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Conceptual Paper

From Subsidy Competition to Institutional Enablement: A Fiscal and Tax Policy Framework for China's Low-Altitude Economy

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Abstract

China's low-altitude economy includes unmanned aircraft, electric vertical take-off and landing aircraft, general aviation, digital airspace services and downstream applications. Due to the quick development of the area, the government has provided subsidies and industrial park construction. Only fiscal and tax policies that do not promote subsidy dependency, duplicate infrastructure or fragment regions are considered in this paper. Based on a structured synthesis of recent Chinese fiscal-policy research, foreign studies of innovation incentives, and official industry data, a market-failure and industry-life-cycle framework has been constructed. The four policy mismatches identified are: too much supply-side support, weak demand creation, poor accessibility of tax incentives for young enterprises, and fragmented fiscal governance of cross-jurisdictional airspace. A stage-contingent policy architecture is proposed. Early-stage support should focus on shared digital and physical infrastructure, competitive grants, public procurement and risk-sharing finance; the policy at the expansion stage can be more neutral tax instruments, interoperable standards and cross-regional cost sharing; mature activities will have reduced subsidies and performance-based user fees. Therefore, policy design should aim to build institutions that reduce coordination costs, uncover demand and protect competition, rather than naming specific enterprises.

Keywords

Low-altitude economy, Fiscal policy, Tax incentives, Industrial policy, Regional coordination, China

1. Introduction

China's low-altitude economy has moved from a special aviation area to a national development strategy. Economic activities that can be promoted by low-altitude airspace include unmanned aerial

vehicles (UAVs), electric vertical take-off and landing aircraft (eVTOLs), general aviation, logistics, emergency response, tourism, and digital flight services. Official reports have indicated that the amount in 2023 exceeded 500 billion yuan, with 1.27 million registered civilian UAVs and 23.11 million flight hours (State Council of the People's Republic of China, 2024). The above data show that the sector is economically feasible; however, they do not guarantee long-term development without institutional reform.

The basic policy problem is structural. Low-altitude activities need shared facilities, safety regulations, interoperable data, long-term research and cross-border administrative cooperation. Private enterprises may be reluctant to invest in such public or quasi-public goods, and local governments want to attract more high-profile projects and leading enterprises. The results may be in conflict: generous support at the company level exists alongside missing institutions in the system. Therefore, recent Chinese studies have begun to question whether traditional subsidies can meet the airspace-dependent and market-creating demands of the industry (Li & Lu, 2026); identified deficiencies in infrastructure, technology, capital and talent support (Meng & Ye, 2025); and proposed new roles for fiscal policy in fostering clusters and promoting cross-regional cooperation (Gu & Wang, 2026).

How to combine fiscal and tax instruments at different stages of a market failure in an industry to address the problem without falling into subsidy competition? It has three uses. First, it combines innovation, infrastructure, demand and regional-governance failures into a single system. Second, it differentiates temporary market-building support from permanent institutional capacity. Third, according to the above division, an achievable policy package with an entry, review and exit criterion is constructed. The claim is not that the subsidies are unreasonable; rather, their reasons should address specific deficiencies, suit the stage of economic development, and be reasonably justifiable.

2. Analytical Framework and Approach

The article is a qualitative policy-synthesis study. It triangulates three bodies of evidence: recent Chinese scholarship on fiscal support for the low-altitude economy; international research on R&D incentives, industrial clusters and place-based development; and official information on China's sectoral development. This approach is suitable because nationally comparable firm-level fiscal data are still lacking, and the institutional environment is changing rapidly. The goal is therefore analytical generalisation rather than causal inference.

The framework combines market-failure analysis with industry-life-cycle theory and identifies four failures.Knowledge spillovers reduce the firm's ability to realise the social return of R&D. Network and coordination externalities delay investment in vertiports, communications, navigation, weather and digital airspace platforms. Information and adoption failures reduce demand for new

services. Finally, fragmented jurisdictions create fiscal spillovers due to uneven distribution of infrastructure costs and tax benefits. Cluster theory suggests that agglomeration can raise productivity, but it is also cautious about the inefficiency of policy-induced clustering if local imitation occurs instead of specialisation (Krugman, 1991; Isaksen & Trippl, 2017). Evidence from a 2014–2023 panel of 30 Chinese provinces shows that coordination between public science-and-technology expenditure and low-altitude development has improved but remains uneven, with significant cross-provincial spillovers (Wang et al., 2026).

