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From brand to prosperity: the impact of agricultural regional public brands on local economic growth in China

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ABSTRACT

This study examines the impact of agricultural regional public brands (ARPBs) on county-level economic growth in China. We combine panel data for 2,725 counties from 2000 to 2020 with a staggered difference-in-differences (DID) strategy. Using a robust CS-DID estimator to correct for potential biases, we find that ARPB adoption increases per capita GDP by approximately 6.68% (notably higher than the baseline TWFE estimate of 3.94%). Mechanism analysis shows that these effects operate through agricultural modernization, industrial clustering, and enhanced household savings. Heterogeneity analysis shows the effect of ARPBs on economic growth depends on product types, institutions, and regions. We also find positive spatial spillover to neighboring counties. These findings highlight ARPBs as a transformative place-based strategy, offering vital policy insights for leveraging collective reputation to bridge the rural–urban development gap.

1. Introduction

Brands are increasingly recognized as strategic assets that extend beyond mere commercial identity—they convey trust, signal quality, and create long-term value for producers and regions. In both developed and developing economies, effective branding helps overcome market imperfections, mitigates information asymmetry, and fosters consumer loyalty (Giovannucci et al., 2010; Belletti et al., 2017). In particular, territorial or place-based branding, rooted in geography, culture, and product characteristics, has emerged as a powerful tool for promoting local economic development and regional differentiation (Bérard & Marchenay, 2006). This significance is especially pronounced in the agricultural sector, where agricultural producers—particularly in developing economies—face the persistent challenge of the "commoditization trap," characterized by thin margins and intense price competition. Agricultural branding not only distinguishes products in competitive markets but also embeds cultural, environmental, and historical values into the food system (Fan, 2006). Regional brands can help producers command premium prices, enhance rural employment, and preserve traditional farming knowledge and local ecosystems (Delgado-Ballester et al., 2003; Zhang et al., 2024).

In this context, Agricultural Regional Public Brands (hereafter ARPBs) have emerged as a prominent instrument in the global landscape of place-based development policies. While sharing similarities with Geographical Indications (GIs) and collective trademarks used in Europe and North America, the Chinese ARPBs model represents a distinct state-led variation. Defined as public, region-level umbrella brands jointly owned and used by producers within a specific ecological or cultural boundary (Hu et al., 2013), they typically adopt a standard "region + product" nomenclature (e.g., Luochuan Apple, West Lake Longjing Tea). The policy significance of ARPBs has evolved from initial pilot programs in 2008 to a comprehensive national strategy since 2017. During this period, the central government elevated brand building to a top-tier national priority, institutionalizing ARPBs through successive high-level policy frameworks equivalent to strategic five-year plans (Zheng et al., 2022; Yang et al., 2025). This sustained political commitment has catalyzed a massive expansion: by 2020, over 2,000 ARPBs had been established across more than 1,100 counties, making it one of the world's largest experiments in state-sponsored agricultural branding.

Consequently, investigating China's ARPBs initiative holds substantial international relevance as a critical case study of government intervention in agricultural markets. It provides empirical evidence on

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the efficacy of state-led branding as a scalable tool for rural revitalization. This analysis is particularly vital for other developing economies—such as Vietnam, Thailand, and various African nations—that are implementing similar "One Village One Product" (OVOP) strategies but face challenges in scaling local specialties into competitive regional industries (Natsuda et al., 2012). By examining whether and how these government-sponsored brands drive local economic growth, this study offers generalizable insights into the role of public intervention in correcting market failures and overcoming information asymmetry in the global agri-food sector.

Although ARPBs share some similarities with Geographical Indications (GI)—such as emphasizing regional origin, collective reputation, and quality assurance—they represent a fundamentally different institutional model in China (Yang et al., 2024). GI is a legal intellectual property right registered for individual products under WTO/TRIPS rules, whereas ARPBs function as government-led brands at the county or prefectural level, integrating agricultural products, enterprises, and local service systems into a unified regional identity (European Union, 2006). GI focuses on protecting the distinct geographical attributes of a single product, while ARPBs aim to promote comprehensive regional competitiveness, through coordinated industrial development, quality standardization, cross-product certification systems, public service platforms, and unified brand marketing campaigns (Allen, 2007; Kavaratzis, 2005). Products with both GI certification and brands perform better in the market than those with only one of them (Jiang et al., 2023). As such, ARPBs can be viewed as a Chinese institutional innovation extending beyond the GI concept, characterized by stronger government leadership, wider product coverage, and a development-oriented rather than purely protection-oriented mandate.

Despite their growing policy relevance, empirical evidence on the economic impact of ARPBs remains scarce. Existing studies emphasize their potential to enhance product reputation, promote supply-chain integration, and support local industries (Ma & Qiao, 2024; Zhang et al., 2024). Furthermore, ARPB can also promote farmers' income growth and narrow the urban–rural income gap through regional industrial agglomeration and new agricultural business entities, and has a positive spillover effect on surrounding areas (Yang et al., 2025). However, significant gaps remain: (1) rigorous causal evaluations are limited, with most studies relying on traditional estimators that may be biased in staggered adoption settings; (2) the mechanisms linking ARPBs to county-level growth remain under-examined; and (3) little is known about the potential heterogeneity across different development stages and institutional settings.

This study fills these significant gaps by expanding the literature in several ways. First, we employ a comprehensive panel dataset of 2,725 counties over 21 years (2000–2020) and utilize standard two-way fixed effects and CS-DID models, providing rigorous causal evidence on the growth effect of ARPBs. Second, we unpack the "black box" of transmission channels, identifying agricultural modernization, industrial clustering, and household savings as key drivers. Third, we conduct a nuanced heterogeneity analysis, uncovering a "congestion effect" in the developed Eastern region and verifying the institutional synergy between ARPBs and GIs. Lastly, we extend the analysis to examine spatial spillover effects, validating whether regional branding generates positive externalities for neighboring economies.

The remainder of this paper is organized as follows. Section 2 provides a literature review and theoretical analysis. Section 3 presents the empirical strategy and data. The results and robustness checks are presented in Section 4. Section 5 presents mechanism and heterogeneity analysis. Section 6 is the conclusions, and Section 7 presents our policy implications.

2. Conceptual framework

2.1. Agricultural regional public Brands: Concept and development

Agricultural Regional Public Brands (ARPBs) represent collective initiatives aimed at marketing agricultural products according to their regional origins. These brands highlight the distinctive natural, cultural, and historical attributes of their respective production regions, thereby distinguishing them from their analogous products. The primary objective of ARPBs is to augment the market value of agricultural offerings by harnessing the identity and reputation of the regions from which they originate (Belletti et al., 2017; Zhang et al., 2024).

