixed asset investment (in logs); a positive and significant β_{inv} means that industrial policy raises the investment of firms in the related industries.

4 Empirical Results: State Capital Investment

Considering that the layout of state capital entered a new stage after 2012, and that the COVID-19 pandemic occurred after 2020, the sample in this part covers 2012 to 2019. When firm financial data are used, we need the industrial-firm data, whose sample period runs from 2012 to at most 2015.

4.1 Baseline Results and Robustness

Table 5 presents the baseline results for the effect of industrial policy on state capital's equity investment.

Columns (1) and (2) of Table 5 control only for year, industry, and city fixed effects, and the results are significantly negative. Column (3) controls for year and firm fixed effects, which is the baseline regression. Column (4) uses a DID term that does not fill in intermediate periods: if there is an industrial policy in period t−2 and an industrial policy for the same industry is also announced in period t, but the sample for period t−1 is missing, period t−1 is still defined as having no shock. The results show

robustness to the assumption about the duration of industrial policy. Column (5) adds industry-by-year and city-by-year fixed effects, removing time-varying industry and city characteristics, and the results are robust. Column (6) estimates the ATT using the staggered DID method (Callaway et al., 2021), and the results are robust. In addition, column (7) uses the firm's state share as the dependent variable, and the results remain robust.

The above results show that the announcement of local government industrial policy strengthens the firm's degree of nationalization—i.e., state capital supports the government in achieving its policy goals by expanding its control over firms. This control is reflected not only in state capital being closer to firms in the related industries, with fewer control tiers, but also in a significant rise in the state share within firms. From another angle, this also offers a possible explanation for the long-standing change in China's state-capital layout: to fulfill government goals and support the direction of industrial development, state capital increases its equity investment in firms in the related industries, which is very likely an important cause of "the state advancing and the private retreating."

To test the robustness of the conclusion, we consider distance measures along different dimensions. In particular, considering that shareholders at tier 3 or 4 and above have relatively weak influence over firms, we consider whether the distance is tier 1 or 2 or below 3, whether the firm has a stake above 5%, and whether it has a controlling stake above 33%. Details are shown in Table 6.

Column (1) of Table 6 replaces the dependent variable with "whether distance is 1 or 2." Because, on average, firms at distance 1 or 2 are state-controlled, this specification shows that after key government industries are announced, a firm's probability of being state-controlled increases. Column (2) similarly replaces the dependent variable with "whether distance is 1 or 2 or 3"; because distance 3 corresponds on average to a large shareholder above 5%, this specification means that after key government industries are announced, the probability that state capital becomes a large shareholder increases. Column (3) jointly defines distances 4 and 5 as 4, and distance 6 (private attribute) as 5, because the shares at distances 4 and 5 are very low and the degree of nationalization may be small.

Column (4) uses the penetration-aggregated state share as the dependent variable, replacing it with "whether a large shareholder above 5%," with consistent results. Column (5) replaces the dependent variable with "whether a relative-

controlling shareholder above 33%," with consistent results, similar in logic to column (1).

In addition, this chapter defines the average share corresponding to each distance, to intuitively understand the state share that a distance corresponds to, so that changes in distance can be understood as changes in share. Specifically, column (6) of Table 6 uses the "within-province share corresponding to distance," defined as the average share of firms at each distance within the province in a given year (e.g., if the average share of distance-1 firms in Hunan Province in 2012 is 49.19%, then all distance-1 firms in that province in that year are assigned 49.19% for this variable). Similarly, the within-prefecture-city average and the within-two-digit-industry average correspond to columns (7) and (8), with robust results. This shows that if distance is understood as share—i.e., the discrete number is defined as a continuous share—the results remain robust.

At the same time, beyond robustness in sign and significance, Table 6 shows that the nationalization indicators along different dimensions all increase significantly, indicating that the nationalization induced by industrial policy is comprehensive: state capital both shortens its tier and increases its equity, moving from a small shareholder to a large shareholder and from a large shareholder to a controlling shareholder.

4.2 Event-Study Approach

To verify the reliability of the DID identification assumption and to examine the dynamic effects of industrial policy, we apply an event-study approach. We first conduct a parallel-trend test, specified by the following equation, where $time_t$ is the number of years relative to the year in which the industry was designated as a key development industry.

$$Y_{it} = \alpha + \sum_{t>-4, t<4, t\neq-1}^{T} \beta_t \times treat_{ind,c} \times time_t + \lambda_t + \lambda_i + \varepsilon_{it} \qquad (2)$$

The results are shown in Table 7 and Figure 4. The results pass the parallel-trend test, confirming the validity of the DID identification strategy. In terms of the state shareholder's distance and equity share, firms in policy-targeted industries and firms in other industries show no significant difference beforehand, indicating no pronounced pre-trend difference. This also means that, before the government explicitly proposes the corresponding industry, state capital has no intention to position itself in advance—possibly because the expected investment returns of the targeted industries are not noticeably higher than those of other industries; on the

contrary, these industries are likely still early, immature, or facing low market investment enthusiasm, so state capital has no incentive to “bottom-fish” in advance. After the government clarifies the industrial policy, state capital takes actual action—actively or passively—to respond to the government's call and support policy implementation. These findings confirm that state capital is an important tool for the government to implement industrial policy.

4.3 Characteristics of State Capital's Investment Targets under Key Industries

This part mainly discusses what kinds of firms and what regional characteristics make a firm more likely to be invested in by state capital after government industrial policy is announced. In other words, under the government's industry goals, which regions and which firms is state capital more inclined to strengthen its influence over. Details are shown in Table 8.

The core explanatory variable in Table 8 is the interaction of the DID term with the firm's distance before the industrial shock; its coefficient shows which firms, by original distance, are more likely to be invested in by state capital under the shock. Columns (1) and (2) use the DID term interacted with “whether the distance one year earlier was 2 or 3,” with the reference group being originally purely private firms (distance 6+). “Whether the distance one year earlier was 4 or 5” is defined similarly, corresponding to columns (3) and (4). The results show that, under the shock of announcing key government industries, relative to private firms, the degree of state ownership of firms at distance 2 or 3 and at distance 4 or 5 both increases further. From the perspective of firms' prior degree of state ownership, state capital is more inclined to further strengthen control over firms that already have a state component. This also partly echoes the earlier descriptive statistics: the share of purely private firms receiving state equity participation is not high, but for firms that already have penetrated state investment, state capital increases its influence—reducing tiers and raising the equity ratio.

Table 9 interacts the DID term with city and firm economic or financial indicators from the previous year, to analyze whether industrial policy's effect on state equity investment varies with regional and firm characteristics. Columns (1) to (4) show that regions with higher per-capita GDP, slower GDP growth, higher fiscal-expenditure levels, and higher local financial-

development levels are more inclined to increase state capital's influence over firms after announcing industrial policy. The reason may be that regions with higher development and fiscal-expenditure levels, when growth slows, have both stronger incentives and greater capacity to raise their influence over firms through state-capital investment, increasing firms' production scale and thereby raising economic growth. Column (5) shows that firms with a higher subsidy share are more likely to be invested in by state capital under industrial policy. The reason is, on one hand, that higher subsidies may indicate a stronger informal relationship between such firms and the government; on the other hand, firms that use more subsidies occupy more fiscal resources from the government's perspective and need to be better controlled through stronger equity investment, to avoid or reduce their waste of funds or fraudulent claiming of subsidies.

In sum, this section confirms that local industrial policy significantly increases state capital's equity investment in firms in the related industries and raises its influence over these firms, and this is robust across different ways of measuring the degree of state ownership. Moreover, state capital's investment behavior is comprehensive: it both shortens the shareholder tier and increases equity investment in firms over which it has stronger influence, but the increase in control is concentrated in firms in which state capital already holds stakes. At the same time, regions with high economic levels and high fiscal-expenditure intensity but slowing growth, and firms with high subsidy levels, are more likely to see increased state-capital investment under the policy.

5 Empirical Results: Fixed Asset Investment

This section mainly discusses the effect of industrial policy on the investment of firms in which state capital takes a stake, distinguishing firms over which state capital has different degrees of influence and comparing the response of private capital. In terms of data, because investment is based on the industrial-firm data, investment data extend to at most 2015; and to focus on the effects after government turnover, this section mainly uses data for 2012–2015.

