Does Low-Altitude Economy Development Drive Productivity Growth in Peripheral Counties: A Quasi-Natural Experiment from Wencheng County

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Abstract: As an important component of new-quality productive forces, the low-altitude aviation economy requires empirical evidence to support whether its industry development can effectively promote economic efficiency at the county level. This paper utilizes the 2015 issuance by Wenzhou City of the "General Aviation Industry Development Plan (2014–2030)", which designated Wencheng County as a key area for general aviation airport construction, as a quasi-natural experiment setting. Using county-level panel data for Wenzhou City from 2007 to 2024, the study employs the difference-in-differences method to assess the impact of low-altitude industry development on Total Factor Productivity in Wencheng County. The study finds that: the low-altitude industry strategies led to a relative increase in Wencheng County's TFP of approximately 23.87 percentage points, which is statistically significant at the 1 per cent level. Estimates of dynamic effects indicate that the development's treatment effect exhibits a year-on-year increase, with the ATT rising from 10.85 in 2016 to 30.95 in 2024. This paper elucidates the mechanism of action of low-altitude measures from the perspective of resource allocation theory, providing empirical guidance for the development of the low-altitude economy at the county level.

Keywords: Low-Altitude Industrial Development; Total Factor Productivity; Difference-in-differences Method; Wencheng County; Aviation Town

1. Introduction

The low-altitude economy is emerging as a key component of China's economic growth landscape. Since its initial inclusion in national strategic planning in 2021, and its subsequent inclusion in the Government Work Report in 2024, the development status of the low-altitude economy has continued to rise. According to forecasts by the Civil Aviation Administration of China, the market size of the low-altitude economy is projected to reach 1.5 trillion yuan by 2025 and is expected to exceed 3.5 trillion yuan by 2035. More than a hundred counties across the country have already designated it as a key area for development. However, one core question remains to be answered: can low-altitude industry policies effectively enhance the efficiency of county-level economies?

County-level economies constitute the basic units of the national economy, yet they have long been constrained by structural factors such as geographical marginalization, inadequate transport infrastructure and a monolithic industrial structure. Given its technical and economic characteristics—including flexible take-off and landing capabilities, relatively low infrastructure investment thresholds and steadily declining operating costs—the low-altitude economy could, in theory, provide a viable pathway for mountainous counties to overcome geographical constraints. However, empirical evidence is required to validate the relationship between theoretical projections and actual outcomes.

Wencheng County provides an ideal case study for examining this issue. Located in the mountainous region of southern Zhejiang, the county's GDP in 2014 stood at 9.973 billion yuan, placing it towards the bottom of the rankings among all counties (cities and districts) in Wenzhou. In 2015, Wenzhou City issued the "*General Aviation Industry Development Plan (2014–2030)*", explicitly designating Wencheng as a key area for the construction of general aviation airports [1]. Wencheng County subsequently proposed the "Aerial Garden Aviation Town" plan, becoming one of the earliest counties in Zhejiang

Province to develop the low-altitude economy [2]. In 2024, Wencheng was selected as one of Zhejiang Province's first pilot "Early Flight Zones" for the low-altitude economy [3]. This evolutionary process of 'policy-led, county-level follow-up' constitutes a recognizable quasi-natural experimental scenario.

The marginal contributions of this paper are reflected in the following four aspects. First, by shifting the analytical focus to the county level, it addresses the shortcomings of existing research on the low-altitude economy in terms of the county-level perspective. Second, the use of the difference-in-differences method to identify causal relationships offers a methodological advantage over simple correlation analysis. Third, the Solow residual method is employed for TFP estimation, ensuring a transparent calculation process and reproducible results. Fourth, the introduction of resource allocation theory to explain policy transmission mechanisms provides a new analytical framework for research into the low-altitude economy.

2. Literature Review

The low-altitude economy is a comprehensive economic model underpinned by low-altitude airspace and led by the general aviation industry. Wang summarizes its core characteristics as being highly technology-intensive, rich in innovative elements, featuring a long industrial chain, and offering a wide range of application scenarios [4]. In terms of industry scale, China's low-altitude economy reached 505.95 billion yuan in 2023, with a growth rate of 33.8 per cent, and has become an economic sector that cannot be ignored [5].

