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Industrial Policy Signals and Firm Entry: Evidence from China's Low-Altitude Economy

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Abstract. Industrial policy has returned to the centre of economic debate, yet evidence on how quickly and through which margins it reshapes real activity remains thin. We study firm entry, the margin through which resources first flow into a targeted sector, using a near-universe of 88,133 Chinese low-altitude economy (LAE) firms registered between 1966 and 2025. Over a compressed period the state raised the LAE from a niche concept to a national strategic priority, culminating in its first appearance in the 2024 Government Work Report. Monthly entry exhibits a sharp structural break: a supremum-Wald test dates the trend inflection to April 2024, immediately after the designation, while a level surge crystallises by October 2024 at roughly 2.3 times the counterfactual. The response is concentrated in the policy-named core segment, whose share of new entrants rises from 3% to 24%, and it diffuses spatially away from the incumbent Shenzhen-Guangzhou cluster. Entrants are small and thinly capitalised, a pattern consistent with speculative, subsidy-oriented entry.

Keywords: industrial policy, firm entry, low-altitude economy, new productive forces, China

1. Introduction

Industrial policy has re-entered the mainstream of economic analysis, and a new generation of studies has begun to establish, with credible identification, when and how targeted state intervention affects real outcomes [1]. Much of this evidence concerns mature programmes in advanced or historical East Asian economies, and it typically measures effects on incumbent productivity, exports or employment. Far less is known about the entry margin. The formation of new firms is the primary channel through which capital, entrepreneurship and labour are first drawn into a newly favoured sector, and entry dynamics are a leading indicator of an industry's trajectory [2, 3]. Because entry responds to the returns that policy is expected to create rather than to returns already realised, it also offers an unusually clean, high-frequency window on how firms interpret and act upon policy signals.

China's low-altitude economy (LAE) provides a sharp setting in which to study this margin. The LAE comprises economic activity in the airspace below roughly 1,000 metres, spanning unmanned aerial vehicles, electric vertical take-off and landing (eVTOL) aircraft, general aviation and the services and infrastructure that support them. Over a compressed period the Chinese state elevated the LAE from a niche category to a headline national priority. The concept first entered a national plan in February 2021; the Central Economic Work Conference of December 2023 listed it among

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the strategic emerging industries; on 5 March 2024 it was written for the first time into the Government Work Report as a new growth engine and folded into the official rubric of new productive forces; and on 27 December 2024 the National Development and Reform Commission established a dedicated Low-Altitude Economy Development Department, the first standing body charged with coordinating the sector. The civil aviation regulator projected a market of 1.5 trillion yuan by 2025. This sequence of dated, national and highly visible signals, unaccompanied by any single large direct subsidy, makes the LAE a natural setting in which to identify how firm entry responds to policy attention.

We assemble a near-universe of 88,133 LAE firms registered between 1966 and 2025 and use their registration dates, locations, sectors and capital to characterise the entry response. Three findings emerge. First, monthly entry displays a pronounced structural break aligned with the policy campaign. A supremum-Wald test with an unknown break point places the trend inflection in April 2024, immediately after the Government Work Report, while a Bai and Perron [4] level-shift procedure dates the visible surge to October 2024; a local design estimates that entry jumped to roughly 2.3 times its immediate pre-break level. Annual entry in 2025 reached 13,777 firms, a record that exceeds the earlier commercial-drone boom of 2018 and 2019. Second, the surge is specific to the policy-targeted segment rather than a generic entrepreneurship wave. Entry into the core LAE activities that the policy names (eVTOL, low-altitude manufacturing and low-altitude flight) rises by a factor of 2.7 more than entry into the pre-existing drone category, and the core share of new entrants climbs from 3.3% in 2023 to 23.9% in 2025. Third, the boom is populated by small, thinly capitalised firms, with the median registered capital of entrants roughly halving, and it diffuses geographically away from the incumbent Shenzhen-Guangzhou cluster, the across-province Gini coefficient of entry falling from 0.44 to 0.36.

These results contribute to three literatures. They extend the new empirical economics of industrial policy [1, 5, 6] to the entry margin and to a contemporaneous episode observed in real time through registration microdata. They connect to work on the entry and overcapacity that state promotion can generate, most directly the analysis of Chinese shipbuilding subsidies by Kalouptsidi [7]. And, through the spatial diffusion of entry, they speak to the economics of clusters and place-based policy [8, 9, 10]. Because identification rests on a single aggregate series, we interpret the evidence as an interrupted time series in the sense of Hausman and Rapson [11]. The convergence of an endogenously located break, a segment-specific differential response and a compositional shift makes a policy interpretation considerably more credible than any of these pieces alone.