In the context of China, the advancement of ARPBs has received substantial support from various governmental policies designed to revitalize rural areas and modernize the agricultural sector (Fan, 2006; Qie et al., 2023). In contrast to Geographical Indications (GIs), which are primarily concerned with legal protection and quality assurance, ARPBs offer greater flexibility by concentrating on collective marketing and regional branding. This methodology facilitates a more prompt adaptation to fluctuating market dynamics, while ensuring adherence to specific quality and authenticity standards (Yang et al., 2024).

The strategic progression of ARPBs in China is in congruence with the government's broader objectives concerning rural revitalization, which encompasses the enhancement of rural household incomes, promotion of local industry development, and improvement of overall quality of life in rural settings (Qie et al., 2023). By endorsing high-quality, region-specific agricultural products, ARPBs play a pivotal role in the economic growth of regions where they are cultivated and contribute to the preservation of local cultural heritage and traditional agricultural practices (Belletti et al., 2017). In 2022, the "Social Capital and Investment Rural and Agricultural Guidelines (2022)" state that more social capital should be invested in industries, particularly ARPBs (Ministry of Agriculture and Rural Affairs of the PRC, 2022). Relying on significant competitive advantages in the three aspects mentioned above, ARPBs can better stimulate the flow of capital to the countryside to accelerate poverty alleviation, increase farmers' income, and boost rural industrial revitalization and development.

Currently, there are over 1110 counties that possess different forms of ARPBs and approximately 2,000 product-level brands nationwide. Most provinces and regions have also introduced policies for cultivating agricultural brands (Duan et al., 2024). However, ARPBs face numerous challenges in their promotion. First, vague brand positioning and low value are common, and many public brands have yet to develop clear, differentiated competitive advantages (Li et al., 2022). Second, their ability to drive industry growth is insufficient: most ARPBs fail to effectively extend to deep processing and distribution channels (Ma & Qiao, 2024). Furthermore, outdated standards and management systems, weak digital support, resource constraints, and underdeveloped infrastructure further undermine the sustainability and diffusion of ARPBs (Liu & Nong, 2025).

2.2. Theoretical Distinction: From club goods to local public goods

While ARPBs share similarities with Geographical Indications (GIs) in emphasizing territorial origin, they differ fundamentally in their economic nature, governance structure, and welfare objectives.

First, in terms of economic attributes, GIs are typically conceptualized as "club goods" (Moschini et al., 2008; Menapace & Moschini, 2012). They function primarily as a certification mechanism to solve information asymmetry and protect the reputation rents of a specific group of producers (Giovannucci et al., 2010). In contrast, ARPBs in China function more as "local public goods" provided by the government (Hu et al., 2013). They serve as a regional umbrella that not only signals quality but also integrates infrastructure, logistics, and public services, generating broader positive externalities for the entire county rather than just member firms.

Second, regarding governance and incentives, GIs usually rely on a bottom-up approach driven by producer associations seeking price premiums. Conversely, ARPBs operate on a top-down, government-led model. Drawing on the theory of "Local State Corporatism" (Oi, 1992), local governments in China act as corporate entities, investing in ARPBs to maximize regional economic growth and fiscal revenue. This strong governmental intervention allows ARPBs to overcome the collective action problems often faced by fragmented smallholders, mobilizing resources for rapid industrial upgrading (Jin et al., 2022).

Finally, the welfare implications differ. While GIs focus on static efficiency by correcting market failures in quality signaling, ARPBs aim for dynamic structural transformation. By fostering industrial agglomeration and modernizing supply chains, ARPBs are designed not merely to protect existing assets but to serve as a developmental engine for rural revitalization.

2.3. Mechanisms driving the impact of ARPBs on economic growth

Although the positive impact of agricultural regional public brands (ARPBs) on county-level economic growth has been empirically established, the underlying transmission mechanisms remain an important area for exploration. Following the framework of Baron and Kenny (1986) and incorporating the empirical strategies used by La Ferrara et al. (2012) and Liu and Lu (2015), this study examines three theoretically plausible and empirically testable channels through which ARPBs may promote local economic development: (1) agricultural mechanization, (2) agribusiness development and industrial clustering, and (3) household savings and financial deepening Fig. 1.

First, agricultural branding, particularly through ARPBs, is increasingly being recognized as a catalyst for modernizing farming practices. As markets shift from price-based to quality- and reputation-based competition, strong regional brands encourage farmers to improve their product quality and consistency (Belletti et al., 2017; Delgado-Ballester et al., 2003). Building a regional public brand typically requires standardized production, food safety certification, and the adoption of advanced technologies, which in turn accelerates agricultural modernization (Giovannucci et al., 2010). Regional brands typically impose stringent requirements on production processes and environmental standards, prompting producers to adopt more sustainable and modern farming techniques (Bérard & Marchenay, 2006). Moreover, as small farms band together under a familiar brand and expand their operations, they achieve economies of scale that enable the use of modern equipment and more mechanized, intensive methods, thereby boosting productivity (Bowen, 2010). This dynamic is evident in Europe's protected origin labels, where strong regional brands have helped small producers' upgrade by improving quality and moving into higher-value markets (Chambolle & Saulpic, 2006). In summary, the literature suggests that ARPBs drive agricultural modernization by setting higher quality standards, facilitating technology adoption, and encouraging farmers to scale up their operations efficiently.

Second, ARPBs promote local economic growth by catalyzing industrial scaling; that is, by fostering the agglomeration of agricultural enterprises into competitive clusters. Theoretically, when producers and agribusinesses unite under a public regional brand, they form an industrial cluster that benefits from shared resources, reduced transaction costs, and collective reputation—an illustration of classic agglomeration economics (Porter, 1998; Kavaratzis, 2005). This logic aligns with Porter's cluster theory, which holds that geographically concentrated firms enjoy knowledge spillovers and supply chain efficiencies that enhance their regional competitiveness. Moreover, a regional public brand links a territory to a specific product industry, creating a shared identity that is not tied to any single firm's lifecycle. This collective identity provides enduring agglomeration benefits for the regional economy; for example, it can attract input suppliers, processors, and distributors to co-locate around the branded industry (Skinner, 2009; Ohe & Kurihara, 2013). In China, policymakers explicitly promote ARPBs development as a strategy to "promote rural revitalization and agricultural industrialization," thereby effectively scaling up the farming sector (Zheng et al., 2022; Yang et al., 2024). By branding a signature crop or food product, a county can integrate its entire industrial chain, from production to processing to marketing, under a regional brand umbrella. Overall, the literature indicates that ARPBs act as focal points for industrial clustering, transforming fragmented farming activities into integrated clusters that propel regional economic growth through economic agglomeration.