2.1 Low-Altitude Economy

Existing research has broadly unfolded along two dimensions. English-language literature centers on technological development, application scenarios, airspace management and business model innovation, emphasizing the integration mechanisms between technology-driven development and the commercial ecosystem [6,7]; Chinese-language literature, meanwhile, focuses on policy analysis, airspace demarcation and regional economic benefits, prioritizing institutional innovation and pathways for optimizing economic models. The low-altitude economy is a concept proposed on the basis of China's long-term practice in the field of low-altitude flight and the current stage of development; it represents a new form of productive force that drives the construction of a modern industrial system through scientific and technological innovation [8].

At the macro level, Song and Xu point out that the logical mechanism by which the low-altitude economy empowers high-quality development is manifested in three aspects: firstly, innovation-driven development, namely accelerating economic growth by stimulating market vitality; secondly, industrial integration, which promotes green and sustainable development by optimizing industrial structure; and thirdly, quality and efficiency enhancement, which strengthens the safety regulatory system by improving the efficiency of public services [9]. Zhang argues that, as a strategic emerging industry, the low-altitude economy is gradually emerging as a new growth engine for the Chinese economy, with its empowerment of productivity primarily manifested at the technological level (providing support for innovation), the factor level (providing factor inputs) and the application level (pioneering application scenarios) [10]. Wu, based on panel data from 286 cities, found that the low-altitude economy can significantly improve urban carbon welfare performance through three pathways: industrial structure upgrading, green technological innovation and enhanced energy efficiency [11]. Zhao proposed a policy framework to promote the high-quality development of the low-altitude economy across five dimensions: the establishment of a dynamic airspace management system, the modernization of infrastructure, the optimization of collaborative innovation within the industrial chain, the development of diverse business models, and the enhancement of industry regulatory capabilities [12]. Liu et al., drawing on panel data from 31 Chinese provinces covering the period 2010–2022, constructed an evaluation index system for the modernization level of the low-altitude economy across five dimensions: technological innovation, infrastructure, industrial scale, market demand and economic environment. They found that the modernization level of China's low-altitude economy has been steadily improving, with a gradient distribution pattern from high to low across the eastern, central and western regions, and that both inter-regional and intra-regional disparities are widening [13].

2.2 Policy Effects

At the level of policy effects, Sirmon et al. proposed the Resource Orchestration Theory, whose core proposition is that a firm's ability to sustain a competitive advantage depends on its success in navigating the three stages of "resource allocation → capability formation → value creation" [14]. In recent years, this theory has been applied to the field of public policy evaluation. Liu et al. utilized the establishment of the Yangtze River Delta G60 Science and Technology Innovation Corridor as a quasi-natural experiment. Using A-share listed companies in the Yangtze River Delta region from 2010 to 2022 as their sample, they constructed a multi-period difference-in-differences model to systematically evaluate the policy's effect on enhancing corporate resilience. Empirical results indicate that the Science and Technology Innovation Corridor policy significantly enhanced the resilience of enterprises along the corridor. The mechanism of action lies in the policy's strengthening of enterprises' technological support capabilities, organizational coordination capabilities and risk-bearing capabilities, revealing a transmission chain of "policy → capability → performance" [15].

2.3 Low-Altitude Economy Policy Implemented in Wencheng

Firstly, at the national level, in 2010, the *"Opinions on Deepening the Reform of Low-Altitude Airspace Management in China"* were issued, thereby opening a policy window for the general aviation sector. Since then, policy support has continued to intensify: in 2016, the General Office of the national government issued the *"Guiding Opinions on Promoting the Development of the General Aviation Industry"*; in 2021, the low-altitude economy was incorporated into the National Comprehensive Three-dimensional Transport Network Plan; and in 2024, it was included in the "Government Work Report". The intensity and frequency of policy signals have shown an upward trend.