2. Data

Our data are drawn from a compilation of the Chinese national enterprise registry, filtered to firms whose registered business scope, name or classification identifies them as participants in the low-altitude economy. The file contains 88,133 firms with registration dates spanning December 1966 to December 2025, although meaningful counts begin only in the 2000s. For each firm we observe the unified social credit code, registration date, province, city and district, registered capital, a three-level industry classification, the current operating status and a set of LAE keywords.

We construct three variables central to the analysis. Registration date, parsed to monthly frequency, is the running variable. Registered capital, reported in units of 10,000 yuan, is parsed to a numeric measure; because China moved to a subscribed-capital regime in 2014, this figure reflects committed rather than paid-in capital and is best read as a coarse indicator of firm scale and intent. Finally, we classify a firm as core LAE if its keywords reference eVTOL, low-altitude manufacturing, flight, tourism, logistics, inspection, airspace or advertising, and as peripheral

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(drone-only) otherwise; the distinction separates the newer, policy-salient activities from the established commercial-drone industry that predates the LAE framing.

Table 1 summarises the sample. The firms are overwhelmingly active: 76.5% remain in operation and 23.3% have exited through deregistration or licence revocation. Peripheral drone firms account for 94.0% of the sample and core LAE firms for 6.0%, though this proportion rises sharply over time. Registered capital is highly right-skewed, with a median of 2 million yuan. Entry is geographically concentrated: Guangdong alone accounts for 18.9% of all firms, the top five provinces for 42.1%, and Guangzhou and Shenzhen together for 15.2%; the across-province Gini coefficient is 0.409 and the across-city coefficient 0.687.

Table 1. Summary statistics

Variable	Sample value
Firms (N)	88,133
Registration period	December 1966 to December 2025
Provinces / cities covered	31 / 339
Operating status	Active 76.5%; exited 23.3%
Segment	Core LAE 6.0% (5,310); peripheral drone 94.0% (82,823)
Registered capital (10k yuan)	Median 200; p25 100; p75 800; mean (w99) 952; 4.1% missing
Leading industries	IT 26.7%; wholesale and retail 26.5%; business services 11.9%; aerospace and defence 10.0%
Geographic concentration	Guangdong 18.9%; top-5 provinces 42.1%; Guangzhou+Shenzhen 15.2%; Gini (prov.) 0.409; Gini (city) 0.687

Notes: Registered capital is winsorised at the 99th percentile (w99) for the mean. Gini and Herfindahl indices are computed over raw firm counts by administrative unit.

3. Empirical strategy

We study entry at monthly frequency. Because a national policy is a single time-series event, we adopt an interrupted time series, or regression discontinuity in time, design [11]. For month t we estimate the segmented regression

$$\ln(E_t) = \alpha + \beta_1 t + \beta_2 D_t + \beta_3 (t - t_0) D_t + \Sigma_m \gamma_m + \varepsilon_t \tag{1}$$

where E_t is the count of new registrations, D_t indicates months on or after the policy date t_0, the interaction captures a change in the monthly trend, and the γ_m are calendar-month fixed effects that absorb the strong seasonality of Chinese firm registration. We take the policy date to be the March 2024 Government Work Report and report standard errors robust to heteroskedasticity and autocorrelation. The coefficient β_2 measures an immediate level shift and β_3 the change in trend.

Two concerns motivate additional tests. First, the location of any break should be established from the data rather than imposed, so we apply a supremum-Wald test for an unknown break point [12, 13] and the Bai and Perron [4] procedure. Second, an aggregate break could in principle reflect a coincident macroeconomic or entrepreneurial shock rather than the LAE policy [14]. To address this we exploit the differential exposure of the core and peripheral segments: a common shock should lift both, whereas a policy that names the core activities should raise core entry

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disproportionately. We estimate a difference-in-differences specification that pools the two segments and includes segment-specific trends, so that the interaction terms identify the additional core response net of any pre-existing divergence.

4. Results

4.1. A structural break in firm entry

Figure 1 places the episode in long-run context. Annual entry rose through a first wave that peaked around 2018 and 2019, driven by the commercial-drone boom, receded during 2020 to 2022, and then surged: entry in 2025 reached 13,777 firms, exceeding the earlier peak and more than doubling the 2024 figure.

