

# Urban bias in Capital Allocation: Evidence from China<sup>\*</sup>

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## Abstract

Urban bias in resource allocation is central to development debates, yet direct evidence on differential access to capital remains limited. Using firm-level data from China, we infer the cost of capital from returns and compare urban and rural firms within the same prefecture. We find that urban firms have significantly lower returns, indicating cheaper access to capital. This gap is large for state-owned enterprises (SOEs) but negligible for nonstate firms, and is robust across specifications. The results suggest that urban bias in capital allocation is primarily driven by state-directed investment rather than private-sector constraints.

**JEL Classification:** O18, R51, R12.

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# 1 Introduction

The underinvestment of capital in rural areas is viewed as a major impediment to both efficiency and urban-rural equity (Ades and Glaeser, 1995; Davis and Henderson, 2003; Hodler and Raschky, 2014). A prominent explanation is urban bias—favoritism toward urban areas in resource allocation—which has been identified as a central driver of poverty in developing countries (Lipton, 1977). A number of theoretical models link such bias to political incentives and institutional structures (Majumdar et al., 2004; Shifa, 2013).

Despite its prominence, empirical evidence on whether urban areas enjoy a favorable access to capital remains limited. Existing studies largely focus on differences in public spending across regions (Majumdar et al., 2004; Bezemer and Headey, 2008), which do not directly capture distortions in capital markets. Moreover, higher investment in urban areas may reflect efficiency considerations, given agglomeration economies and better connectivity, rather than policy bias (Arnott and Gersovitz, 1986; Mourmouras and Rangazas, 2012).

In this paper, we provide direct evidence on urban bias in capital allocation using firm-level data from China’s Annual Survey of Industrial Firms (ASIF), a setting often viewed as emblematic of urban-biased development. We infer the cost of capital from firm-level returns: under standard assumptions, returns should equalize in the absence of distortions, so systematically higher returns indicate tighter capital constraints. Leveraging detailed location information, we compare firms in urban districts and rural counties within the same prefecture.

We find that urban firms face capital costs 7 percentage points lower than their rural counterparts—a large and statistically significant gap. This gap is driven almost entirely by state-owned enterprises (SOEs), while it is negligible among nonstate firms. These results suggest that urban bias in capital allocation primarily reflects state-directed investment patterns rather than constraints in the private sector.

## 2 Background and data

China’s institutional setting is characterized by the dominance of state-owned enterprises (SOEs), strong urban-biased policies, and decentralized governance that together shape capital allocation. SOEs play a central economic and political role, benefiting from prefer-

ential access to credit, markets, and regulatory treatment, while also serving government objectives such as maintaining urban employment and stability. At the same time, long-standing institutions such as the hukou system and rural land regime systematically favor urban residents over rural populations in access to public services and mobility (Shifa and Xiao, 2023). Following decentralization reforms, prefecture-level governments gained substantial autonomy and influence over local economic decisions, including bank lending, and are incentivized to prioritize growth and social stability. Because these governments are headquartered in urban districts and more responsive to urban interests, they tend to channel investment and resources disproportionately toward urban areas (Brueckner et al., 2026), often at the expense of rural counties, thereby reinforcing an urban bias in capital allocation.

Our firm-level data come from the ASIF (1998–2007). Conducted by the National Bureau of Statistics, the ASIF covers all state-owned enterprises (SOEs) as well as non-state firms with annual sales exceeding 5 million RMB, thereby capturing a vast majority of China’s industrial output. The sample is dominated by manufacturing firms (approximately 90%), with the remainder primarily in utilities. We follow standard cleaning procedures by excluding observations with implausible values (e.g., nonpositive net assets, value added, employment, or labor compensation) and trimming the top and bottom 2% of the distribution of value added relative to net assets.

The ASIF provides detailed location information that allows us to identify each firm’s prefecture and whether it is located in an urban district (*shixiaqu*). We define an indicator variable, *Urban*, equal to one for firms in urban districts and zero otherwise. The final sample covers 320 prefectures, with roughly half of the observations in urban areas. We define SOEs as firms in which the state holds a controlling ownership stake.