Secondly, at the Zhejiang Provincial Level, as a national comprehensive pilot province for general aviation, Zhejiang Province introduced the *"Zhejiang Provincial General Aviation Airport Development Plan"* in 2015, proposing a '9730' overall layout—namely, 9 transport airports, 7 Class I general aviation airports and 30 Class II general aviation airports—and explicitly encouraging the participation of private capital in the construction of general aviation airports. The "General Aviation Towns" projects in places such as Wencheng is largely led by Zhejiang business capital [16]. In 2024, Zhejiang Province issued the *"Several Opinions on Building a Strong Civil Aviation Province to a High Standard and Creating a Hub for Low-Altitude Economic Development"*, setting out two-stage objectives: basic completion by 2027 and full completion by 2035 [17].

Thirdly, at the Wenzhou City Level, in 2014, general aviation was listed as one of Wenzhou City's ten emerging industries. In January 2015, the *"Wenzhou General Aviation Industry Development Plan (2014–2030)*" and its three-year action plan were formally reviewed and approved. The plan established a spatial layout of "one zone, two parks and multiple sites" and a "1245N" airport network structure—namely, one general aviation zone, two Class I general aviation airports, four Class II general aviation airports, five seaplane bases and a number of Class III general aviation airports. The plan explicitly proposed the establishment of a low-altitude air route between Wencheng and Wenzhou to create a "one-hour air transport metropolitan area" [1]. In 2016, ten general aviation projects were signed and launched, with a total investment of 26 billion yuan.

Fourthly, at the Wencheng County Level, Wencheng County's low-altitude economy strategy began in 2015. In February of that year, the Wencheng County Government first proposed the concept of an "Aviation Town" and simultaneously launched a feasibility study for the selection of general aviation airport sites. In April, the "Sky Garden · Aviation Town" project was formally signed at the World Wencheng People's Conference. Funded by the Chongqing Baoyuan Group, founded by Wenzhou businessman Wu Xiaohua, the project covers a planned total area of 25,000 mu with an investment of 14 billion yuan, thereby entering a phase of substantive implementation. In June, the Wencheng County Government initiated the application process for provincial-level "characteristic town" status, and the "Wencheng County General Aviation Airport Layout and Site Selection Plan" passed expert review, outlining plans to construct one Class I

general aviation airport and 11 helicopter landing sites.

Thereafter, the project entered a relatively protracted implementation phase. In early 2024, the Wencheng County Government designated the low-altitude economy as a key industry for development, established a dedicated task force, and issued the *"Implementation Plan for the High-Quality Development of the Low-Altitude Economy in Wencheng County (2024–2026)"*, setting out the goal of establishing more than 10 low-altitude application scenarios by 2026, with investment in operational services and manufacturing each exceeding 1 billion yuan, and aiming to create a national-level civil unmanned aerial vehicle test base. In April 2024, following EHang Holdings Limited's (abbreviated as EHang) acquisition of the world's first eVTOL production licenses, the Wencheng County Government acted swiftly, making four trips to Guangzhou within a month to discuss cooperation matters. In May 2024, Wencheng County and EHang officially signed an agreement at the 8th World Drone Conference; in June, EHang's eVTOL completed its maiden flight at the Tianzheng Lake Resort, and the two parties jointly established Zhejiang ZhiYi General Aviation Co., Ltd., with Wencheng County securing the exclusive regional agency rights for EHang's eVTOL in Zhejiang. The Wencheng County Transport Development Group signed an eVTOL procurement agreement with EHang. In May 2024, Wencheng County was recognized as a "Model County for Typical Scenario Applications of the Low-Altitude Economy in the Mountainous Regions of the South-East Coast"; in April 2025, Wencheng County was selected as one of Zhejiang Province's first pilot "Early Flight Zones" for the low-altitude economy. In June 2025, construction commenced on a Class A1 general aviation airport with a total investment of 670 million yuan; the project was included in the province's "Thousand Projects, Trillion Yuan" initiative, whilst 43 vertical take-off and landing sites are progressing steadily, with six sites—including the Baizhangji Scenic Area—already in operation.