5.1 State-Controlled Firms

Table 10 presents the effect of industrial policy on the investment of state-

controlled firms, based on the DID regression model of equation (1). The dependent variable is the log of the firm's fixed asset investment. Columns (1) and (2) use the sample of firms with a state share above 33% (strict control); column (3) further adds the distance-1 sample, considering that the state-equity share may be missing and we may underestimate state-controlled firms with above-33% stakes. Column (4) estimates the treatment effect using the staggered DID method (Callaway et al., 2021) to address the multiple-timing DID problem. The results show that for state-controlled firms, industrial policy significantly raises their fixed asset investment, supporting the government's direction of industrial development. The staggered DID method shows that investment increases by 2%.

Figure 5 presents the event-study results, confirming that pre-trends are parallel; investment increases by 0.9% in the first period after the announcement, significant at the 10% level.

5.2 State-Participated Firms, State-Strengthened Firms, and Private Firms

Besides state-controlled firms, do the remaining state-participated firms likewise support the government's direction of industrial development? Also, for firms invested in (via equity) by state capital after industrial policy is announced, do they continue to support the policy? How does private capital respond to the policy announcement—is it noticeably weaker than state-capital firms? This section discusses these questions.

Columns (1) to (5) of Table 11 use the samples at distance 2, distance 3, distance 4, distance 5, and state share below 33%, respectively, and none is significant, indicating that on average state-participated firms do not significantly increase investment to support industrial policy. Column (6) uses the interaction of the industrial-policy effect with “whether distance is 1”; among firms with a state-capital background, distance-1 firms support the policy significantly more strongly than firms farther away. This means that not all firms with state equity use actual investment to support government industrial policy—only state-controlled firms, or firms in which state capital is a direct shareholder, can actively and effectively support policy implementation.

But if state equity participation itself cannot bring support for policy implementation, why does state capital increase equity investment after industrial policy is implemented? We further distinguish firms in which state capital newly takes a stake or reduces the shareholder tier from firms in which state capital does not

change its equity investment.

Column (1) of Table 12 is the interaction of the industrial-policy effect with "whether distance decreases"; a positive and significant coefficient shows that after local industrial policy is established, firms whose distance decreases due to state capital's increased equity investment significantly raise their fixed asset investment, supporting industrial policy. Column (2) broadens the measure of rising state ownership to "distance decreases or state share rises," with results similar to column (1).

The above results show that, on one hand, on average non-state-controlled firms do not significantly raise fixed asset investment to support government industrial-policy goals. On the other hand, after the government clarifies key development industries, state capital increases its influence over firms through equity investment and significantly raises these firms' fixed asset investment to support the government's development goals. There are two possibilities here. One is that state capital's equity investment is a passive choice: because its influence over non-controlled firms is insufficient, it has to increase its stake in some firms to raise its influence and induce them to support industrial policy. The other possibility is that state capital's equity investment is a highly strategic, active choice: it selects firms in industries with relatively high investment returns to increase its stake—firms whose willingness to increase fixed asset investment is inherently strong—while for firms in industries with low investment returns, it does not use its influence to intervene in their investment behavior. When the choice of industrial policy may not be optimal and investment returns are uncertain, such strategic selection helps improve efficiency and greatly tests the capability of state-capital operating institutions.

Combined with the earlier results, from the perspective of increasing fixed asset investment, state-controlled firms can raise their investment, state-participated firms provide insufficient support, but state capital can influence firms in which it newly increases equity investment, increasing related investment to support industrial policy. In other words, by raising its influence over firms under government-designated key industries, state capital both completes its layout and, objectively, prompts state-participated firms to jointly increase investment, so that together with state-controlled firms they support government goals. In this sense, state capital here achieves a unification of the extensive and intensive margins: for firms it already controls, it raises the investment level; for firms it does not control, it raises its control capacity

and raises the investment level.

The above discussion focuses on the internal system of firms in which state capital takes a stake. How private firms respond to government-designated key industries is also of great interest. Specific results are shown in Table 13.

Column (1) of Table 13 uses the sample of purely private firms, i.e., firms at distance 6 or more. The results show that after industrial policy is implemented, private firms significantly raise investment. The next five columns compare the magnitude of the response between private firms and state-capital firms. Column (2) uses the full sample and shows the interaction of the DID term with “whether distance is below 6”; the results show that state-capital firms' response to industrial policy is not noticeably greater than that of private firms. Column (3) uses firms at distance 1 or 6+, with the DID term interacted with “whether distance is 1”; the results show that controlled (distance-1) firms' response to industrial policy is also not noticeably greater than that of private firms. Column (4) uses firms at distance greater than 1, with the DID term interacted with “whether distance is below 6 and above 1”; the results show that state-participated firms' response to industrial policy is not noticeably greater than that of private firms. Columns (5) and (6) use “whether state capital is above 33%” and “state capital > 5%,” respectively, interacted with the DID term, with results similar to the above: neither state-controlled firms nor firms with newly added state equity support government-designated key industries noticeably more strongly than purely private firms.

The above results show that private capital's support for industrial policy is not noticeably weaker than that of state-capital firms at any level of comparison. This may carry a more profound implication: from the perspective of increasing fixed asset investment to support industrial development, private capital is not noticeably weaker than state capital. Furthermore, there is no significant evidence that, to develop government-targeted industries, it is necessary to increase equity investment and nationalize firms.

5.3 Financing Channels and Performance

Finally, we analyze through what means firms finance their increased investment to support the government's direction of industrial development, and how this support performs.

In the literature, credit financing is an important channel through which firms

support industrial policy. Liu Ruohong and Huang Jiuli (2023) find that local industrial policy affects firms' financing costs mainly through government support, credit enhancement, signaling, implicit guarantees, and liquidity risk; Wu Cen et al. (2019) hold that industrial policy mainly affects the speed of capital-structure adjustment through debt financing; Qian Xuesong et al. (2023) find that industrial policy significantly raises the probability and scale of listed manufacturing firms extending entrusted loans to peers in the same industry, and that the allocation of entrusted-loan funds within policy-supported industries is mainly realized through equity affiliations. Thus, credit financing is an important channel through which firms support industrial policy, and the important role of government support is also emphasized. Therefore, credit funds and subsidy funds may be the channels through which firms support industrial policy. This part also considers employment.

On the other hand, the impact of industrial policy on firm performance has been widely discussed, such as total factor productivity (Dai Kuizao, 2024; Pan Lingyun, 2023; Chen et al., 2022; Aghion et al., 2015, among others). This part discusses the impact of industrial policy on firms' profitability, scale, equity value (owners' equity), and total factor productivity.

Through what channels firms obtain the funds or resources to support government key industries is shown in Table 14.

Columns (1) to (4) of Panel A use the state-controlled sample, Panel B uses the state-participated sample (distance greater than 1 and below 6, or state share greater than 0 and below 33%), and Panel C uses the purely private sample, discussing respectively the effect of the shock of announcing key government industries on leverage, log total debt, log employees, and subsidy share.

The results show that after the government clarifies key industries, state-controlled firms make fixed asset investment mainly by raising their debt level. For state-participated firms, because their willingness to support the policy is inherently low, they do not noticeably raise debt, employment, or subsidy use. For private-background firms, they not only significantly raise their debt level but also obtain higher subsidies to make fixed asset investment. This result is also intuitive: state-controlled firms have lower debt costs and already have high subsidy levels, so they prefer to use debt funds for investment; state-participated firms have insufficient willingness to invest in government key industries, so they do not noticeably raise debt or obtain subsidies; private capital, under government key industries, can clarify

its willingness to support, obtain higher debt support and government subsidy funds, and then invest. The above results do not noticeably raise employment, which may indicate that the government-announced key industries have limited power to pull employment.

In addition, how the parties perform after key industries are clarified is also worth attention, as shown in Table 15.