Third, ARPBs contribute to growth in a more nuanced way by influencing rural household income and saving behavior. A strong regional brand often secures premium prices and better market access for farmers' products, substantially raising farm household income (Fan, 2006; Tu & Wang, 2012). With higher and more stable earnings, rural households tend to increase their savings, driven by precautionary motives and relatively limited consumption options in rural areas (Li, 2021). Over time, these greater savings can be reinvested in farm improvements or local business ventures, creating a virtuous cycle of rural development (Van der Ploeg et al., 2000). In other words, ARPBs-induced income gains strengthen households' financial resilience and capacity for reinvestment, further supporting long-term growth in rural economies (Likoudis et al., 2016).

In summary, the mechanism analysis reinforces the theoretical expectation that ARPBs not only improve market visibility but also drive structural changes in labor allocation, spatial integration, and production technologies. These transformations collectively explain a

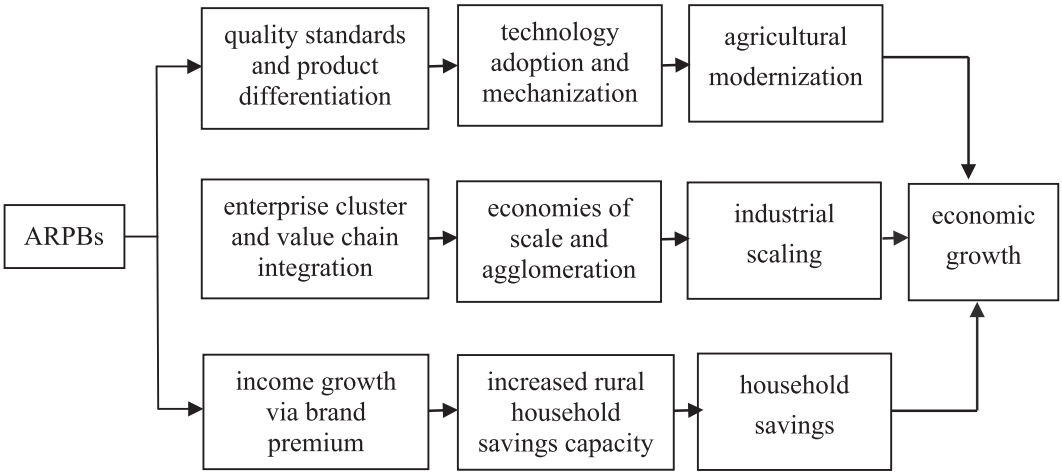

Fig. 1. How ARPBs affects local economic growth.

substantial portion of the effects of ARPBs on local economic development. The literature underscores that ARPBs influence county-level economic growth through multiple interrelated pathways. By raising production standards and incentivizing the adoption of advanced technologies, ARPBs stimulate agricultural modernization, fostering the clustering of agribusinesses and promoting value-chain integration. They generate economies of scale and industrial spillovers; by enhancing farm households' incomes and savings capacity, they contribute to local capital accumulation and reinvestment. These mechanisms reinforce one another, creating a synergistic process through which regional branding not only elevates product visibility, but also drives more profound structural transformations in production, industry organization, and financial behavior. As such, ARPBs have emerged as more than marketing tools; they serve as engines of rural revitalization and sustainable economic development.

3. Data and empirical models

3.1. Data

The data used in this study consists of two parts: agricultural product branding data and county-level socioeconomic development data. First, agricultural product branding data (including geographical indication products and regional public brands) are obtained from the China Academy for Rural Development-Qiyan China Agri-research Database (CCAD), Zhejiang University. Data for the dependent variable (real GDP) and control variables (fixed investment, education, industrial structure, financial development, and population density) come from the China County Statistical Yearbook published by the National Bureau of Statistics (NBS) from 2000 to 2020, which is used to measure the actual gross domestic product, where the provincial consumer price index is from the annual data of the National Bureau of Statistics by province, with 2000 as the base period. The natural logarithm of per capita GDP is used to reduce the influence of outliers and heteroscedasticity, and to interpret the coefficients as percentage changes.

3.2. Empirical models

The difference-in-differences (DID) advantageously helps to control the confusing effect of other events on the time series, effectively isolate the real impact of ARPBs, and more accurately distinguish the causal relationship between ARPBs and county economic development. Since 2008, ARPBs have been thriving, but the ARPBs' development status has varied in different counties. This indicates the possibility of assessing the impact of ARPBs on rural revitalization using DID. According to the regional and temporal differences in ARPBs approval in different counties, we introduce the variable Product_, and establish the following two-way fixed effects model to empirically verify the impact of ARPBs on county economics. The model is as below:

$$agdp_{i,t} = \alpha + \beta ARPBs_{i,t} + \sum \gamma_m X_{i,t} + \mu_i + \omega_t + \varepsilon_{it} \quad (1)$$

where the dependent variable ($agdp_{it}$) indicates the economic growth level of county i at time t, which can be used to represent the rural revitalization level of different counties. The independent variable (ARPBs) is a major policy variable used to suggest the ARPBs' policy of different counties. X_{it} is a vector of control variables, including industrial structure, fixed investment, human capital (education), financial development level, and population density. μ_i and ω_t are individual and time fixed effect, respectively. ε_{it} is the error item.

3.3. Variable selection

Table 1 shows the definitions of the key variables used in the empirical analyses. Economic growth level (agdp). This study chooses per capita gross domestic product (GDP) as the proxy variable, consistent with the previous definition of county-level economic growth (Li et al., 2016; Qie et al., 2023). To alleviate the impact of price factors, this study adopts the GDP ablation index (2000 = 100) for ablation. Logarithmic processing was conducted on the actual per capita GDP to ensure a normal distribution approximation. This study also analyzes the impact of ARPBs on the counties' primary, secondary, and tertiary sectors.

Table 1
Definitions and descriptive statistics of main variables.