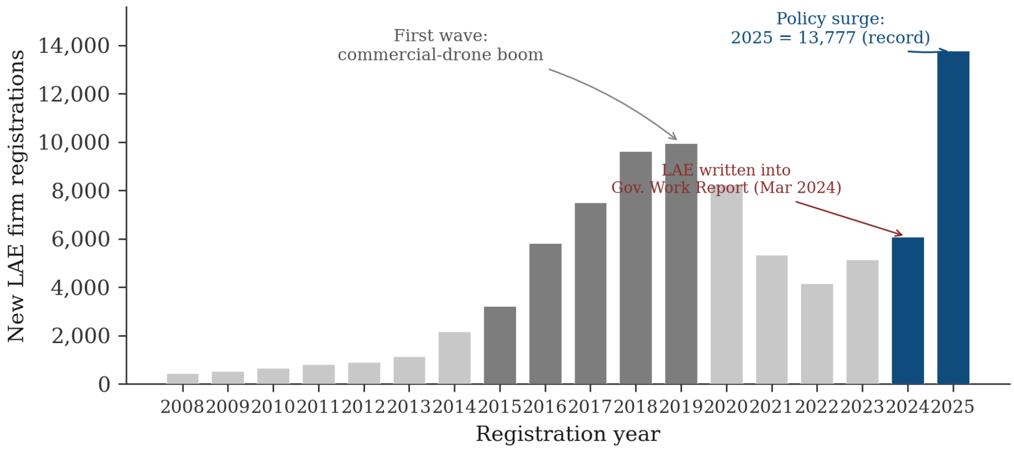

Figure 1. Annual low-altitude-economy firm registrations, 2008 to 2025

Note: The first wave reflects the commercial-drone boom; the 2025 total is a record. Grey bars mark the first wave and blue bars the post-designation years.

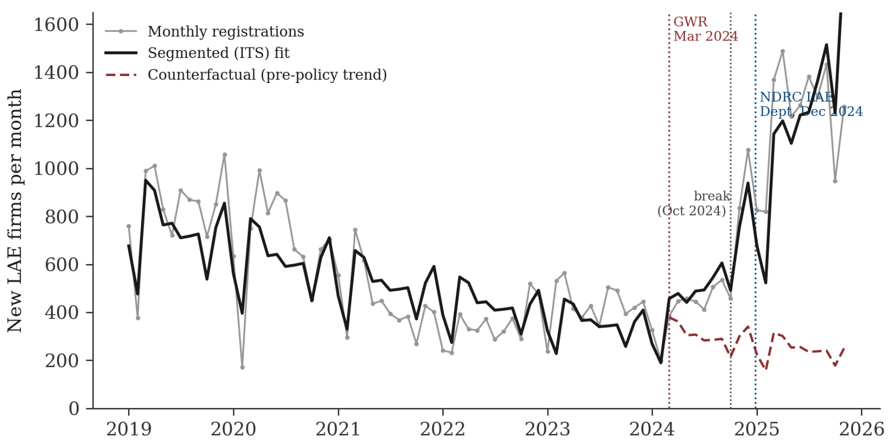

Figure 2. Monthly LAE firm registrations, 2019 to 2025

Note: The fitted interrupted-time-series model and the counterfactual are implied by the pre-policy trend. Vertical markers denote the Government Work Report (GWR, March 2024), the estimated Bai-Perron level break (October 2024) and the establishment of the NDRC Low-Altitude Economy Department (December 2024).

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Figure 2 turns to monthly data. After declining through 2022 and remaining subdued into 2024, entry accelerates sharply from late 2024 and remains elevated throughout 2025. The fitted segmented regression tracks this pattern, and the counterfactual implied by the pre-policy trend, shown for the post-period, lies far below the realised path. Column 1 of Table 2 reports the corresponding estimates. There is no significant immediate level shift at the March 2024 designation (β_2 = 0.097, not significant), but the monthly trend changes markedly: the pre-policy decline of 1.5% per month reverses, with β_3 = 0.092 (p < 0.001). The absence of an instantaneous jump alongside a strong trend break is consistent with a transmission lag, in which the initial signal was reinforced through provincial adoption during 2024 and the creation of the coordinating agency in December 2024 before entry responded in volume. The trend break is stable across estimation windows beginning in 2020, 2021 and 2022 (columns 2 to 4).The break location is confirmed by formal tests. The supremum-Wald statistic reaches 82.4, far above conventional critical values, and is maximised at April 2024, one month after the Government Work Report; its five most likely break months all fall between December 2023 and May 2024, spanning the interval from the Central Economic Work Conference to the report. The Bai and Perron level-shift procedure dates the discontinuity to October 2024, and a local design around that break estimates a level increase to 2.3 times the immediate pre-break mean (p < 0.001), robust across bandwidths. The two procedures identify complementary features: the trend inflection coincides with the policy signal, while the visible level surge follows with a lag of about two to three quarters.