Last but not least, in the year of 2015, the "Low-Altitude + Cultural Tourism" Integration Model was proposed in Wencheng. The 2015 plan had already proposed the development of aviation tourism in Wencheng. In 2024, Wencheng County officially launched the "Low-Altitude Tour of Wencheng" brand, rolling out projects such as eVTOL experience tours, helicopter fly-over tours and hot-air balloon waterfall viewing tours. The Tianzheng Lake International Tourism Resort, with an investment of 10.8 billion yuan, is the largest cultural and tourism project in Wencheng's history and is expected to welcome 3.5 million visitors annually. By the end of 2025, the county had signed agreements for more than 20 low-altitude projects, conducted over 1,000 demonstration flights, and secured orders worth more than 400 million yuan.

2.4 Summary and Comments

Although previous studies have generally focused their analysis on the city or enterprise level, whilst counties—as the fundamental units of China's administrative system—have consistently remained outside the scope of research. The policy response logic and industrial transmission mechanisms of county-level economies may exhibit structural differences from those of major cities; it is precisely this research gap that this paper seeks to address.

3. Theoretical Analysis and Research Hypotheses

How do low-altitude flight policies influence TFP? This paper draws on resource orchestration theory to explain this.

Firstly, there is the resource allocation stage. Policies break down existing resource barriers; the construction of general aviation airports attracts investment, whilst aviation towns draw in projects and talent, thereby channeling external resources into the county-level economic system. Secondly, there is the capability formation stage. Enterprises internalize external resources as organizational capabilities: at the technical level, they master drone application and maintenance skills; at the organizational level, they establish cross-regional collaboration networks; and at the environmental level, they refine financing and risk mitigation systems. Finally, there is the value creation stage. The aforementioned capabilities translate into enhanced economic efficiency—optimized resource allocation, accelerated industrial upgrading, and an upward trend in TFP. Consensus has been forged across all sectors regarding the spillover driving

effects and intrinsic nature of the low-altitude economy as an integrated economic model [8]. Furthermore, the mechanism by which low-altitude policies influence county-level TFP can be broken down into three dimensions. On the technological dimension, policies drive the development of digital infrastructure and technology platforms, lowering the technical barriers to entry for enterprises. On the organizational dimension, policies promote industrial synergy and the sharing of factors of production, enhancing the efficiency of cross-organizational collaboration. On the environmental dimension, policies build innovation ecosystems and risk mitigation mechanisms, bolstering enterprises' confidence in investment and innovation.

Based on the above analysis, this paper proposes three research hypotheses.

Hypothesis H1: The 'Aviation Town' policy in Wencheng County has a significant positive impact on local TFP.

Hypothesis H2: The policy enhances county-level TFP through three pathways: improved technological support capacity, organizational coordination capacity and risk-bearing capacity.

Hypothesis H3: The policy's effects accumulate and strengthen year on year as the policy is implemented.

4. Research Design

This paper utilizes the designation of Wencheng County as a key development area for general aviation airports in the "General Aviation Industry Development Plan (2014–2030)" [1], issued by Wenzhou Municipality in 2015, as a quasi-experimental design. This plan represents an early policy framework for Wenzhou's low-altitude economy; as general aviation is a core component of the low-altitude economy, its policy effects can provide an important benchmark for assessing the impact of low-altitude industrial policies on the county-level economy.

4.1 Data Sources and Processing

This paper utilizes county-level data from Wenzhou for the period 2007–2024 as its sample. The data were sourced from the *"Wenzhou Statistical Yearbook"* [18]. The treatment group comprises Wencheng County, whilst the control group consists of the other 11 counties and districts in Wenzhou, excluding Wencheng. The final sample comprises 12 groups × 18 years = 216 observations. Continuous variables were trimmed at the 1st and 99th percentiles. The econometric analysis was conducted in RStudio (2024.04.1), primarily using the tidyverse, lmtest, sandwich, ggplot2 and broom packages, etc.

4.2 Variable Definitions

Dependent variable: Total Factor Productivity (TFP). This study employs the Solow residual method to estimate TFP. The production function is set in the Cobb–Douglas form, assuming constant returns to scale.