Variables	Definitions	Mean	Std. dev.
ln(agdp)	The natural logarithm of county-level real GDP (adjusted for inflation)	13.061	1.3463
ARPBs	A dummy or proportion variable indicating whether agricultural Regional Public Brands are present in the county: yes = 1; no = 0	0.139	0.346
inv	The natural logarithm of fixed asset investment in the county	0.815	1.507
edu	Human capital proxy: the share of students enrolled in regular secondary schools divided by the registered population	0.054	0.034
nagr	Industrial structure: the share of secondary and tertiary industry output (non-agricultural output) in total GDP	0.828	2.182
credit	The natural logarithm of year-end loan balance of financial institutions	0.701	1.559
pop	Population density: number of persons per square kilometer in the county	5.299	1.629

Notes: N = 57,174。 .

ARPBs Policy (ARPBs). This study focused on the development of ARPBs. In the regression model, the development level of ARPBs is represented by whether the counties approved them and when they were approved. If the county has already approved or has started approving ARPBs, then the value of the ARPBs policy is set to 1; otherwise, it is set to 0. Among the samples selected for this study from 2000 to 2020, 1110 counties possessed different forms of ARPBs. The county with the most ARPBs is Rongcheng, Shandong, which has 16 regional public brands for agricultural products, including apples, green tea, kelp, and squid.

Fixed Investment (inv.). Fixed capital formation has been widely recognized as a direct driver of economic expansion, particularly in the context of China's sustained growth since the reform and opening-up era (Wang and Yao, 2003). We include the ratio of fixed asset investments to GDP at the county level to capture the intensity of capital accumulation.

Human Capital (edu). According to human capital theory, education enhances labor productivity and long-term economic performance (Becker, 2002). We used the ratio of students enrolled in regular secondary schools to the registered population as a proxy for local human capital stock.

Industrial Structure (nagr). An advanced and diversified industrial structure is essential for productivity gain and efficient resource allocation (Rodrik, 2013). We measure industrial structure by the share of secondary and tertiary industry output in GDP, reflecting the transition away from agricultural dependence.

Financial Development (credit). Financial institutions facilitate growth by improving capital allocation and investment efficiency (Levine, 2005). The degree of financial development is measured by the ratio of the year-end loan balance of financial institutions to the GDP.

Population Density (pop). Population agglomeration fosters knowledge spillovers and economies of scale, which in turn stimulates innovation and growth (Ciccone and Hall, 1996). We included population density as a control to account for spatial externalities associated with concentrated settlement patterns. The descriptive statistics of each variable are also presented in Table 1.

4. Empirical analysis

4.1. Baseline results

Estimates of equation (1) are reported in Table 2. Column (1) shows baseline results without controls, while Columns(2) add controls at county level. All specifications include county and year fixed effects. Across both model specifications, the coefficient on ARPBs is positive and statistically significant at 1% level, indicating that ARPBs adoption is associated with improved local economic outcomes even under the most parsimonious setting. The results show that ARPBs adoption increases county-level per capita GDP by approximately 3.94% on average (Column (2)).

4.2. Spillover effects

In addition to the direct impact of ARPBs on local economies, it is crucial to examine whether the policy generates externalities across administrative boundaries. Theoretically, the direction of this spillover is ambiguous: it could be negative ("siphon effect") if branded counties draw capital and talent away from neighbors, or positive ("agglomeration externality") if the brand enhances the regional supply chain and reputation.

To rigorously test this hypothesis, we augment our baseline TWFE model by introducing a spatial lag of the treatment variable. Following the Spatial Lag of X (SLX) framework (Halleck Vega & Elhorst, 2015), the specification is defined as follows:

$$agdp_{i,t} = \alpha + \beta_1 ARPBs_{i,t} + \beta_2 Spillover_{i,t} + \sum \gamma_m X_{i,t} + \mu_i + \omega_t + \varepsilon_{it} \quad (2)$$

where $ARPBs_{i,t}$ captures the direct effect of local brand adoption. The variable $Spillover_{i,t}$ is a binary indicator constructed to capture the spatial externality. Specifically, it is defined as:

$$Spillover_{i,t} = 1\left(\sum_{j \neq i} W_{i,j} ARPBs_{j,t} > 0\right) \quad (3)$$

where 1(.) is the indicator function, and $W_{i,j}$ is an element of the spatial adjacency matrix taking a value of 1 if county i and county j share a common border, and 0 otherwise. Thus, $Spillover_{i,t}$ takes a value of 1 if any neighboring county has adopted an ARPB in year t, and 0 if no neighbors have adopted it. β_1 measures the effect of a county's own branding, while β_2 captures the externality generated by its neighbors.

Table 3 reports the estimation results. Column (1) presents the results using the full sample. The coefficient of the direct effect remains significantly positive (0.0310). More importantly, the coefficient of the spillover effect β_2 is also positive and highly significant (0.0561). This empirical evidence rejects the "siphon effect" hypothesis and supports the existence of strong positive spatial externalities.

To further isolate the "pure" spillover effect and rule out the concern that the results are driven by the treated counties themselves (who might benefit from both their own and their neighbors' brands), we conducted a subsample analysis restricted to untreated counties only (i.e., counties that never adopted an ARPB or had not yet adopted it). As shown in Column (2), the spillover coefficient increases to 0.0598 and remains statistically significant at the 1% level.

This finding confirms a robust "rising tide lifts all boats" effect: non-branded counties benefit significantly from the brand construction of their neighbors. This is likely because agricultural regional brands typically rely on geographic endowments (e.g., climate, soil, terrain) that span across administrative borders. The successful branding of a neighbor helps establish a broader regional reputation and fosters cross-border market infrastructure, allowing adjacent areas to "free-ride" on these positive externalities.

Table 2
Baseline results.

	(1)	(2)
ARPBs	0.1138***	0.0394***
	(0.0168)	(0.0114)
inv		−0.0039***
		(0.0004)
edu		0.1138***
		(0.0168)
nagr		−0.0144***
		(0.0030)
credit		−0.0107***
		(0.0052)
pop		−0.0739***
		(0.0344)
Constant	8.5476***	13.5004***
	(0.0060)	(0.1875)
County FE	YES	YES
Year FE	YES	YES
Observations	57,174	57,174
R^2	0.896	0.964

Note: All regressions include county fixed effects and year fixed effects. Standard errors are clustered at the county level; ***p < 0.01, **p < 0.05, and *p < 0.1.

Table 3
Testing for Spatial Spillover Effects.