Columns (1) to (5) of Panel A in Table 15 use the state-controlled sample, with dependent variables being return on assets, log total assets, log owners' equity, TFP computed by the LP method, and TFP computed by the OP method. The results show that for state-controlled firms that supported the direction of industrial development and raised their debt and fixed asset investment, performance also improved in terms of profitability, scale, and production efficiency. This indicates that state-controlled firms' support for government key-industry policy is beneficial and is not a scenario of continuously transfusing zombie industries amid overcapacity. On the other hand, their owners' equity does not noticeably rise, meaning that support dominated by debt expansion does not noticeably raise equity value—and thus the asset value corresponding to the state shares. This may imply that, under government-designated key industries, the value-preservation-and-appreciation objective of state capital is not paramount; otherwise it would prioritize the appreciation of state equity and even seek a higher share of subsidy funds. The importance of expanding scale, raising efficiency, and thereby genuinely promoting industrial development—i.e., realizing the “policy function”—is greater. Panel B of Table 15 uses the state-participated sample; the results show that government-designated key industries have little effect on its performance. The reason may be that under the policy, state-participated firms do not participate strongly, do not significantly increase fixed asset investment, and do not obtain more resources, so it is also logical that their performance shows no noticeable response.

Panel C of Table 15 uses private-capital firms without state investment. The results show that for purely private-background firms, supporting government industry goals raises their profit level, asset scale, production efficiency, and owners' equity. Private capital raised its debt level, obtained more subsidy funds, and raised its fixed asset investment; from a performance perspective, this support is beneficial, and its effect may even exceed that of state-controlled firms. The reason may be that private capital has a stronger profit-seeking motivation and can obtain higher

economic returns under the relevant policy.

It is worth noting that the above findings on channels and performance also demonstrate, from a certain angle, that at least in the development of government key industries, the “policy function” of state capital outweighs value preservation and appreciation. First, in terms of channels, state capital is itself closer to the government and on average has higher subsidies, so its ability to obtain subsidies should be stronger—especially relative to private firms, which can already obtain higher subsidies. Yet after the government clarifies key industries, neither state-controlled nor state-participated firms obtain higher subsidy levels during the period, inconsistent with value-preservation-and-appreciation behavior. Second, in terms of performance, the core of state-capital value is the value of state equity, which—absent premiums from listing—is the net assets corresponding to the shares. In terms of performance, state capital's owners' equity does not noticeably rise, whereas private capital's rises noticeably.

6 Conclusion

This paper analyzes how, after local governments clarify key industries, state capital plays its “policy function” to support the implementation of industrial policy, and how it affects the response of private capital. The results show that, on one hand, state capital makes equity investments in the related firms, strengthening its influence and completing the state-economy layout in key industries to support the direction of industrial development; on the other hand, it prompts state-controlled firms to increase fixed asset investment, and also prompts firms in which it increases equity investment during the period to raise their fixed asset investment. These firms finance their investment mainly through debt funds, and supporting government industrial policy also raises their profitability and efficiency.

After industrial policy is established, the increase in state capital's equity investment in firms in the related industries is comprehensive, including not only reducing the distance to firms but also rising from a small shareholder to a large shareholder and from a large shareholder to a controlling shareholder. In addition, in prompting the related firms to raise fixed asset investment, state-controlled firms and firms with newly added equity investment show clear effects, but state-participated firms on average do not noticeably increase investment. It can therefore be said that state capital's equity investment has the potential purpose of raising firms' fixed asset investment.

It is also worth pointing out that private-background firms play an important role in the implementation of government industrial policy: the rise in their investment level is not noticeably weaker than that of state-background firms, and after using debt funds and obtaining subsidies to finance investment they also raise their profitability and efficiency. State capital does not seek higher subsidies under the policy, nor does it noticeably raise equity value, indicating that in this scenario its policy function is more important than value preservation and appreciation.

This chapter complements the understanding of the role of state capital in industrial policy, confirming that state capital plays an active and effective role in implementing industrial policy, promoting the state-economy layout, and raising fixed asset investment, reflecting the characteristics of its “policy function.” However, the effective implementation of industrial policy does not depend on the active support of state capital; private capital's response to industrial policy is often positive, no weaker than that of firms with state equity participation. Nonetheless, private capital's response likely depends on its expectations of the development potential of industrial policy; if those expectations are biased, the active entry of state capital helps improve efficiency. The different market responses caused by such heterogeneity of industrial policy, and the different needs for government intervention, await further research.

References

Aghion P, Cai J, Dewatripont M, et al. Industrial Policy and Competition[J]. American Economic Journal: Macroeconomics, 2015, 7(4): 1-32.

Bai C N, Hsieh C T, Song Z. The Long Shadow of a Fiscal Expansion[R]. NBER Working Paper, No. 22801, 2016.

Barwick, Panle Jia, Myrto Kalouptsidi, and Nahim Bin Zahur. "Industrial Policy Implementation: Empirical Evidence from China's Shipbuilding Industry." *The Review of Economic Studies*, ahead of print, 2025. https://doi.org/10.1093/restud/rdaf011.

Branstetter, Lee, and Guangwei Li. "The Challenges of Chinese Industrial Policy." *Entrepreneurship and Innovation Policy and the Economy* 3 (2024): 77–113. https://doi.org/10.1086/72776

Cai, Jing, and Ann Harrison. "Industrial Policy in China: Some Intended or Unintended Consequences?" *ILR Review* 74, no. 1 (2021): 163–98. https://doi.org/10.1177/0019793919889609.

Callaway B, Sant'Anna P H C. Difference-in-Differences with multiple time periods[J]. Journal of Econometrics, 2021, 225(2): 200-230.

Chen Y, Wang L, Wu S. Industrial policy and total factor productivity: Evidence from China[J]. Journal of Comparative Economics, 2022, 50(2): 500-520.

Choi, Jaedo, and Andrei A. Levchenko. "The Long-Term Effects of Industrial Policy." *Journal of Monetary Economics* 152 (June 2025): 103779. https://doi.org/10.1016/j.jmoneco.2025.103779.

Fang, Hanming, Ming Li, and Guangli Lu. "Decoding China's Industrial Policies." *National Bureau of Economic Research Working Paper Series* No. 33814 (2025). https://doi.org/10.3386/w33814.

Garin, Andrew, and Jonathan Rothbaum. "The Long-Run Impacts of Public Industrial Investment on Local Development and Economic Mobility: Evidence from World War II." *The Quarterly Journal of Economics* 140, no. 1 (2024): 459–520. https://doi.org/10.1093/qje/qjae031.

Juhász, Réka, Nathan Lane, and Dani Rodrik. "The New Economics of Industrial Policy." *Annual Review of Economics* 16, no. Volume 16, 2024 (2024): 213–42. https://doi.org/10.1146/annurev-economics-081023-024638.

Lane, Nathan. "Manufacturing Revolutions: Industrial Policy and Industrialization in South Korea." *The Quarterly Journal of Economics*, ahead of print, 2025.

https://doi.org/10.1093/qje/qjaf025.

Mao, Jie, Shiping Tang, Zhiguo Xiao, and Qiang Zhi. “Industrial Policy Intensity, Technological Change, and Productivity Growth: Evidence from China.” *Research Policy* 50, no. 7 (2021): 104287. https://doi.org/10.1016/j.respol.2021.104287.