Therefore, the four requirements for instrument selection are: additionality, accessibility, neutrality and coordination. Additionality refers to whether public funds motivate a change in behaviour or promote new activities. Accessibility is the ability of young and loss-making enterprises to use the instrument. Neutrality restricts the government's selection of some enterprises and technical routes. Coordination aligns beneficiaries, cost-bearers, and regulators across jurisdictions. These tests organise the diagnosis and recommendations below.

3. Why the Existing Policy Mix Underperforms

3.1. Supply-side concentration and subsidy competition

Most local policy packages focus on settlement awards, capital-investment subsidies, industrial parks and producer-side R&D support. Although the above measures may help enterprises enter the market, they also incentivize relocation and the construction of idle facilities for those enterprises that meet the administrative requirements. Li and Lu (2026) believe that this is a subsidy trap; instruments borrowed from the mature manufacturing sector may not generate the consumption habits, operational networks and airspace institutions necessary for low-altitude services. A text analysis of Chinese local policies also finds a supply-oriented toolset and weaker environmental instruments (Wu et al., 2025). Competition among the localities may therefore redistribute firms without increasing national innovation or viable demand.

3.2. Weak demand discovery

Low-altitude services are not just the old products reinvented. Emergency response, inspection, medical logistics, agricultural services and urban mobility all need to find feasible service arrangements for users and regulators. Producer subsidies lower private costs but do not reveal willingness to pay, set procurement specifications, or allocate liability. Therefore, the policy mix risks supporting aircraft and parks without repeated service demand. Public procurement, challenge contracts and time-limited demonstration purchases are more suitable for demand discovery as payment is linked to verified service delivery rather than installed capacity.

3.3. Tax incentives that miss young firms

Research and development tax incentives can reduce the user cost of innovation, and their application has expanded across OECD countries (OECD, 2024). Most traditional deductions are for high-earners in large enterprises with good compliance. Early-stage eVTOL, software and component companies will face years of losses and high-cost certification. If the relief is non-refundable and narrowly defines eligible R&D, its nominal generosity exceeds actual support. Research also indicates that R&D tax credits may increase R&D spending without producing a corresponding aggregate increase in patenting (Melnik & Smyth, 2024). This supports refundable credits, carry-forward provisions, simplified documentation, and explicit eligibility for testing, simulation, safety validation and certification-related experimental development.

3.4. Fragmented fiscal and administrative governance

Flights, data, supply chains and environmental damage cross borders; subsidies and tax administration are not geographically limited. Therefore, local governments may underinvest in connection facilities, offer inconsistent incentives for competition, or argue over tax base allocation. Gu and Wang (2026) believe that the construction of clusters requires fiscal coordination, and Li and Lu (2026) have studied the institutional attributes and public-sector features of airspace. Viewing airspace access as a single-instance fiscal asset will raise short-term funds but harm open access, safety and the long-term ecosystem value. The policy unit should be the functional flight network or city region, not an individual industrial park.

4. A Stage-Contingent Fiscal and Tax Policy Architecture

4.1. Build shared institutions before subsidizing scale

In the formative stage, fiscal spending should focus on public goods: low-altitude communications and navigation, surveillance, meteorology, emergency capacity, interoperable data interfaces, and shared test facilities. Central government transfers can use matching formulas to consider spillovers, fiscal capacity and safety obligations. Competitive grants should fund clear technical or service milestones, and the non-sensitive results should be independently reviewed and published. Infrastructure subsidies should require open and non-discriminatory access, and the publicly-funded facilities should not be exclusive local assets. According to the purpose of promoting public welfare, the state can create a market that also includes an evaluation and learning mechanism (Mazzucato, 2018).

4.2. Make innovation and finance support usable and technology-neutral

A tiered package is preferable to a single large deduction. Refundable or payroll-offset R&D credits can be passed on by pre-profit enterprises; loss carry-forwards can reserve benefits for extended development cycles; accelerated depreciation supports qualified testing and digital infrastructure, and competitive grants can target high-spillover research. Eligibility should be based on verifiable activities and costs, not on a favoured-enterprise list. Fiscal tools should crowd in stage-matched finance: early public grants and venture capital, growth-stage policy-bank or guaranteed lending, and mature-stage capital-market finance. Airworthiness data, insurance and operating records can improve risk pricing, but public guarantees should keep lender risk and be capped (Zhong & Li, 2026). Tax incentives may attract mobile R&D, but coordination is required to prevent a race to the bottom at home (Wilson, 2009). Support should be linked to actual R&D in China and meet the OECD nexus requirement (Appelt et al., 2023).