	(1) Full Sample	(2) Untreated Sample
ARPBs	0.0310***	—
	(0.0112)	
Spillover Effect	0.0561***	0.0598***
	(0.0109)	(0.0110)
Controlled variables	YES	YES
Constant	13.4729***	13.4803***
	(0.1885)	(0.1876)
County FE	YES	YES
Year FE	YES	YES
Observations	57,174	33,886
R^2	0.964	0.958

Note: Standard errors are clustered at the county level and reported in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1. Column (1) uses the full sample to estimate both direct and spillover effects simultaneously. Column (2) restricts the sample to counties that have not adopted ARPBs (control group only) to identify the pure spillover effect on non-adopters.

4.3. Robustness checks

4.3.1. Alternative estimation method

In our baseline analysis, we employed the standard Two-Way Fixed Effects (TWFE) model. However, recent advances in econometric theory highlight that TWFE estimators can be biased in the presence of staggered treatment timing (Goodman-Bacon, 2021). Specifically, the TWFE estimator averages all possible 2 × 2 comparisons, potentially assigning negative weights to some treatment effects if early-treated units are used as controls for late-treated units. This can lead to an underestimation of the true treatment effect. To address this potential bias and verify the validity of our main findings, we re-estimate the policy effect using the Callaway and Sant'Anna (2021) estimator (CS-DID). This method explicitly avoids the negative weighting problem by using only not-yet-treated or never-treated units as control groups for each cohort-time specific average treatment effect.

Table 4 presents the aggregation results of the CS-DID estimator. Column (1) reports the unconditional ATT without control variables, while Column (2) includes the full set of controls. The results show that the estimated ATT in Column (2) is 0.0668 and is statistically significant at the 1% level.

It is worth noting that the CS-DID estimate (0.0668) is larger than our baseline TWFE estimate. This suggests that the negative weighting inherent in the traditional TWFE model may have biased the coefficient downward, leading to a conservative estimate of the policy impact in our

Table 4
Robustness check: alternative estimation method.

	(1)	(2)
ARPBs	0.1138***	0.0668***
(ATT)	(0.0168)	(0.0081)
Controlled variables	NO	YES
County FE	YES	YES
Year FE	YES	YES
Observations	57,174	57,174

Note: Standard errors are clustered at the county level and reported in parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.

baseline regression. The fact that the CS-DID result remains significantly positive—robustly confirms that the ARPBs construction has a substantial growth-promoting effect.

4.3.2. Parallel trend test

The validity of the Difference-in-Differences (DID) identification strategy hinges on the parallel trends assumption, which requires that, in the absence of the ARPBs policy, the economic growth trends of treated and control counties would have followed the same trajectory. Furthermore, distinguishing the treatment effect from potential anticipatory effects—where local governments might increase investment prior to formal brand approval—is crucial for causal inference. To rigorously test this assumption and examine the dynamic evolution of the policy effect in our staggered adoption setting, we employed the event-study approach based on the heterogeneity-robust estimator proposed by Callaway and Sant'Anna (2021).

Fig. 2 plots the estimated average treatment effects on the treated (ATT) against the time relative to ARPBs adoption (t = 0), with the period t = -1 serving as the reference. Crucially, as illustrated by the blue markers in Fig. 2, the estimated coefficients for all pre-treatment periods (t < 0) are small in magnitude and statistically insignificant, with 95% confidence intervals containing zero. This indicates that there were no systematic differences in economic growth trends between treated and control counties prior to the policy implementation. The lack of significant pre-treatment divergence provides robust evidence supporting the parallel trends assumption and effectively rules out the concern of anticipatory effects. Following the implementation of ARPBs (t ≥ 0, shown in red), the coefficients become positive and exhibit a sustained upward trend. The magnitude of the effect grows larger over time, particularly accelerating after the fifth year. This dynamic pattern suggests that the economic benefits of ARPBs are cumulative: as brand reputation consolidates and the supporting industrial clusters mature, the marginal contribution of branding to local economic growth progressively increases.

4.3.3. Alternative variable measurement and sample exclusion

We also conduct many robustness checks to assess the validity of the baseline results. First, an alternative measurement of the key explanatory variable is used to verify the robustness of the findings. The same county may have more than one agricultural product with an ARPB. In the coming years, counties will continue to apply for ARPBs. Therefore, ARPBs are stocks. On that basis, we used the number of ARPBs in different counties to indicate the development level of ARPBs in different counties. The specific regression results are shown in Column (1) of Table 5. Second, we change the measurement of the dependent variable. Specifically, per capita GDP is used as a proxy for the level of economic growth. The specific regression results are shown in Column (2) of Table 5. Finally, we exclude observations prior to 2008 in our baseline estimates. Because the Ministry of Agriculture of the People's Republic of China released the first regional public brand of agriculture product in 2008, which could be a potential confounding factor. The regression results are shown in Column (3) of Table 5.

4.3.4. Controlling for concurrent policies

A major challenge in identifying the causal effect of ARPBs is distinguishing it from other place-based development policies implemented during the same period. To rule out the possibility that our results are driven by fiscal transfers or other national support programs,

Table 5
Robustness check: alternative variable measurement and sample exclusion.

	(1)	(2)	(3)
ARPBs	0.0089**	0.1121***	0.0026***
	(0.0049)	(0.0163)	(0.0036)
Controlled variables	YES	YES	YES
Constant	12.4571***	9.4831***	13.1627***
	(0.1849)	(0.2335)	(0.1466)
County FE	YES	YES	YES
Year FE	YES	YES	YES
Observations	57,174	57,174	35,393
R^2	0.123	0.243	0.017

Note: Standard deviations are in parentheses; ***p < 0.01, **p < 0.05, and *p < 0.1.