Chen, Yujie, Wanxiao Xu, and Jianfeng Wang. “Mixed-Ownership Reform and the Debt Risk of Local Government Financing Vehicles.” Technology Economics 41, no. 9 (2022): 133–144. (in Chinese)

Dai, Kuizao, Ali Chen, and Xinyu Yang. “Can Functional Industrial Policy Promote Firm Productivity Growth? A Quasi-Natural Experiment Based on ‘Made in China 2025’.” Nankai Economic Studies, no. 2 (2024): 43–63. (in Chinese)

He, Dexu, Min Zeng, and Shuonan Zhang. “How Does State Capital Participation Affect Private Enterprises? A Study from the Perspective of Debt Financing.” Management World 38, no. 11 (2022): 189–207. (in Chinese)

He, Jun. “The Role of Government in the Catch-up of Emerging Technology Industries: A New Perspective on Industrial Policy Research.” Social Sciences in China, no. 11 (2022): 105–124, 206–207. (in Chinese)

Huang, Qunhui. “On the Development of China's Real Economy in the New Era.” China Industrial Economics, no. 2 (2018): 5–24. (in Chinese)

Jiang, Guanhong. “Industrial Policy and Factor-Allocation Distortion.” China Industrial Economics, no. 4 (2022): 42–60. (in Chinese)

Li, Huamin, Yating Lan, and Hailing Xiang. “Can State Capital Participation Enable High-Quality Development of Private Enterprises?” Nankai Economic Studies, no. 12 (2023): 199–217. (in Chinese)

Li, Wengui, and Yiping Shao. “Industrial Policy and Nationalization: A Natural Experiment Based on Five-Year Plans.” Management World, no. 10 (2016): 22–38. (in Chinese)

Liu, Ruohong, and Jiuli Huang. “Local Industrial Policy, Financing Costs, and Firm Investment.” Journal of Financial Research, 2023 (forthcoming). (in Chinese)

Qian, Xuesong, Sheng Fang, and Wei Peng. “Industrial Policy and Entrusted Loans: A Perspective Based on Equity Affiliations.” Economic Research Journal 58, no. 2 (2023): 120–136. (in Chinese)

Song, Wenyue, and Baoping Ren. “An Analysis of the Effectiveness of China's Industrial Policy.” The Economist, no. 5 (2018): 60–68. (in Chinese)

Wang, Hongjian, Mangmang Li, and Taijie Tang. “Industrial Policy and Firm

Investment Efficiency." Management World 38, no. 3 (2022): 80–96. (in Chinese)

Wang, Yiming, and Yan Zhao. "The Impact of Mixed-Ownership Reform on the Labor Productivity of State-Owned Enterprises." Public Finance Research, no. 10 (2021): 27–43. (in Chinese)

Wu, Cen, Xuesong Tang, and Mingshan Zhou. "Industrial Policy, Debt Financing, and the Speed of Capital-Structure Adjustment." Management World 35, no. 8 (2019): 43–59. (in Chinese)

Yang, Ruilong, and Fangyu Hou. "A Study on the Conditions for the Effectiveness of Industrial Policy." Economic Research Journal 54, no. 8 (2019): 4–20. (in Chinese)

Ye, Guangliang, Shiqiang Wang, and Yihao Chen. "A Comparative Study of Industrial Policy Types." Economic Research Journal 57, no. 1 (2022): 100–116. (in Chinese)

Yi, Yang, Fei Jiang, Zhuang Liu, et al. "Government Willingness to Decentralize, Mixed-Ownership Reform, and Firm Employee Efficiency." The Journal of World Economy 44, no. 5 (2021): 130–153. (in Chinese)

Yu, Jingwen. "The Role of Government in Firm Nationalization." China Industrial Economics, no. 3 (2018): 155–173. (in Chinese)

Zhang, Xunchang, and Jingrong Lin. "Fiscal Pressure and the Effects of Mixed-Ownership Reform of State-Owned Enterprises: Evidence from the VAT Revenue-Sharing Reform." Public Finance Research, no. 6 (2022): 64–80. (in Chinese)

Figures

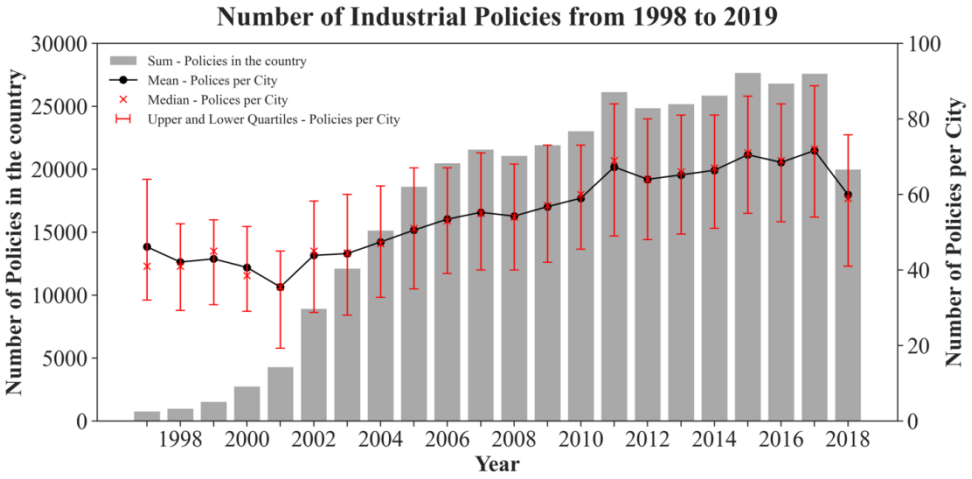


Figure 1 Number of key industries designated by governments

Source: Government work reports.

Note: Because we disaggregate industrial policy to the three-digit industry level, the keywords in government work reports often correspond to many industries, so the number of government key industries is high.

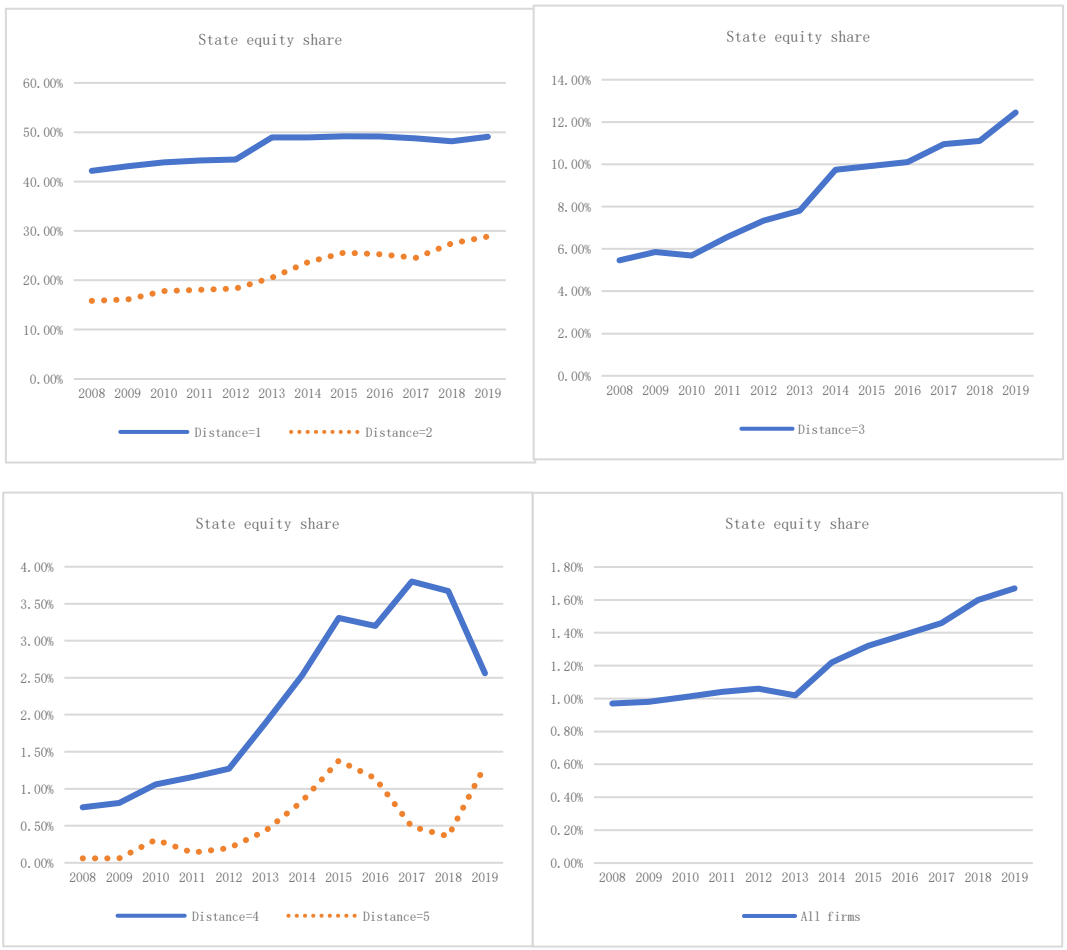


Figure 2　Trends in state share by distance

Source: Industrial-firm database; Tianyancha database.