### 3 Empirical setup

We estimate the urban–rural gap in the cost of capital using the average revenue product approach (Dollar and Wei, 2007; Chen et al., 2017). An appealing feature of the average revenue approach is that it transforms, under certain assumptions, the first-order condition so that one can use the observable average revenue (instead of the unobservable marginal revenue) to estimate the parameters in the first-order condition.

Consider a firm whose output is a Cobb-Douglas function:  $Y_j = A_j F(K_j, L_j) = A_j K_j^\alpha L_j^{1-\alpha}$ , where  $A_j$  is the TFP level for firm  $j$ ,  $K_j$  is capital, and  $L_j$  is labor. The firm's profit is given by

$$\max_{L_j, K_j \geq 0} \pi_j = P_j A_j K_j^\alpha L_j^{1-\alpha} - W_j L_j - R_j K_j, \quad [1]$$

The prices of output, labor and capital are denoted by  $P_j, W_j$  and  $R_j$ , respectively. To maximize [1], the first-order conditions for capital set the marginal revenue product of capital ( $MRPK$ ) equal to the rental cost of capital ( $R$ ):

Our focus is on the differential in the cost of capital between firms located in rural and urban areas.<sup>1</sup> Combining the production function and the first-order condition for capital [??], one obtains the equation that relates the average revenue product of capital ( $ARPK$ ) with the cost of capital:

$$ARPK_j \equiv \frac{P_j Y_j}{K_j} = \frac{1}{\alpha} R_j \quad [2]$$

Thus, differences in  $ARPK$  directly reflect differences in the cost of capital. Intuitively, all else being equal, firms facing higher capital costs substitute away from capital, resulting in higher output-capital ratios.

We exploit this relationship to compare capital costs across locations. Let  $\bar{R}$  denote the average cost of capital for rural firms and  $(1 - \beta)\bar{R}$  denote the average cost of capital for urban firms.  $\beta$  captures the extent of preferential access to capital relative to rural

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<sup>1</sup>Differences in the cost of capital may reflect not only market interest rates but also distortions to investment incentives. For example, SOEs may pursue non-profit objectives (e.g., political stability), and government-driven overinvestment would be interpreted as cheaper access to capital.

firms. Taking the log of [2], the equation to estimate  $\beta$  is given by

$$\begin{aligned}\log ARP K_j &= Urban_j * \log(1 - \beta) + \log \bar{R} - \log \alpha + \epsilon_j \\ &\approx -\beta * Urban_j + \log \bar{R} - \log \alpha + \epsilon_j\end{aligned}\tag{3}$$

A key advantage of this approach is that  $ARP K$  is independent of firm productivity ( $A_j$ ). This is important because more productive firms may sort into urban areas; such selection does not bias our estimates since higher productivity affects capital demand but not  $ARP K$ . If two firms have different levels of productivity while facing the same cost of capital, they employ different quantities of capital, but they will have the same level of  $ARP K$ . That is, more productive firms employ a larger quantity of capital so that [2] holds. As noted by, among others, Dollar and Wei (2007) and Chen et al. (2017), the simple relationship between  $ARP K$  and the cost of capital in Equation [2] is possible by virtue of the Cobb-Douglas assumption.

Rewriting [2], we obtain the baseline specification:

$$\log(ARP K_j) = -\beta \times Urban_j + \mathbf{\Gamma} \mathbf{X}_j + \epsilon_j\tag{4}$$

where  $\mathbf{X}_j$  is a vector containing the interaction of prefecture, sector and year fixed effects. These controls ensure that the estimated urban bias comes from comparisons between urban and rural firms within the same location, sector, and time period.

## 4 Empirical results

Table 1 presents the benchmark estimates of the urban-rural gap in returns to capital. Column (1) shows that returns are about 7% (i.e.,  $-\beta$  in equation [4]) lower for urban firms than for rural firms, indicating significantly cheaper access to capital in urban areas. Column (2) confirms that SOEs have substantially lower returns than nonstate firms—by about 0.63 log points—consistent with preferential access to financing.