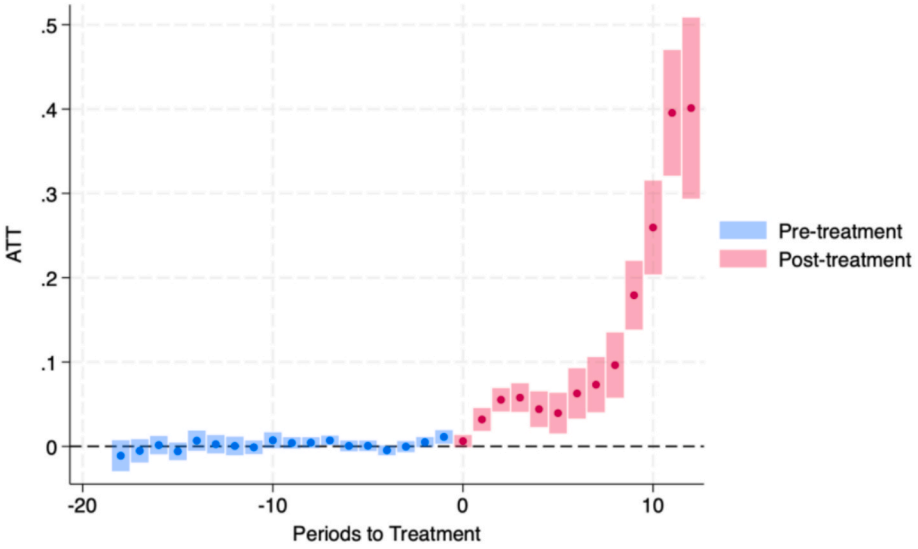

Fig. 2. Dynamic effects of ARPBs approval on economic growth.

we manually collected data on three major policy initiatives and introduced them as time-varying controls in our DID framework. Specifically, we control for: 1) the National Poverty-Stricken Counties program (poverty_post); 2) the Comprehensive Demonstration of E-commerce in Rural Areas (ecommerce_post); and 3) the Featured Agricultural Product Advantage Areas (advantage_post).

Table 6 reports the results. Columns (1) to (3) introduce these policy dummies individually, while Column (4) includes all three simultaneously. The results are highly robust. Even in the most stringent specification (Column 4), where all concurrent policies are controlled for, the estimated of ARPBs remains positive and statistically significant at the 1% level. Although the magnitude decreases slightly from the baseline estimate of 0.0668 to 0.0471 after controlling for all factors, this is expected as it filters out the compounding effects of poverty alleviation grants. Crucially, the persistence of a significant 4.7% growth effect confirms that ARPBs generate distinct economic benefits that cannot be explained by resource endowments, e-commerce infrastructure, or state-led financial aid alone.

4.3.5. Placebo test

To further verify the robustness of our baseline results and rule out the possibility that our findings are driven by unobserved omitted variables, idiosyncratic regional shocks, or random noise, we conducted a placebo test using a Monte Carlo simulation approach (Chetty et al., 2009; Cai et al., 2016). Unlike traditional counterfactual tests that rely on arbitrary assumptions about timing or treatment groups, this method allows us to statistically test whether the estimated treatment effect is distinguishable from zero under random assignment.

Specifically, we performed a random permutation test consistent with our baseline TWFE framework. In each simulation, we randomly shuffled the treatment status and timing across counties while preserving the original sample structure—ensuring that the number of treated units and the distribution of treatment years remained consistent with the actual data. We then re-estimated the TWFE model using this randomly generated placebo sample to obtain a "placebo ARPBs.".

We repeated this process 500 times to construct an empirical distribution of the placebo estimates. The underlying logic is that if the brand agriculture policy effectively drives economic growth, the coefficients derived from random assignments should cluster around zero, whereas the true estimate should be a significant outlier.

The results are visualized in Fig. 3. The kernel density plot shows that the distribution of the 500 placebo coefficients closely approximates a normal distribution centered at zero, indicating that randomly assigned "fake" policies have no systematic effect on economic growth. In stark contrast, our benchmark estimate (indicated by the vertical red dashed line at 0.0394) falls at the far right tail of the distribution, clearly differentiating itself from the stochastic noise. This significant separation provides strong evidence that the positive impact of ARPBs on local economic growth is causal and not driven by spurious correlations.

Table 6
Robustness check: Controlling for concurrent policies.

	(1)	(2)	(3)	(4)
ARPBs	0.0344***	0.0301***	0.0374***	0.0310***
	(0.0112)	(0.0111)	(0.0114)	(0.0111)
Poverty_Post	YES	NO	NO	YES
Ecommerce_Post	NO	YES	NO	YES
Advantage_Post	NO	NO	YES	YES
Controlled variables	YES	YES	YES	YES
Constant	13.5474***	13.4728***	13.5309***	13.5114***
	(0.1947)	(0.1969)	(0.1934)	(0.1970)
County FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	57,174	57,174	57,174	57,174
R^2	0.964	0.962	0.964	0.965

Note: Standard deviations are in parentheses; ***p < 0.01, **p < 0.05, and *p < 0.1.

4.4. Mechanism analysis

To further identify the transmission mechanisms through which Agricultural Regional Public Brands (ARPBs) promote county-level economic growth, this section employs a two-step mediation analysis within a panel fixed-effects framework. Following the seminal approach proposed by Baron and Kenny (1986), as well as its subsequent applications in studies of regional development (Liu & Lu, 2015; La Ferrara et al., 2012), we examine the mediating effects of potential channels by estimating the following equations:

$$M_{i,t} = \alpha_1 + \beta_1 ARPBs_{i,t} + \sum \gamma_m X_{i,t} + \mu_i + \omega_t + \varepsilon_{i,t} \quad (4)$$

$$agdp_{i,t} = \alpha_2 + \beta_2 ARPBs_{i,t} + \delta M_{i,t} + \sum \gamma_m X_{i,t} + \mu_i + \omega_t + \varepsilon_{i,t} \quad (5)$$

where $agdp_{it}$ represents county-level GDP, M_{it} denotes the mediating variable, X_{it} is the vector of control variables, μ_i and ω_t are individual and time fixed effect, respectively. ε_{it} is the error item. A significant β_1 in equation (4) and a reduction in β_2 after including M_{it} in equation (5) indicate the presence of partial mediation.

Three mechanisms are analyzed based on theoretical reasoning and data availability: agricultural modernization, industrial clustering in agriculture, and household savings behavior. These mechanisms align with the theoretical framework proposed in Section 2.2, representing technological, structural, and financial transformation channels, respectively. A key challenge in identifying these mechanisms is the potential influence of confounding policies. For example, increased mechanization or industrial agglomeration may be driven by concurrent provincial-level industrial policies (e.g., machinery subsidies or industrial park planning) rather than by branding itself. To rigorously account for such alternative explanations, we employ a Two-Way Fixed Effects model that explicitly includes fixed effects for the interaction of province and year. This high-dimensional specification absorbs all time-varying shocks common to counties within the same province, allowing us to isolate the specific effect of ARPBs on the intermediate variables.

Mechanism I: ARPBs and agricultural modernization

First, ARPBs accelerate agricultural modernization by incentivizing quality upgrading. Building a regional public brand typically entails stricter production standards, which induces producers to adopt advanced machinery and standardized practices to secure brand premiums (Giovannucci et al., 2010). We use the logarithm of total agricultural machinery power as a proxy for modernization.