Note: Distance represents different tiers of state-capital shareholders. A distance of 1 means state capital is a first-tier shareholder (direct shareholder), usually for state-controlled firms; a distance of 5 means state capital is a fifth-tier shareholder, with a small state share and relatively weak influence. As can be seen, except for the fifth tier, the state share rises noticeably after 2012.

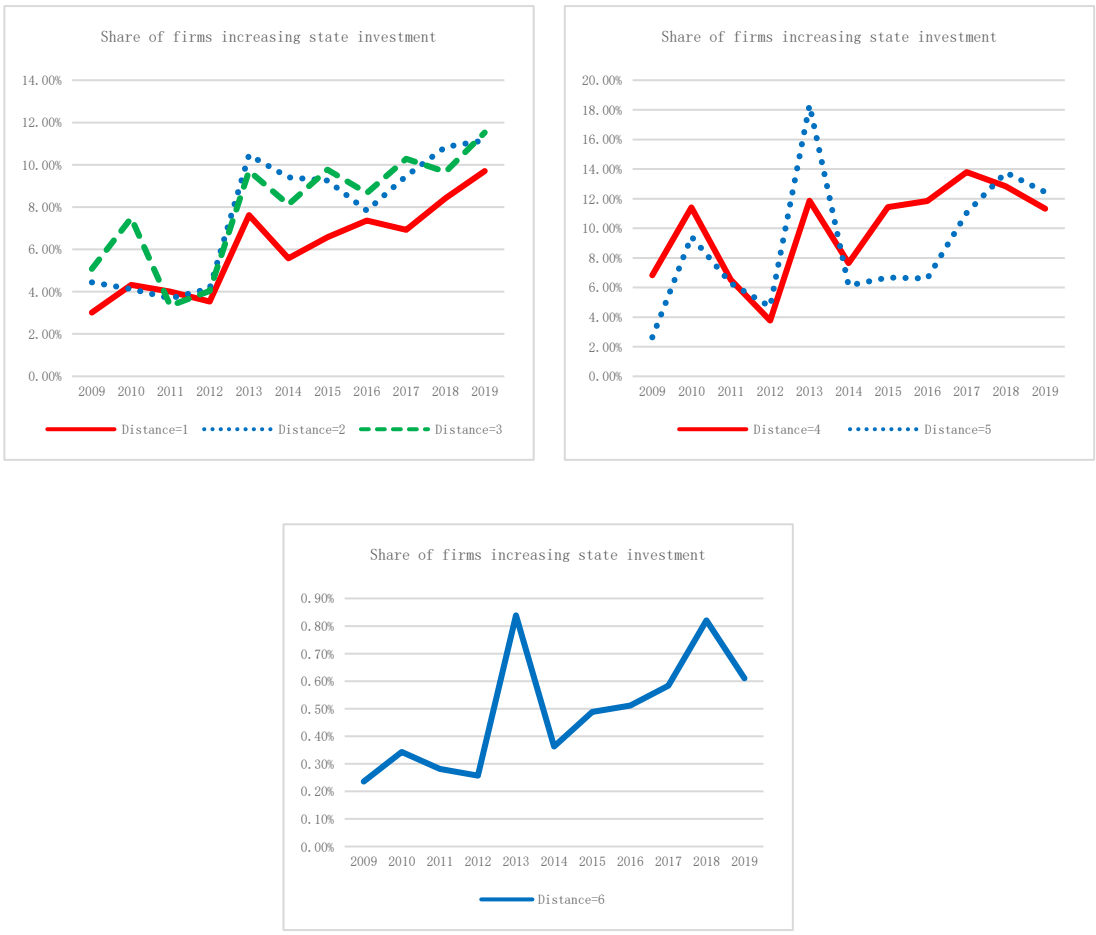


Figure 3 Annual share of firms increasing state-capital investment (raising state influence) at each tier

Source: Industrial-firm database; Tianyancha database.

Note: This figure shows, by tier of state shareholder, the share of firms with an increase in state-capital equity.

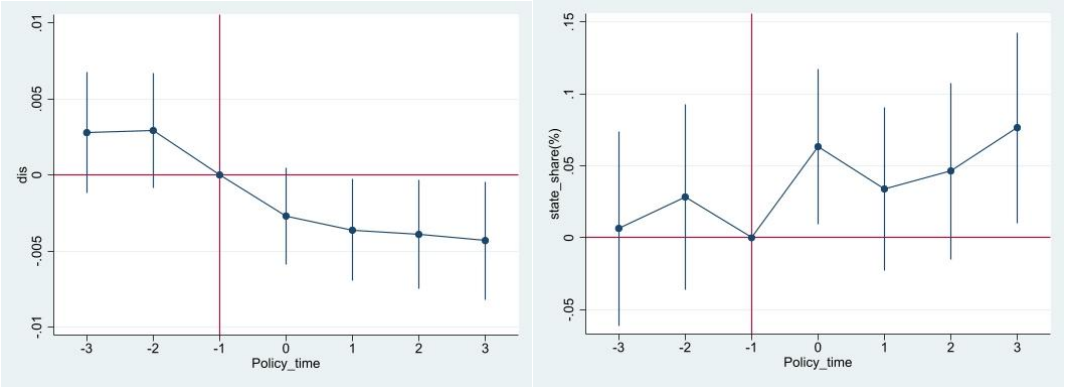


Figure 4　State capital and the implementation of industrial policy: event-study approach

Source: Estimated coefficients from Table 7; 95% confidence intervals.

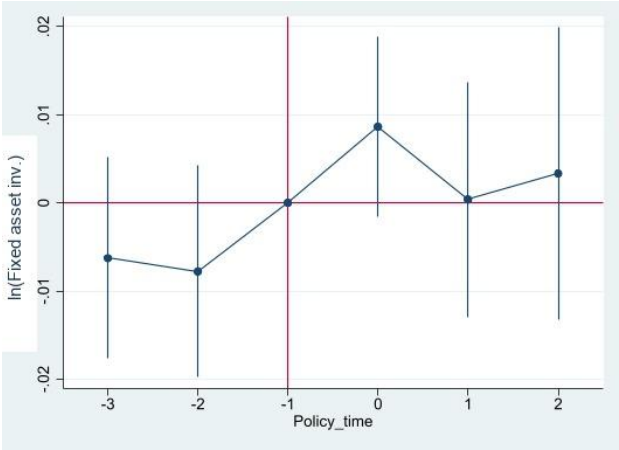


Figure 5　Parallel-trend test for fixed asset investment

Note: The sample consists of state-controlled firms, defined as those with a penetrated share above 33%. Parallel trends hold overall. The confidence intervals in this figure are 95%, and the estimated parameter is significant at the 10% level at year 0.

Tables

Table 1 Key sentences extracted for prefecture-city industrial policy

Year	Region	Key sentence
2015	Wuzhong	Prioritize development of charity, grape, and forage-livestock industries
2010	Weifang	Prioritize support for semiconductor lighting, electro-acoustic devices, software and information-service outsourcing, and the Internet of Things
2008	Liaocheng	Vigorously develop characteristic industries such as bearings, steel pipes, drilling tools, and cables
2017	Yuxi	Build the Pan-Asia Silk Road Data Valley and the “Three Lakes” International Cloud Computing Industrial Park brands
2006	Jinan	Vigorously develop emerging industries such as information, biology, new materials, and new energy
2013	Xiamen	Vigorously develop industrial clusters such as marine biomedicine and cruise ships and yachts
2012	Xishuangbanna Dai Autonomous Prefecture	Fully promote the development of the “four 10-billion-yuan industries”: rubber, Dai and southern medicine, ecological food, and ecological products
2019	Golog Prefecture	Vigorously develop ecological agriculture and animal husbandry, characteristic processing industries, and commerce-and-tourism services with comparative advantages
2019	Jieyang	Focus on the upgrading of six modern agricultural industrial parks: Puning green plum, Huilai southern medicine, Jiexi tea, Jiedong bamboo shoots, Huilai pineapple, and Puning green olive

Note: Information source is government work reports.