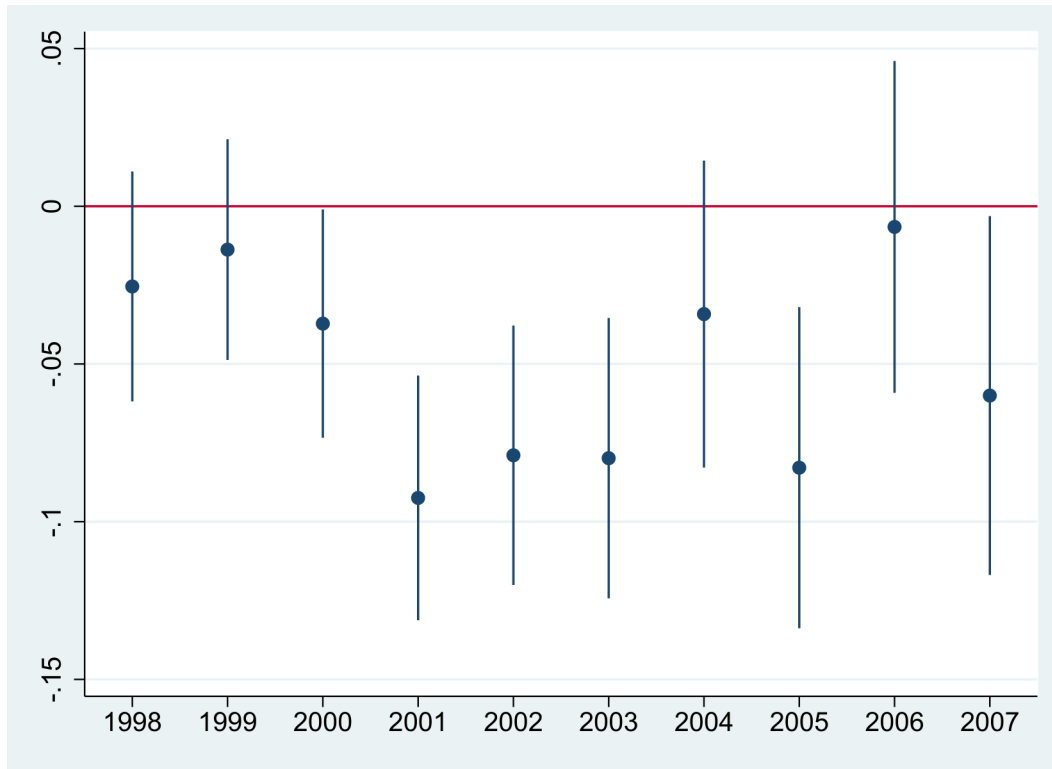
Columns (3) and (4) reveal pronounced heterogeneity by ownership. The urban–rural gap is large and statistically significant for SOEs (around 9%), but small and statistically insignificant for nonstate firms (less than 2%). As shown in column (5), the difference between the two groups is statistically significant, indicating that the overall urban bias

is primarily driven by SOEs. Standard errors are bootstrapped at county level with 1,000 replications.

**Table 1:** Urban-rural gap in capital allocation and state onwership, benchmark results

|              | [1]<br>All         | [2]<br>All         | [3]<br>SOE         | [4]<br>non-SOE  | [5]<br>[3]-[4]     |
|--------------|--------------------|--------------------|--------------------|-----------------|--------------------|
| Urban        | -0.07***<br>(0.02) |                    | -0.09***<br>(0.01) | -0.02<br>(0.02) | -0.08***<br>(0.02) |
| SOE          |                    | -0.62***<br>(0.01) |                    |                 |                    |
| R-squared    | 0.23               | 0.25               | 0.36               | 0.17            | 0.27               |
| Observations | 1,814,416          | 1,814,416          | 269,949            | 1,544,467       | 1,814,416          |

*Notes:* The dependent variable is  $\log ARPK$ . Columns [1] and [2] include all firms. Column [3] shows that urban SOEs have a lower MPKR than rural SOEs. Columns [3] and [4] include state- and nonstate-owned firms, respectively. Column [5] shows the difference between state- and nonstate-owned enterprises with respect to the urban-rural gap in returns to capital. Standard errors bootstrapped at county level are in parentheses. All columns include the interaction of prefecture, year and sector fixed effects. \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%.



We next examine the robustness of this finding. Figure ?? plots the difference between SOEs and nonstate firms in the urban-rural gap (i.e., column [5] of Table 1) over time.

Despite substantial changes in China's economy during the sample period, the gap remains remarkably stable. Although the coefficients are not statistically significant for some of the years, their signs for each year are consistent with the average coefficient.