As shown in Column (1) and (2) of Table 7, even after controlling for province-by-year shocks, the adoption of ARPBs has a positive and statistically significant impact on agricultural mechanization ($\beta = 0.029$, $p < 0.05$). This robust finding suggests that the observed technological upgrading is an endogenous response to branding opportunities rather than an artifact of external government subsidies.

Mechanism II: ARPBs and industrial clustering in agriculture

Second, ARPBs foster industrial clustering by transforming fragmented production into integrated value chains. A shared regional identity reduces information frictions and attracts downstream agribusinesses—such as processors, logistics firms, and distributors—to co-locate, generating agglomeration economies (Porter, 1998). We measure clustering by the number of agricultural-related enterprises.

Column (3) and (4) of Table 7 reports a highly significant positive coefficient ($\beta = 0.076$, $p < 0.01$). This indicates that ARPBs significantly promote the agglomeration of agribusinesses. Crucially, because we control for time-varying provincial policies, this result implies that firms are clustering to capture the brand's reputational externalities, independent of general provincial industrial park policies.

Mechanism III: ARPBs and household savings

Third, ARPBs contribute to capital accumulation by raising rural incomes. By generating price premiums and stabilizing market access, regional brands enhance the financial capacity of rural households (Fan, 2006). We test this channel using per-capita household savings.

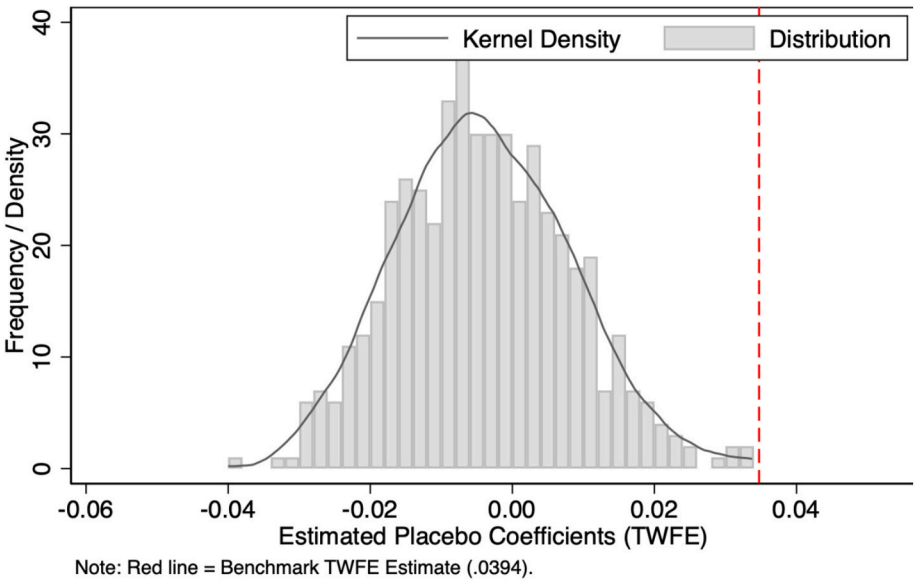

Fig. 3. Placebo Test.

Table 7
Mechanism results.

	Agricultural Modernization		Industrial Clustering		Household Savings	
	(1)	(2)	(3)	(4)	(5)	(6)
ARPBs	0.0297**		0.0791***		0.047***	
(on mechanism)	(0.0116)		(0.0153)		(0.0117)	
ARPBs		0.0092***		0.005***		0.008***
(with mechanism)		(0.0128)		(0.0176)		(0.0181)
Mechanism		0.0831***		0.104***		0.092***
		(0.0128)		(0.0086)		(0.0181)
Control variables	YES	YES	YES	YES	YES	YES
Constant	3.4040***	13.0122***	4.0202***	12.8680***	12.5882***	11.6285***
	(0.1396)	(0.1755)	(0.1724)	(0.1694)	(0.1893)	(0.2968)
County FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Province × Year FE	YES	YES	YES	YES	YES	YES
Observations	56,766	56,766	57,167	57,167	57,173	56,767
R^2	0.944	0.971	0.935	0.972	0.969	0.971

Note: County-level standard deviations are in parentheses; ***p < 0.01, **p < 0.05, and *p < 0.1.

Column (5) and (6) of Table 7 shows that ARPBs significantly increase household savings (β = 0.047, p < 0.01). This confirms that branding generates tangible wealth effects for local residents. Higher savings, in turn, provide essential liquidity for further agricultural reinvestment and local entrepreneurship, creating a virtuous cycle of growth.

In summary, the results in Table 7 provide compelling evidence that ARPBs promote economic growth through structural transformation. By robustly driving technological modernization, industrial agglomeration, and capital accumulation—even under stringent controls for provincial policy shocks—ARPBs function as a powerful catalyst for comprehensive rural development.

5. Heterogeneity analysis

To further explore whether the economic effects of Agricultural Regional Public Brands (ARPBs) vary across different contexts, this study conducts a heterogeneity analysis along three key dimensions: (1) agricultural product category, (2) regional economic development stage, and (3) Geographical Indication (GI)-based certification. These three dimensions—product category, region, and GI certification—represent the most policy-relevant forms of heterogeneity recognized in China's ARPBs governance framework (Zheng et al., 2022; Pan & Guan, 2023).

The heterogeneity is measured using an interaction term approach within the baseline difference-in-differences (DID) framework. The general specification is given as:

$$agdp_{i,t} = \alpha + \beta_1 (ARPBs_{i,t} \times H_i) + \beta_2 ARPBs_{i,t} + \beta_3 H_i + \sum \gamma_m X_{i,t} + \mu_i + \omega_t + \varepsilon_{i,t} \quad (6)$$

Where $agdp_{it}$, $ARPBs_{it}$, and X_{it} are the same as in equation (1). H_i represents the heterogeneity indicator (e.g., product category dummies, regional group dummies, or GI-based classification). The coefficient β_1 captures the differential effect of ARPBs across heterogeneous groups, while β_2 measures the average effect. μ_i and ω_t are individual and time fixed effect, respectively. ε_{it} is the error item.

(1) Product-category heterogeneity.

Column (1) in Table 8 examines the variation across agricultural product categories using Grain as the reference group. The results reveal significant structural differences driven by value chain characteristics and industrial linkages. Specifically, the interaction terms for Livestock and Vegetables are positive and statistically significant at the 1% and 5% levels, respectively, indicating that ARPBs associated with these

Table 8
Heterogeneity analysis.