Table 2. Firm entry and the policy break

Panel A: interrupted time series (dep. var. = ln monthly entry)				
Estimation window	(1) 2019-25	(2) 2020-25	(3) 2021-25	(4) 2022-25
Pre-policy trend (β1)	−0.015***	−0.012***	−0.002	0.011*
	(0.003)	(0.004)	(0.005)	(0.007)
Level shift at policy (β2)	0.097	0.026	−0.087	−0.221**
	(0.165)	(0.157)	(0.108)	(0.091)
Trend change (β3)	0.092***	0.089***	0.080***	0.065***
	(0.010)	(0.010)	(0.011)	(0.012)
Seasonal fixed effects	Yes	Yes	Yes	Yes
Observations	83	71	59	47
R-squared	0.755	0.749	0.842	0.887
Panel B: structural break tests				
Supremum-Wald statistic (estimated break)	82.4 (April 2024)			
Bai-Perron level-shift break	October 2024			
Local RDiT level shift at break (±12m)	0.830*** (0.248) → ×2.3			

Notes: Heteroskedasticity- and autocorrelation-robust (Newey-West, 6 lags) standard errors in parentheses. All specifications include calendar-month fixed effects. Panel B critical values follow Andrews [13]. *** p < 0.01, ** p < 0.05, * p < 0.10.

4.2. The response is policy-specific

If the surge reflected a broad improvement in the entrepreneurial climate, it would appear across LAE segments. Instead it is concentrated in the activities the policy names. Panel B of Figure 3 indexes monthly core and peripheral entry to January 2024: the two series move together before the

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designation and diverge sharply afterwards, with core entry rising far faster. The difference-in-differences estimates in Table 3 confirm this. Relative to peripheral drone firms, core LAE entry jumps by a factor of 2.7 at the policy date (interaction of 0.99, $p < 0.001$) and grows about 3% per month faster thereafter ($p < 0.01$), net of a segment-specific trend. Core firms were already the faster-growing segment before 2024, reflecting the emergence of eVTOL and advanced LAE technologies from around 2021, so we do not read the level of core growth as wholly policy-induced; the discontinuity and further acceleration at the designation, however, are difficult to attribute to a smooth continuation of that earlier trend or to a common shock.

The reorientation is visible in composition. Panel A of Figure 3 shows the core share of new entrants rising from 1.3% in 2018 and 3.3% in 2023 to 12.1% in 2024 and 23.9% in 2025. Within two years the policy shifted the character of entry from an overwhelmingly drone-based industry towards the eVTOL, manufacturing and flight activities at the centre of the official agenda.

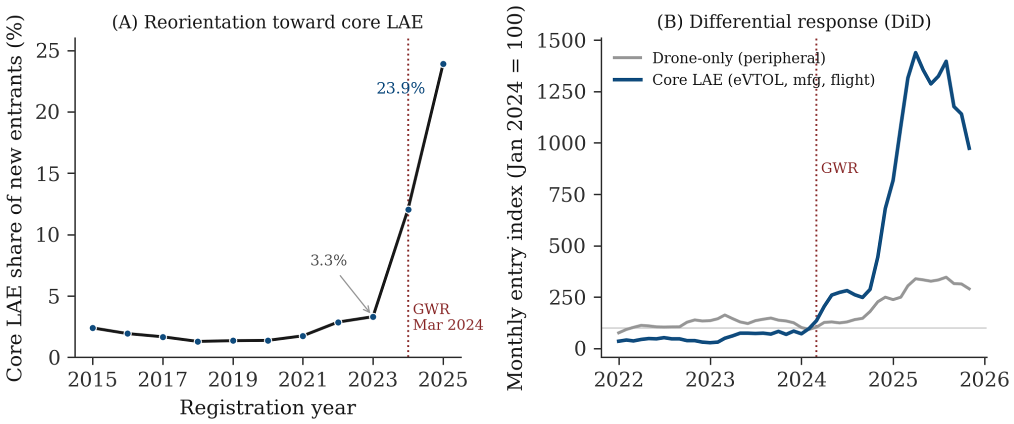

Figure 3. Mechanisms

Note: Panel A: the core-LAE share of new entrants by registration year, which jumps after the March 2024 designation. Panel B: monthly entry of core and peripheral firms indexed to January 2024, a difference-in-differences view in which the segments move together before the designation and diverge afterwards.