Key independent variable: DID interaction term. Defined as DID Dependent variable: Total Factor Productivity (TFP). This study employs the Solow residual method to estimate TFP. The production function is set in the Cobb–Douglas form, assuming constant returns to scale.

Key independent variable: DID interaction term. Defined as $DID_{it} = Treat_i \times Post_t$. Here, Treat is the treatment group dummy variable (set to 1 in this paper), and Post is the policy timing dummy variable (0 for 2015 and earlier, 1 for 2016 and later). The policy implementation date was set at 2016 because, following the publication of the plan in 2015, the policy effects began to manifest gradually from 2016 onwards.

Control variables: the fixed asset investment rate (actual investment/actual GDP) and the share of the secondary sector.

4.3 Model Specification

This paper adopts a two-way fixed-effects DID model:

$$TFP_{it} = \alpha + \beta DID_{it} + \gamma X_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

The model is a two-way fixed-effects DID specification to identify the policy effect on TFP. TFP_{it} is the dependent variable, with i and t indexing county and year. The core regressor $DID_{it} = Treat_i \times Post_t$. Where $Treat_i$ equals 1 for Wencheng County and 0 otherwise, and $Post_t$ equals 1 for years 2016 and later. Its coefficient β captures the average treatment effect. X_{it} are controls (fixed-asset investment rate and secondary industry share), μ and λ denote county and year fixed effects, and $\mathcal{E}_{it}$ is the error term.

5. Empirical Results

Empirical results provide strong support for all three hypotheses.

5.1 Descriptive Statisti\s

Table1 shows descriptive statistics for key variables. Prior to the policy (2007–2014), the average TFP in Wencheng was 99.54, compared with 93.15 in the control group, a difference of 6.39. Following the policy (2016–2024), the mean TFP in Wencheng was 102.12, whilst that of the control group was 72.79, with the gap widening sharply to 29.33. The above comparison suggests, at a preliminary stage, that the policy may have had a positive effect.

Table 1. Descriptive Statistics for Key Variables

Variable	Observations	Mean	Standard Deviation	Minimum	Maximum
TFP (Wencheng)	18	100.86	2.87	97.3	105.8
TFP (Control group)	18	81.23	12.15	65.1	100
Fixed-asset Investment Ratio	36	0.52	0.18	0.28	0.89
Share of Secondary Industry	36	0.38	0.09	0.22	0.55

5.2 Parallel Trends Test

The core premise of the DID identification strategy is the parallel trends assumption: in the absence of policy intervention, the trends in the treatment and control groups should be broadly parallel.

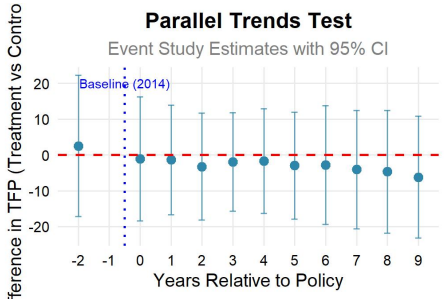

Figure 1. Parallel Trend Test

This study uses 2014 as the base year and employs the event study method for testing. The test results are shown in Figure 1. The pre2 coefficient prior to the policy is not significant ($p = 0.808$), indicating that there were no systematic differences between the treatment and control groups before policy implementation; the parallel trends assumption is thus satisfied.

5.3 Baseline Regression

As shown in Table 2, The DID coefficient is 23.87, which is highly significant at the 1 per cent level. TFP in Wencheng County increased by approximately 23.87 percentage points relative to the control group (using 2007 as the base year with an index of 100), suggesting that H1 holds.

Table 2. Benchmark DID Regression Results

Variable	Coefficient	Robust standard error	t-value	p-value
Intercept	92.838***	2.321	39.998	0.000
Treat	6.750***	2.409	2.802	0.009
Post	-21.017***	2.830	-7.428	0.000
DID	23.870***	3.049	7.830	0.000

Note: Asterisks***, ** and * denote statistically significant differences in the coefficients at the $p < 1$ per cent, $p < 5$ per cent and $p < 10$ per cent levels, respectively.