4.3. Use public demand to validate markets

Government procurement and service-purchasing should aim for public-value applications that have measurable outputs, such as emergency response time, inspection coverage, medical-delivery reliability, agricultural productivity or emissions reduction. Contracts should be awarded through competitive procedures, allow participation by consortia and small enterprises, and proceed in stages: prototype, limited demonstration, and scaled purchase. First-use insurance or risk sharing can address buyer uncertainty without reducing consumption permanently. Commercial tourism and personal mobility should not be covered by broad consumer vouchers, as the benefits may be regressive and safety capacity may be limited. Demand support should be discontinued after repeated purchases, private-sector revenue and unit-cost thresholds show market viability.

4.4. Coordinate taxation and infrastructure across regions

The central government should issue model rules for the tax treatment of cross-jurisdictional flight services, platform income, leasing and bundled digital services. Regional agreements can distribute the cost of shared facilities according to flight volume, service benefits and fiscal strength, and share related tax revenues by formula. Transfers should vary according to the local fiscal ability, ecological conditions and network functions, and not be uniform. Green logistics, agricultural monitoring and emergency services may generate more public value in the West and ecologically sensitive areas than passenger mobility (Mao et al., 2026). A single digital tax-service window should support tax registration, filing, and payment.Central transfers can reward interoperability and joint procurement rather than the number of local parks.

4.5. Embed evaluation and exit

All principal instruments must designate a baseline, target group, counterfactual, review date and exit condition. The first few indicators are: private R&D additionality, SME participation, use of shared facilities, repeated commercial revenue, procurement concentration, safety performance and interregional interoperability. Distinguish between outputs, such as patents and flight hours, and outcomes, such as productivity, cost reduction and stable service adoption, in the evaluation. Sunset clauses and reduced co-financing should be normal. Support should be withdrawn if it only shifts activities among areas, creates persistent subsidized overcapacity, and does not enhance measurable public benefits. List the tax expenditures alongside direct expenditures and, for the same reasons, unify the system for comparing relevant instruments.

5. Discussion

The proposed architecture changes the object of support. Rather than designating the company as the default recipient, it will name shared capabilities, verified innovations and service outcomes as the policy objects. Thus, it addresses the two problems in Chinese literature simultaneously. Direct subsidies are still justifiable when uncertainty, spillovers or first-use risk are high, as shown by Meng and Ye (2025). Institutional support is required at the scale of large-scale networks to address the problems of subsidy dependence (Li and Lu, 2026) and cluster coordination (Gu and Wang, 2026). It also operationalises Hu and Xu's (2026) call for vertically targeted support across the value chain and horizontally coordinated regions, ecosystems and institutions.

The different levels of government have distinct responsibilities. The central government should establish a coherent tax framework and safeguard data security and cross-jurisdictional data transfers, while regional governments should coordinate infrastructure and procurement at the functional-network level. Local governments are better placed to organise demonstration scenarios and service delivery, but incentives should not focus on attracting a particular well-known manufacturer. This division allows local experimentation without creating further fragmentation.

Several limitations remain. The analysis fails to determine the causal effect or fiscal multiplier of the individual instruments, and changes in the regulatory environment may impact administrative feasibility. In the future, one will construct a stable-policy panel, compare the treated and untreated pilot areas, and investigate heterogeneous effects according to firm age, ownership and position in the value chain. Procurement and tax-expenditure microdata can be used to determine whether the support strengthened national capacity or only shifted economic activities.

6. Conclusion

Fiscal and tax policies can promote the low-altitude economy, but additional support is justified only when it addresses identifiable market or coordination failures.A firm-centred subsidy model is

not suitable for an industry that is built on shared airspace, network infrastructure, uncertain demand and cross-regional operation. At the same time, there will be institutional support. Early policy should finance shared capabilities, accessible innovation support and public-demand discovery; expansion-stage policy should strengthen neutral tax rules and regional interoperability; mature activities will face declining subsidies, transparent user charges and normal competition. Explicit additionality tests and coordinated governance structures can reduce system-wide coordination costs without transferring routine commercial risks to the public sector.

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Author contributions

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