4.3. Quality and geography of entry

Two features temper a simple reading of the surge as a build-up of productive capacity. First, entrants are small. The median registered capital of new firms fell from 2 to 3 million yuan in the pre-policy years to 1 million yuan in 2024 and 2025, and the winsorised mean fell in parallel (Table 3). Although the subscribed-capital regime and a shift towards asset-light service and software firms both contribute, the pattern is consistent with a wave of small, opportunistic entrants of the kind that state promotion is known to attract, and it echoes the overcapacity and low-quality entry documented for other Chinese industrial-policy episodes [7].

Second, the boom diffuses geographically. Comparing firms registered before and after the designation, the across-province Gini coefficient of entry falls from 0.436 to 0.361 and the province Herfindahl index from 0.073 to 0.049; Guangdong's share of entrants falls from 20.8% to 12.2%, and the Guangzhou-Shenzhen share from 17.1% to 8.0% (Table 3). As some thirty provincial governments incorporated the LAE into their own work programmes, entry spread well beyond the original Shenzhen-Guangzhou drone cluster. This dispersion is the spatial signature of decentralised policy mimicry: rather than reinforcing the incumbent agglomeration, the national campaign

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encouraged many localities to cultivate their own clusters, a configuration with well-known efficiency risks [8, 9].

Table 3. Mechanisms: policy specificity, quality and geography

Panel A: difference-in-differences, core vs peripheral (dep. var. = ln monthly entry)		
	Coefficient	Implied effect
Core × Post (level shift)	0.990*** (0.168)	×2.7
Core × Post-trend (per month)	0.030*** (0.010)	×1.43 / yr
Core-specific pre-trend (per month)	0.026*** (0.003)	n.a.
Observations (2 segments × 83 months)	166	
Panel B: core-LAE share of new entrants, by year		
2022 / 2023 / 2024 / 2025	2.9% / 3.3% / 12.1% / 23.9%	
Panel C: quality and geography, before vs after March 2024		
	Pre	Post
Median registered capital (10k yuan)	300	100
Gini coefficient (province)	0.436	0.361
Guangdong share of entrants	20.8%	12.2%
Guangzhou + Shenzhen share	17.1%	8.0%

Notes: Panel A pools core and peripheral monthly series over 2019-2025 with segment-specific linear trends, calendar-month fixed effects and standard errors clustered by month. The core-specific pre-trend is reported to make transparent that the segments were not on parallel paths before the designation. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

4.4. Robustness

The trend break is robust to the estimation window and to the treatment of autocorrelation. Placebo designations in 2021, 2022 and 2023 yield smaller trend changes and, unlike the true date, negative estimated level shifts, reflecting that any break placed within the post-trough recovery captures part of the rebound; the supremum-Wald test, which searches all dates, nonetheless selects the true policy window as the global maximum. The difference-in-differences result survives the inclusion of segment-specific trends, which is the more demanding specification given the non-parallel pre-trends. We regard the aggregate design as identifying an association whose causal reading is supported, though not proven, by the convergence of these tests.

5. Conclusion

Using a near-universe of registered firms, we show that China's designation of the low-altitude economy as a national strategic priority was followed by a sharp and specific surge in firm entry. The response was not instantaneous: a strong trend break coincides with the March 2024 Government Work Report, but the visible level surge materialised about two to three quarters later, as the initial signal was reinforced by provincial adoption and a dedicated coordinating agency. The surge was concentrated in the policy-named core activities, doubling the core share of entrants twice over within two years, and it diffused across provinces rather than deepening the incumbent cluster.

Two implications follow. First, industrial-policy signals can move the entry margin quickly and selectively, even without a single large subsidy, which suggests that the expectational content of

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designation, and the credibility lent by institutional follow-through, matters alongside direct fiscal support. Second, the composition of the induced entry raises familiar concerns: a wave of small, thinly capitalised firms dispersed across many competing localities is the configuration from which overcapacity and duplication have emerged in earlier Chinese episodes. Whether the LAE entrants translate into durable capacity or into a shakeout is the natural question for future work, which the panel structure of registration data, followed forward through survival and performance, is well suited to address. Our evidence should be read as descriptive of a striking policy episode and as an interrupted time series rather than a fully identified experiment; its value lies in documenting, in real time and at the level of the individual firm, how rapidly and how selectively entrepreneurship responds to the direction of the state.

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