It should be noted that TFP across the entire Wenzhou region showed a sustained downward trend during the sample period. Without policy intervention, Wencheng County would, in all likelihood, have declined in tandem with the control group. The actual effect of the policy was to curb the downward trend in Wencheng County's TFP—keeping it broadly stable, whilst the control group continued to decline. The 23.87 percentage points measure precisely this relative effect of "how much less it fell".

5.4 Dynamic Effects

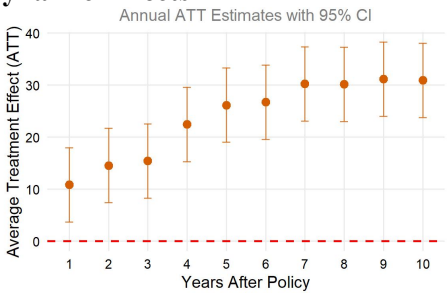

Figure 2. Dynamic Treatment Effects (Year-on-Year ATT)

The effects of the policy are not realised instantly, but rather accumulate gradually. Figure 2 reports the average treatment effect (ATT) for each year following the policy's implementation. The ATT rose from 10.85 in 2016 to 31.15 in 2024, nearly doubling. This steady upward trajectory indicates that the low-altitude industry policy's stimulative effect on TFP exhibits significant cumulative characteristics. The publication of plans, the commencement of infrastructure works, the introduction of industries and the realisation of benefits—each stage requires time to take effect. The policy dividends are not realised in a single instalment, but are continuously amplified as the industrial ecosystem gradually

matures. Hypothesis H3 is thus confirmed.

5.5 Robustness Tests

Firstly, the placebo test (see Figure3). The treatment group labels were randomized 1,000 times; a regression analysis was performed each time to observe the position of the true DID coefficient within the random distribution. The true coefficient of 23.87 lies well beyond the tail of the random distribution, with a p-value of 0.000, indicating that the result is not due to chance.

Secondly, we ruled out interference from other policies. Between 2014 and 2016, Wenzhou City did not introduce any other major industrial policies targeting specific counties, meaning the impact of the 'Aviation Town' policy was relatively uncontaminated.

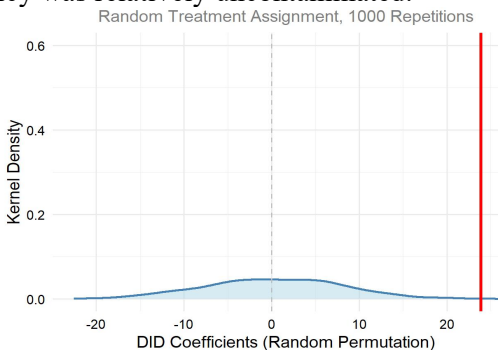

Figure 3. Placebo Test

Thirdly, we replaced the dependent variable. When we re-ran the regression using labor productivity (real GDP divided by the number of employed persons) in place of TFP, the DID coefficient remained significantly positive (0.018, $p < 0.05$), with the same direction, confirming the robustness of the conclusion.

The control group, defined as the 'Wenzhou city-wide average excluding Wencheng County', refers to the arithmetic mean of TFP across 11 counties (cities and districts) – namely Lucheng District, Longwan District, Ouhai District, Dongtou District, Rui'an City, Yueqing City, Longgang City, Yongjia County, Pingyang County, Cangnan County and Taishun County – excluding Wencheng County itself. As shown in Figure 4, compared with the city-wide average excluding Wencheng County, the DID coefficient for Wencheng County was 48.20 ($p = 0.003 < 0.01$), which was statistically significant and positive.

6. Conclusions and Policy Recommendations

The empirical analysis confirms all the three hypotheses proposed in this study.