Table 2 Average state share by tier (distance) of state shareholder

Distance (tier of state shareholder)	1 (first-tier shareholder)	2	3	4	5	6	≥6	Average of all firms
2008	42.18%	15.84%	5.46%	0.75%	0.06%	0.00%	0.00%	0.97%
2009	43.11%	16.13%	5.85%	0.81%	0.06%	0.00%	0.00%	0.98%
2010	43.90%	17.80%	5.68%	1.06%	0.31%	0.00%	0.00%	1.01%
2011	44.29%	18.07%	6.56%	1.16%	0.14%	0.00%	0.00%	1.04%
2012	44.45%	18.36%	7.33%	1.27%	0.20%	0.00%	0.00%	1.06%
2013	48.98%	20.53%	7.80%	1.89%	0.43%	0.00%	0.00%	1.02%
2014	48.98%	23.67%	9.74%	2.53%	0.83%	0.01%	0.00%	1.22%
2015	49.18%	25.61%	9.92%	3.31%	1.38%	0.01%	0.00%	1.32%
2016	49.17%	25.30%	10.11%	3.20%	1.14%	0.00%	0.00%	1.39%
2017	48.73%	24.56%	10.96%	3.80%	0.49%	0.00%	0.00%	1.46%
2018	48.15%	27.51%	11.10%	3.67%	0.36%	0.00%	0.00%	1.60%
2019	49.07%	28.87%	12.45%	2.56%	1.31%	0.00%	0.00%	1.67%

Source: Industrial-firm database; Tianyancha database.

Note: For each firm in the industrial-firm database, we searched the Tianyancha database for all of its shareholders and penetrated shareholders (shareholders of shareholders), compiled the tiers of state-capital shareholders, and used them to define distance. A distance of 1 means state capital is a first-tier shareholder, i.e., a direct shareholder of the sample firm—such firms are usually state-controlled; a distance of 2 means state capital is a second-tier shareholder, i.e., not a direct shareholder of our sample firm but a direct shareholder of the company that holds shares in the sample firm. A sample firm may have different state shareholders at different tiers; we take the smallest tier, i.e., the shortest distance. We then compute the penetrated equity share based on equity-penetration relationships and, after summing the shares of all state shareholders, obtain the firm's total state-capital equity share. For example, if state capital is a second-tier shareholder of a sample firm, holding 20% in the first-tier shareholder company and 20% in the second-tier shareholder company, then this state capital's state share in the sample firm is 4%. The table shows that if the tier of the state shareholder is greater than 5, the state share is basically below 1%. Because the number of firms with state investment at distance 6 or more is extremely small and the state share is extremely low, we define them as private-capital firms.

Table 3　Number of firms by tier (distance) of state shareholder

	No. of obs.	Share of firms (%)					
Distance (tier of state capital)		1	2	3	4	5	6+
2008	266678	1.65%	1.45%	0.78%	0.25%	0.07%	95.80%
2009	277066	1.61%	1.43%	0.84%	0.28%	0.08%	95.76%
2010	283824	1.57%	1.48%	0.92%	0.31%	0.11%	95.61%
2011	283919	1.56%	1.54%	0.98%	0.34%	0.12%	95.47%
2012	278842	1.57%	1.55%	1.05%	0.38%	0.14%	95.32%
2013	356323	1.30%	1.41%	1.10%	0.42%	0.19%	95.58%
2014	296534	1.46%	1.60%	1.18%	0.47%	0.24%	95.06%
2015	270233	1.53%	1.68%	1.22%	0.46%	0.20%	94.91%
2016	243247	1.62%	1.75%	1.28%	0.47%	0.19%	94.70%
2017	217394	1.74%	1.85%	1.30%	0.49%	0.20%	94.43%
2018	192646	1.86%	1.89%	1.40%	0.62%	0.21%	94.03%
2019	165529	1.91%	1.87%	1.37%	0.55%	0.18%	94.12%
Average	261020	1.62%	1.63%	1.12%	0.42%	0.16%	95.07%

Source: Tianyancha database; industrial-firm database.

Note: A state-capital shareholder distance (tier) of 1 means state capital is a first-tier shareholder; a distance of 2 means state capital is a second-tier shareholder, i.e., the company in which state capital is a shareholder holds shares in our sample firm. A sample firm may have different state shareholders at different tiers; we take the smallest tier, i.e., the shortest distance. If the tier of the state shareholder is greater than 5, the state share is basically below 1%.

Table 4a Average size of firms at each tier of state shareholder

Distance (tier of state shareholder)	1 (first-tier shareholder)	2	3	4	5	6+ (private capital)
Average assets (100 mn yuan)						
2011	17.65	13.3	7.92	5.09	2.56	1.91
2012	18.9	14.26	8.41	6.11	3.18	2.04
2013	20.11	15.39	9.51	6.06	2.91	1.93
2014	21.08	21.03	13	8.26	5.07	3.17
2015	22.52	20.9	11.8	8.63	8.17	2.12
Average employees (thousands)						
2011	1,139.31	808.43	520.6	409.8	345.92	342.99
2012	1,013.52	773.26	494.45	396.01	322.66	319.53
2013	1,138.10	924.72	631.36	527.25	427.53	414.17
2014	961.6	1,100.37	682.95	610.96	481.17	511.07
2015	1,133.03	1,098.30	715.42	683.49	514.57	511.05

Table 4b Average differences between state-capital and private firms

	ln total assets	ln total debt	Leverage	Interest expense / total debt	Total profit / total assets	VAT / main business revenue	Subsidy / main business revenue
Firms invested by state capital: distance 1 – 5	12.418	11.667	0.569	0.047	0.084	0.037	0.012
Firms not invested by state capital: distance 6	10.880	9.960	0.519	0.114	0.199	0.028	0.003
diff	1.538	1.706	0.050	-0.067	-0.115	0.009	0.009
t	173.402	164.488	28.068	-10.086	-4.696	12.569	16.781

Source: Industrial-firm database; Tianyancha database.

Table 5 The role of state capital in industrial policy

Dependent variable	Distance (tier of state-capital shareholder)						State equity share
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
treat*post	-0.005**	-0.012***	-0.005***	-0.004**			0.067***
	(0.002)	(0.002)	(0.001)	(0.002)			(0.021)
treat*post_ori					-0.003**		
					(0.001)		
treat*post (staggered DID)						-0.009***	
						(0.002)	
Constant	5.788***	5.790***	5.784***	5.783***	5.783***		1.426***
	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)		(0.008)
Year FE	Y	Y	Y	Y	Y	Y	Y
Firm FE	N	N	Y	Y	Y	Y	Y
Industry FE	Y	Y	N	Y	N	N	N
City FE	N	Y	N	Y	N	N	N
Industry×Year FE	N	N	N	Y	N	N	N
City×Year FE	N	N	N	Y	N	N	N
Observations	1,332,933	1,332,933	1,296,281	1,294,101	1,296,281	1,875,055	1,296,281
R^2	0.090	0.108	0.843	0.847	0.843		0.712

Source: Industrial-firm database; Tianyancha database.

Note: Clustered standard errors (clustered at the city level) in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. The dependent variable is distance, i.e., the tier of the state shareholder. treat*post indicates that the firm's industry is covered by the industrial policy of the firm's city, where industrial policy is identified through text recognition of prefecture-city government work reports. We assume that once an industry is covered by industrial policy, the effect lasts three years. treat*post_ori considers an alternative treatment that assumes industrial policy covers only one year. Under the same definition of the policy shock, column (6) estimates the treatment effect using the staggered DID method (Callaway et al., 2021). A significantly negative coefficient on these variables shows that after the industrial-policy shock the firm's distance falls and its degree of state ownership rises—i.e., industrial policy induces state capital to take stakes in firms in the corresponding industries.

Table 6 Robustness: alternative measures of state equity participation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable	Whether distance is 1 or 2	Whether distance is 1 or 2 or 3	Distance: redefined	Whether large shareholder (>5%)	Whether controlling shareholder (>33%)	Average state equity share for the firm's state-capital tier (distance) in the year		
						Within-province mean	Within-city mean	Within two-digit industry mean
treat*post	0.166***	0.145***	-0.004***	0.136***	0.112**	0.024**	0.039***	0.047***
	(0.042)	(0.032)	(0.001)	(0.041)	(0.046)	(0.009)	(0.012)	(0.009)
Constant			4.840***			1.425***	1.419***	1.433***
			(0.000)			(0.003)	(0.004)	(0.003)
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y
Observations	39,819	65,916	1,296,281	41,426	34,558	1,212,788	1,212,788	1,296,281
R^2			0.852			0.874	0.817	0.871

Source: Industrial-firm database; Tianyancha database; prefecture-city government work reports.