**Table 2:** Urban-rural gap in capital allocation and state onwership, robustness checks

|                                             | [1]<br>All         | [2]<br>All         | [3]<br>SOE         | [4]<br>non-SOE   | [5]<br>[3]-[4]     |
|---------------------------------------------|--------------------|--------------------|--------------------|------------------|--------------------|
| <b>Panel A:</b> drop 5% on both tails       |                    |                    |                    |                  |                    |
| Urban                                       | -0.06***<br>(0.01) |                    | -0.07***<br>(0.01) | -0.02*<br>(0.01) | -0.04**<br>(0.02)  |
| SOE                                         |                    | -0.44***<br>(0.01) |                    |                  |                    |
| R-squared                                   | 0.18               | 0.19               | 0.35               | 0.18             | 0.22               |
| Observations                                | 1,632,975          | 1,632,975          | 217,139            | 1,415,836        | 1,632,975          |
| <b>Panel B:</b> drop the 10% smallest firms |                    |                    |                    |                  |                    |
| Urban                                       | -0.09***<br>(0.02) |                    | -0.13***<br>(0.01) | -0.03*<br>(0.02) | -0.10***<br>(0.02) |
| SOE                                         |                    | -0.63***<br>(0.01) |                    |                  |                    |
| R-squared                                   | 0.24               | 0.26               | 0.38               | 0.18             | 0.29               |
| Observations                                | 1,632,115          | 1,632,115          | 241,257            | 1,381,858        | 1,632,115          |
| <b>Panel C:</b> exclude utility firms       |                    |                    |                    |                  |                    |
| Urban                                       | -0.07***<br>(0.02) |                    | -0.11***<br>(0.02) | -0.02<br>(0.02)  | -0.09***<br>(0.02) |
| SOE                                         |                    | -0.64***<br>(0.01) |                    |                  |                    |
| R-squared                                   | 0.23               | 0.25               | 0.36               | 0.17             | 0.27               |
| Observations                                | 1,755,543          | 1,755,543          | 223,824            | 1,531,719        | 1,755,543          |

*Notes:* This table reports further robustness checks to outliers. Panel A presents the estimation results after dropping 5% of the observations in both tails of the ARPK distribution. Panel B presents the results for large firms by dropping 10% of the observations in the left-tail of the employment distribution. Panel C presents the results after dropping firms engaged in the production and supply of electricity, heat, gas and water. Standard errors bootstrapped at county level are in parentheses. All columns include the interaction of prefecture, year and sector fixed effects. \*Significant at 10%, \*\*significant at 5%, \*\*\*significant at 1%.

This result indicates that the level of urban bias among SOEs is not driven by specific periods or outliers.

Table 2 presents additional robustness checks. We trim the distribution of *ARPK* by dropping 5% of the observations in both tails of the *ARPK* distribution, restrict the sample to larger firms by dropping 10% of the observations in the left tail of the employment distribution, and exclude utility firms to focus on manufacturing. Across all specifications, the main result remains unchanged: the urban–rural gap in returns to capital is primarily a feature of SOEs.

Some counties in our sample experienced a change in urban status during the sample period. Because this change could be endogenous to capital allocation—for instance, counties that had previously received greater capital investment may have been more likely to be reclassified as urban districts—we re-estimated our main specification excluding observations from counties whose urban status changed during the sample period (roughly 10% of observations). The results from this restricted sample are virtually the same (not reported).

## 5 Conclusion

The idea that governments favor urban areas in capital allocation is central to the development literature, yet direct evidence on differential access to capital remains limited. Existing work largely relies on comparisons of public investment, which do not necessarily capture distortions in capital allocations since it may be more efficient to allocate more capital in urban areas due to, for example, urban-rural productivity differences. Using firm-level data from China, this paper provides direct evidence on urban bias in the cost of capital.

We show that returns to capital are systematically lower for urban firms, implying cheaper access to capital in urban areas. This gap is driven almost entirely by state-owned enterprises (SOEs), while it is negligible among nonstate firms. Importantly, these findings suggest that urban bias primarily reflects state-directed investment patterns rather than financing constraints faced by private firms in rural areas. This pattern suggests that investment choices by the state, as opposed to constraints faced by nonstate enterprises in rural areas, are the more likely factor

driving urban bias.

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