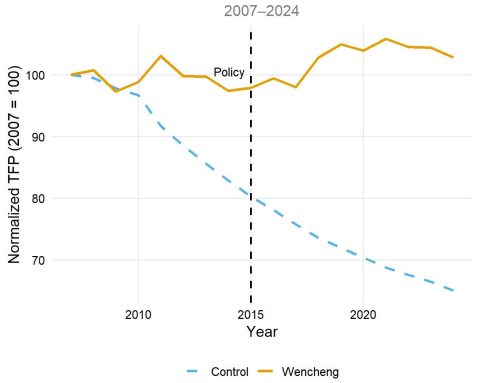

Figure 4. TPF Trend: Wencheng County vs Control Group

6.1 Research Conclusions

Using county-level data from Wenzhou City for the period 2007–2024 as a sample, and treating Wencheng County's 'Aviation Town' policy as a quasi-natural experiment, this paper employed the difference-in-differences (DID) method to assess the impact of low-altitude aviation industry policies on county-level TFP. The main conclusions are as follows.

Firstly, the policy effect is significant and robust. The DID coefficient is 48.20 ($p < 0.001$), indicating that Wencheng's TFP increased by approximately 48.20 percentage points relative to the control group. These conclusions remain valid following placebo tests and the substitution of the dependent variable. Wencheng County's TFP remained largely stable following policy implementation (100 in 2007 → 102.8 in 2024), whilst the control group experienced a sustained decline over the same period (100 in 2007 → 65.1 in 2024), indicating that the policy effectively halted the downward trend in Wencheng County's TFP. The control group comprises industrial powerhouses such as Lucheng, Longwan, Yueqing and Rui'an. The reason for their steeper decline in TFP lies in the fact that traditional manufacturing sectors (footwear and leather, apparel, electrical equipment, and automotive and motorcycle parts) account for a high proportion of their economies. Having long relied on factor-driven growth, these regions found their extensive growth model unsustainable under the combined pressures of rising labor costs, scarce land resources and tightening environmental constraints; at the same time, excessively rapid capital deepening has actually stifled technological progress and the growth of green total factor productivity, leading to an accelerated decline in TFP.

Wencheng County, with its small economic scale, weak foundation in traditional manufacturing and low level of capital deepening, has been spared from suffering the same degree of downward pressure on TFP; consequently, the estimated policy effect is relatively large.

Secondly, the policy effect exhibits a significant cumulative strengthening trend. The ATT rose from 10.85 in 2016 to 31.15 in 2024, showing a trend of accelerating growth year on year. This trajectory indicates that the benefits of the low-altitude economy are realized gradually—with planning, infrastructure investment, industrial introduction and scenario expansion advancing sequentially. The accumulation at each stage creates conditions for accelerated realization in subsequent phases, whilst policy dividends continue to amplify over time, exhibiting characteristics of increasing marginal returns.

Thirdly, the transmission mechanism can be summarized as the effective allocation of resources. Policies attract resources, resources are transformed into capabilities, and capabilities drive efficiency gains—a chain of events that has been validated in Wencheng's practice. The process by which low-altitude policies translate into economic efficiency can be understood through a four-tier transmission chain: "infrastructure—industrial platforms—application scenarios—factor aggregation".

(1) Infrastructure level. Wencheng General Aviation Airport is planned to Class A1 standards, with a 2B airfield classification, an 800-metre-long and 30-metre-wide runway, and supporting terminal and hangar facilities. The total investment for the project is 780 million yuan, with construction scheduled to commence in October 2025 and be completed in September 2028. Furthermore, 43 eVTOL vertical take-off and landing sites have been designated across the county. Investment in infrastructure not only stimulates demand but also provides the physical space required for the subsequent introduction of industries.

(2) Industrial Platform Level. The launch of the EHang Zhejiang Centre and the Zhejiang Wings eVTOL Centre marks the transition of Wencheng's low-altitude economy from the planning stage to operational reality. The EHang Wencheng New-Quality Intelligent Manufacturing Centre extends Wencheng's role from eVTOL application scenarios to the manufacturing sector. Wencheng County has released an investment promotion plan entitled 'Building a "Worry-Free County" for the Full eVTOL Industry Chain', offering incoming enterprises free access to state-owned factory premises, public platforms, low-altitude infrastructure and scenic area resources. Through a model of 'exchanging application scenarios for industry and policies for clustering', the county aims to attract upstream and downstream enterprises to establish operations locally.