Note: Standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. In columns (1) and (2), “whether distance is 1 or 2 (or 3)” is a dummy variable; in column (3), firms at distance 4 or 5 are both defined as distance 4, and firms at distance 6 as distance 5. In columns (4) and (5), the dependent variable “whether a large (controlling) shareholder above 5% (33%)” is a dummy variable. Columns (6) to (8) consider the average state share within the province, city, and industry for each distance tier, treating this average as the average state share corresponding to each firm's distance.

Table 7 State capital and government-designated key industries: parallel-trend test

	(1)	(2)
Dependent variable	Distance	State equity share
treat*year-3	0.003	0.006
	(0.002)	(0.035)
treat*year-2	0.003	0.029
	(0.002)	(0.033)
treat*year0	-0.003*	0.063**
	(0.002)	(0.028)
treat*year1	-0.004**	0.034
	(0.002)	(0.029)
treat*year2	-0.004**	0.046
	(0.002)	(0.031)
treat*year3	-0.004**	0.076**
	(0.002)	(0.034)
Constant	5.802***	1.322***
	(0.000)	(0.005)
Year FE	Y	Y
Firm FE	Y	Y
Observations	1,954,264	1,954,264
R^2	0.855	0.723

Source: Industrial-firm database; Tianyancha database.

Note: Standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. We take the year before the industrial-policy shock as the base period. If parallel trends hold, the coefficients on treat*year−3 and treat*year−2 should be insignificant.

Table 8 Distance characteristics of state-capital investment

	(1)	(2)	(3)	(4)
Dependent variable	Distance			
treat • post × (pre-policy distance 2 or 3)	-0.018***	-0.077***		
	(0.005)	(0.006)		
treat • post × (pre-policy distance 4 or 5)			-0.126***	-0.066***
			(0.007)	(0.009)
treatpost	-0.002	-0.001	-0.001	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)
Pre-policy distance 2 or 3	-3.025***	-1.375***		
	(0.002)	(0.004)		
Pre-policy distance 4 or 5			-1.289***	-0.482***
			(0.004)	(0.005)
Constant	5.975***	5.915***	5.976***	5.972***
	(0.000)	(0.000)	(0.000)	(0.000)
Year FE	Y	Y	Y	Y
Industry FE	Y	N	Y	N
City FE	Y	N	Y	N
Firm FE	N	Y	N	Y
Observations	1,074,360	1,060,558	1,044,068	1,029,768
R^2	0.710	0.807	0.165	0.421

Source: Industrial-firm database; Tianyancha database; prefecture-city government work reports.

Note: Standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. The coefficient on treat*post represents the change in state-capital distance after policy implementation for pre-policy purely private firms (distance-6 firms).

Table 9 Indicator characteristics of state-capital investment targets

	(1)	(2)	(3)	(6)	(5)
Dependent variable	Distance				
treat*post × ln city per-capita GDP (t−1)	-0.008***				
	(0.002)				
treat*post × city GDP growth (t−1)		0.002***			
		(0.000)			
treat*post × city fiscal-expenditure intensity (t−1)			-0.078***		
			(0.021)		
treat*post × city financial-development level (t−1)				-0.005**	
				(0.002)	
treat*post × firm subsidy share (t−1)					-1.657***
					(0.420)
treat*post	0.082***	-0.022***	0.006*	0.003	0.001
	(0.026)	(0.004)	(0.003)	(0.004)	(0.003)
ln city per-capita GDP (t−1)	-0.018***				
	(0.005)				
City GDP growth (t−1)		-0.002***			
		(0.000)			
City fiscal-expenditure intensity (t−1)			0.001**		
			(0.000)		
City financial-development level (t−1)				-0.005*	
				(0.003)	
Firm subsidy share (t−1)					0.735
					(0.561)
Constant	5.981***	5.807***	5.781***	5.804***	5.768***
	(0.052)	(0.003)	(0.004)	(0.004)	(0.002)
Year FE	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y
Observations	1,110,189	1,055,045	1,166,053	1,146,333	139,499
R^2	0.847	0.856	0.849	0.848	0.939

Source: Industrial-firm database; Tianyancha database; prefecture-city government work reports; China City Statistical Yearbook.

Note: Standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. By collecting all equity-penetration relationships of industrial firms, we define the equity-penetration distance and the penetrated equity share; by text-recognizing government work reports, we define the industrial-policy shock and the corresponding DID term. The core explanatory variable is the interaction of treat*post with city and firm indicators. Fiscal-expenditure intensity is defined as “general budget expenditure/GDP”; financial-development level as “deposits of financial institutions in the city/GDP”; subsidy share as the firm's “subsidy income/main business revenue.” A negative coefficient on these interactions shows that the stronger the factor, the greater the degree to which industrial policy nationalizes the firm.

Table 10 Local industrial policy and firm investment: state-controlled firms

	(1)	(2)	(3)	(4)
Dependent variable	ln fixed asset investment			
treat*post	0.036***	0.009**	0.009**	
	(0.009)	(0.004)	(0.004)	
treat*post (staggered DID)				0.020***
				(0.008)
Constant	9.448***	9.535***	9.566***	
	(0.003)	(0.001)	(0.001)	
Year FE	Y	Y	Y	Y
City FE	Y	N	N	N
Industry FE	Y	N	N	N
Firm FE	N	Y	Y	Y
Observations	277,029	213,852	218,294	170,360
R^2	0.177	0.962	0.963	

Source: Industrial-firm database; Tianyancha database; prefecture-city government work reports.

Note: Standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. The sample consists of state-controlled firms, defined as those with a penetrated share above 33%. The column (3) sample uses state-controlled firms (penetrated share above 33%) plus the distance-1 sample (whose average penetrated share is above 33%). Under the same definition of the policy shock, column (4) estimates the treatment effect using the staggered DID method (Callaway et al., 2021). The dependent variable is the log of fixed asset investment, representing the strength with which firms support industrial policy through investment.

Table 11 Government-designated key industries and investment level: state-participated firms

Dependent variable	ln fixed asset investment					
Sample:	Distance 2	Distance 3	Distance 4	Distance 5	State share <33%	Distance <6
	(1)	(2)	(3)	(4)	(5)	(6)
treat*post	-0.004	-0.006	-0.027	0.039	0.021	-0.006
	(0.026)	(0.025)	(0.044)	(0.085)	(0.049)	(0.016)
treat*post × (distance 1)						0.056*
						(0.034)
Distance 1						-0.130**
						(0.059)
Constant	11.31***	11.07***	10.85***	10.42***	10.98***	11.15***
	(0.007)	(0.007)	(0.014)	(0.022)	(0.014)	(0.017)
Year FE	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Observations	7,079	4,898	1,651	719	1,763	20,800
R^2	0.966	0.975	0.969	0.961	0.968	0.968

Source: Industrial-firm database; Tianyancha database; prefecture-city government work reports.

Note: Standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Columns (1) to (4) are estimated on the subsamples at distance 2, 3, 4, and 5, respectively; column (5) uses the subsample with a state share below 33%; column (6) uses firms at distance below 6 (i.e., state-controlled or state-participated firms). The interaction of treat*post with the "distance-i" dummy measures the difference in investment, with versus without industrial policy, for state-participated firms at distance i.

Table 12 Industrial policy and investment level: the effect of distance

Dependent variable	ln fixed asset investment	
	(1)	(2)
treat*post × (distance falls)	0.310***	
	(0.095)	
treat*post × (state ownership rises)		0.100*
		(0.05)
treat*post	-0.015	-0.025
	(0.033)	(0.034)
Distance falls	-0.132***	
	(0.044)	
State ownership rises		-0.034
		(0.025)
Constant	11.22***	11.22***
	(0.009)	(0.009)
Year FE	Y	Y
Firm FE	Y	Y
Observations	6,637	6,777
R^2	0.976	0.976

Source: Industrial-firm database; Tianyancha database; prefecture-city government work reports.

Note: Standard errors in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. The interactions of treat*post with the “whether distance falls” and “whether the degree of state ownership rises (i.e., distance falls or state share rises)” dummies measure how the firm's investment level varies with the change in the degree of state ownership during the industrial-policy period.

Table 13 Industrial policy and firm investment: private capital vs. state capital

Dependent variable	ln fixed asset investment					
Sample:	Private-capital sample	Full sample	Private capital & distance-1 sample	Private capital & distance> 1 sample	Private capital & state >33% sample	Private capital & state >5% sample
	(1)	(2)	(3)	(4)	(5)	(6)
treat*post	0.006**	0.006**	0.006**	0.006**	0.006**	0.006**
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
treat*post × (non-private)		0.003				
		(0.013)				
treat*post × (distance 1)			0.035			
			(0.029)			
treat*post × (state-participated)				-0.004		
				(0.014)		
treat*post × (state-controlled)					0.027	
					(0.026)	
treat*post × (state >5%)						0.053
						(0.048)
Non-private		0.008				
		(0.010)				
Distance 1			-0.015			
			(0.040)			
State-participated				0.010		
				(0.011)		
State-controlled					0.011	
					(0.018)	
State is large shareholder						-0.034
						(0.030)
Constant	9.634***	9.726***	9.657***	9.705***	9.716***	9.698***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Year FE	Y	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y	Y
Observations	361,992	386,713	367,893	380,702	383,711	379,301
R^2	0.958	0.960	0.958	0.959	0.960	0.959

Source: Industrial-firm database; Tianyancha database; prefecture-city government work reports.
Note: Clustered standard errors (clustered at the firm level) in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Column (1) is the private-capital sample with distance 6 or a zero share. Column (2) is the full sample; the coefficient on treat*post interacted with "non-private (distance below 6)" represents the investment level of firms with a state component relative to private firms under industrial policy. Column (3) is the private-capital sample plus the distance-1 sample; treat*post interacted with "whether distance is 1 (the rest being private-capital samples, taking 0)" represents the difference in investment level between distance-1 state-capital firms and private-capital firms. Column (4) is the private-capital sample plus the distance-2, -3, -4, -5 subsamples; the interaction of treat*post with "whether distance is 2, 3, 4, or 5" represents state-participated firms' investment support for industrial policy relative to private capital. Columns (5) and (6) are the private-capital sample plus the subsample with a state share above 33% (5%); the interaction represents the difference in investment strength under industrial policy between state-controlled (large-shareholder) firms and private capital.

Table 14 Financing channels for raising investment

	(1)	(2)	(3)	(4)
Dependent variable	Leverage	ln total debt	ln employees	Subsidy / revenue
	Panel A. State-controlled firms			
treat*post	0.002*	0.014***	-0.005	0.005
	(0.001)	(0.004)	(0.003)	(0.004)
Constant	0.497***	9.855***	5.684***	0.166***
	(0.000)	(0.001)	(0.001)	(0.001)
Year FE	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Observations	243,316	241,939	264,250	146,823
R^2	0.918	0.966	0.863	0.867
	Panel B. State-participated firms			
treat*post	0.005	0.017	0.015	-0.019
	(0.004)	(0.015)	(0.014)	(0.031)
Constant	0.556***	11.73***	5.920***	0.627***
	(0.001)	(0.005)	(0.004)	(0.009)
Year FE	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Observations	13,144	13,112	15,155	9,357
R^2	0.925	0.970	0.905	0.870
	Panel C. Private-capital firms			
treat*post	0.002***	0.009***	0.000	0.007**
	(0.001)	(0.003)	(0.002)	(0.003)
Constant	0.518***	10.13***	5.656***	0.219***
	(0.000)	(0.001)	(0.001)	(0.001)
Year FE	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y
Observations	402,954	401,211	444,849	241,009
R^2	0.913	0.963	0.862	0.864

Source: Industrial-firm database; Tianyancha database; prefecture-city government work reports. Note: Clustered standard errors (clustered at the firm level) in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. The equity-penetration database we compiled defines distance and state share. Panel A's sample is state-controlled (holding above 33% or distance 1); Panel B's sample is state-participated (holding below 33% and distance 2–5); Panel C's sample is private capital (penetration distance 6).

Table 15 Industrial policy and firm performance

	(1)	(2)	(3)	(4)	(5)
Dependent variable	Return on assets	ln total assets	ln owners' equity	TFP (LP method)	TFP (OP method)
	Panel A. State-controlled firms				
treat*post	0.003**	0.011***	0.006	0.010***	0.007***
	(0.001)	(0.002)	(0.004)	(0.002)	(0.003)
Constant	0.178***	10.83***	10.01***	10.09***	6.327***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
Year FE	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y
Observations	243,938	244,303	224,262	215,895	215,895
R^2	0.866	0.975	0.950	0.957	0.928
	Panel B. State-participated firms				
treat*post	-0.005	0.005	-0.021	0.003	-0.000
	(0.004)	(0.011)	(0.018)	(0.013)	(0.014)
Constant	0.069***	12.49***	11.57***	10.57***	6.325***
	(0.001)	(0.003)	(0.005)	(0.004)	(0.004)
Year FE	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y
Observations	13,129	13,155	12,226	12,487	12,487
R^2	0.819	0.979	0.955	0.964	0.941
	Panel C. Private-capital firms				
treat*post	0.002***	0.009***	0.006**	0.014***	0.012***
	(0.001)	(0.002)	(0.003)	(0.002)	(0.002)
Constant	0.151***	11.03***	10.14***	10.12***	6.326***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
Year FE	Y	Y	Y	Y	Y
Firm FE	Y	Y	Y	Y	Y
Observations	403,617	404,362	381,409	375,722	375,722
R^2	0.858	0.974	0.947	0.954	0.923

Source: Industrial-firm database; Tianyancha database; prefecture-city government work reports.

Note: Clustered standard errors (clustered at the firm level) in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. This is the DID approach for state-controlled firms.

Appendix Changes and Flows of State-Capital Layout by Distance

Appendix Table 1 Descriptive statistics of variables

Variable	Definition	Obs.	Mean	Std. dev.	Min	Max
dis	Distance	2,020,748	5.807	0.868	1	6
state_share	State share	2,020,748	1.295	10.705	0	100
lninv	Log of fixed asset investment	758,859	9.564	1.641	5.447	1.986
treat*post	DID term	705,667	0.219	0.414	0	1
lev	Total debt / total assets	805,074	0.509	0.286	0.007	1.204
lndebt	Log of total debt	801,872	9.957	1.707	5.394	14.470
finexp_debt	Interest expense / total debt	719,807	0.058	0.152	0.000	1.151
lnass	Log of total assets	807,250	10.896	1.361	8.131	14.950
lnequ	Log of owners' equity	765,551	10.022	1.508	6.372	14.123
tax_rev	VAT / main business revenue	860,152	0.030	0.029	-0.010	0.148
sub_rev	Subsidy / revenue	496,292	0.202	0.799	0.000	5.690
prof_ass	Total profit / total assets	806,245	0.165	0.266	-0.139	1.335
tfp_lp	TFP computed by the LP method	755,638	10.067	1.019	-1.782	16.991
tfp_op	TFP computed by the OP method	755,638	6.324	0.901	-5.953	14.277
lngdppc	Log of city per-capita GDP	2,463,011	11.051	0.563	9.783	12.120
dlngdp	City GDP growth rate	2,149,597	8.514	2.551	-3.900	15.400
exp_gdp	City fiscal expenditure / GDP	2,554,110	0.154	0.065	0.070	0.414
save_gdp	City financial-institution deposits / GDP	2,512,336	1.477	0.532	0.669	3.144

Source: Industrial-firm database; Tianyancha database; China City Statistical Yearbook

Note: Financial indicators in the industrial-firm database span 2012–2015; distance, share, and city economic indicators span 2012–2019. Except for the continuous variables distance and state share, the continuous variables are winsorized at the 1% level.