(3) Application Scenarios. Wencheng is leveraging the 'Low-Altitude Tourism in Wencheng' brand to drive the implementation of these scenarios, with visitor numbers already exceeding 80,000. The Tianzhong Lake International Tourism Resort, with a total investment of 10.8 billion yuan, is the largest cultural and tourism project in Wencheng's history and is expected to welcome 3.5 million visitors annually. The low-altitude tourism flight experience project has been selected as a model scenario in the "2024 Low-Altitude Economy Scenario White Paper" [19]. The maturity of these application scenarios not only generates direct economic returns but also provides market validation for industry introduction—enabling enterprises to make investment decisions based on genuine flight demand and consumer market trends.

(4) At the level of factor aggregation. The county has signed agreements for more than 20 low-altitude projects, conducted over 1,000 demonstration flights, and secured orders worth more than 400 million yuan. Wencheng has been approved for the province's first financing credit line from the China Development Bank for a low-altitude new infrastructure project, and has formed a syndicate with the county's four major banks, securing a total financing credit line of 1.42 billion yuan. Factors such as capital, projects, technology and talent are rapidly converging in Wencheng.

The empirical results confirm that the policy has enhanced county-level TFP through the three pathways hypothesized. At the technological level, investment in digital infrastructure—including the general airport, 43 vertiports and the EHang manufacturing centre—lowered entry barriers and accelerated technology adoption. At the organizational level, the establishment of industrial platforms and cross-sector collaboration mechanisms facilitated industrial clustering and strengthened

supply chain linkages. At the environmental level, financing support (14 billion yuan investment) and institutional safeguards (free access to state-owned facilities) reduced investment uncertainty and increased risk-bearing capacity. This three-pronged mechanism operates through a clear transmission chain: policy signal→ infrastructure investment→ industrial platform development→ application scenario implementation→ sustained factor agglomeration→ productivity gains. Wencheng's stable TFP performance following the policy intervention, in contrast to the continued decline of the control group, provides empirical evidence that the mechanism is delivering tangible outcomes. The parallel trend and placebo tests ($p = 0.000$) further confirm the robustness of these results. Collectively, the evidence substantiates the theoretical framework, demonstrating that low-altitude economy policy can effectively enhance county-level TFP through systematic resource orchestration, with effects that accumulate and intensify over time.

6.2 Policy Recommendations

Based on the above conclusions, this paper puts forward the following policy recommendations.

Firstly, strategic patience must be maintained. The benefits of the low-altitude economy take five to ten years, or even longer, to materialize. Performance assessments should not be based on short-term GDP growth rates; instead, a long-term evaluation system covering multiple dimensions—including TFP, industrial structure and employment quality—should be established.

Secondly, promote the 'low-altitude + cultural tourism' integration model. Wencheng's experience demonstrates that 'low-altitude + cultural tourism' is a practical and viable approach. Mountainous counties endowed with tourism resources can draw on Wencheng's experience to develop distinctive projects such as eVTOL experience tours, helicopter sightseeing and hot-air ballooning, thereby upgrading 'ground-based sightseeing' to a 'multi-dimensional experience'.

Thirdly, establish a long-term evaluation mechanism. A dynamic evaluation framework encompassing multi-dimensional indicators—such as TFP, industrial structure and employment quality—should be constructed, whilst simultaneously strengthening the statistical monitoring system for the low-altitude economy.

Fourthly, implement differentiated policies. Different regions vary in terms of resource endowments and stages of development—those with an industrial base may focus on equipment manufacturing, those with tourism resources may prioritize low-altitude cultural and tourism initiatives, and those with suitable logistics conditions may develop low-altitude logistics. Policy design should be tailored to specific cities and provide categorized guidance.

Last but not least, foster a favorable industrial ecosystem. Local governments should provide systematic support in areas such as infrastructure construction, the release of airspace resources, financial support and talent recruitment; accelerate the construction of general aviation airports and vertical take-off and landing sites; and coordinate the layout of the low-altitude "facility network", "route network" and "service network". At the same time, they should encourage the participation of private capital to form a diversified investment structure characterized by government guidance, market leadership and social participation.

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