Variables	(1)	(2)	(3)
ARPBs	0.0215	0.0452***	0.0312***
	(0.0184)	(0.0125)	(0.0108)
ARPBs_fruit	0.0241*		
	(0.0135)		
ARPBs_vegetable	0.0533**		
	(0.0210)		
ARPBs_tea	0.0318*		
	(0.0166)		
ARPBs_livestock	0.0895***		
	(0.0245)		
ARPBs_aquaculture	−0.0054		
	(0.0192)		
ARPBs_forest	−0.0112		
	(0.0178)		
ARPBs_general	0.0089		
	(0.0659)		
Eastern region		−0.0605***	
		(0.0182)	
Northeastern region		0.0289*	
		(0.0168)	
Western region		0.0436***	
		(0.0155)	
Based on GI			0.0275**
			(0.0118)
Controlled variables	YES	YES	YES
Constant	13.5099***	13.5123***	13.5004***
	(0.1871)	(0.1877)	(0.1875)
i.county	YES	YES	YES
i.year	YES	YES	YES
Observations	57,174	57,174	57,174
R^2	0.964	0.965	0.962

Note: Standard deviations are in parentheses; ***p < 0.01, **p < 0.05, and *p < 0.1.

categories generate significantly larger economic benefits than grain brands. Fruit and tea brands also exhibit positive coefficients, though the magnitude is smaller. In contrast, Aquaculture, Forest, and General brands show no statistically significant difference from the baseline.

This pattern aligns with the theoretical prediction that branding is most effective for products with high value-added potential and differentiation capabilities (Delgado-Ballester et al., 2003; Zheng et al., 2022). Livestock and fresh produce benefit more from the "cold-chain revolution" and consumer willingness to pay for safety and quality premiums. Conversely, staple grains and undifferentiated categories face thinner profit margins and weaker brand leverage, limiting their contribution to aggregate economic growth.

(2) Regional heterogeneity.

Column (2) investigates spatial heterogeneity by using the Central region as the reference group. The results show that the policy effect is significantly stronger in the Western and Northeastern regions (positive interaction terms). However, a striking finding is that the interaction term for the Eastern region is significantly negative (−0.061). Given the baseline coefficient for the Central region (approx. 0.045), this implies that the net effect of ARPBs in the Eastern region is effectively zero or even slightly negative.

This "negative" finding in the East highlights the "congestion effects" and "diminishing marginal returns" of regional branding. As the most economically advanced region in China, the East exhibits a high density of agricultural brands, leading to market saturation. The fierce competition among similar regional brands creates a "Red Ocean" environment where the marginal return to an additional brand diminishes rapidly. Furthermore, the opportunity cost of land and labor in the East is substantially higher than in the Central and Western regions. In such industrialized settings, administrative resources allocated to agricultural branding might distract from higher-value industrial or service-sector upgrading, leading to potential resource misallocation. This finding resonates with Porter's (1998) cluster theory, suggesting that agglomeration benefits can turn into negative externalities once market maturity exceeds a certain threshold. In contrast, for the less developed Western region, ARPBs serve as a critical lever to break market barriers, exhibiting a strong "catch-up effect.".

(3) GI-based institutional heterogeneity.

Finally, Column (3) distinguishes between GI-based ARPBs and non-GI ARPBs, using the latter as the reference group. The coefficient of the interaction term (ARPBs × GI) is positive and statistically significant, indicating that brands backed by Geographical Indication (GI) certification exert a significantly stronger growth-promoting effect than ordinary brands.

This confirms the institutional reinforcement effect of GI systems. GI certification provides legal protection and guarantees authenticity, which enhances consumer trust and justifies higher price premiums (Belletti et al., 2017). The synergy between GI protection and ARPBs promotion reduces information asymmetry more effectively than generic branding alone, thereby amplifying the developmental benefits for the local economy.

6. Conclusions

This study provides robust empirical evidence that Agricultural Regional Public Brands (ARPBs) significantly enhance county-level economic growth in China. Using a staggered difference-in-differences approach to rigorously identify causal effects, we find that ARPBs adoption increases per capita GDP by approximately 6.68% (notably higher than the baseline TWFE estimate of 3.94%). The analysis reveals that ARPBs promote growth by accelerating agricultural modernization, fostering industrial clustering, and enhancing household savings, effectively serving as a catalyst for rural structural transformation. These findings extend the literature on place-based development strategies and highlight the multifaceted nature of branding as a tool for rural revitalization.

A key contribution of this study is the identification of the context-dependent nature of collective branding. At the product level, livestock- and vegetable-related brands deliver the strongest growth effects due to their high value-added potential and strong downstream linkages, whereas grain and aquaculture brands display limited impacts. At the regional level, we document distinct diminishing marginal returns. While ARPBs act as a critical "catch-up" lever for the Central and Western regions, they encounter "congestion effects" in the economically advanced Eastern region, where market saturation and high opportunity costs lead to negligible or even negative returns. Institutionally, brands reinforced by GI certification significantly outperform generic brands, underscoring the synergy between intellectual property protection and public branding. Spatially, we detect positive spillover effects, ruling out "siphon effects" and suggesting that successful regional brands generate externalities that benefit neighboring economies.

However, these positive aggregate effects must be interpreted with caution. Regional branding is not a panacea, and its implementation entails critical trade-offs. First, distributional concerns persist. While the county economy grows on average, high compliance costs and standardization requirements may create entry barriers that exclude resource-poor smallholders. This leads to a risk of "elite capture," where policy benefits disproportionately accrue to leading enterprises while marginalized farmers are left behind. Second, collective action dilemmas remain unresolved. As shared regional assets, ARPBs are inherently susceptible to "free-riding" and brand dilution. Without stringent quality control and governance, the collective reputation can be eroded by opportunistic behavior, potentially turning the regional brand into a "market for lemons." Third, the government-led model carries risks of resource misallocation. The drive for political performance may lead to the proliferation of "zombie brands" that exist primarily to secure subsidies but lack real market competitiveness, particularly in regions where the agricultural comparative advantage is

weak.

In summary, while ARPBs are powerful tools for rural revitalization, their long-term success depends on moving beyond simple brand creation to establishing inclusive, transparent, and rigorous governance systems that protect both brand reputation and the interests of smallholder farmers.

7. Policy implications

The findings of this study offer several policy insights for strengthening the developmental role of Agricultural Regional Public Brands (ARPBs) in China and other countries pursuing place-based agricultural strategies. A central implication is that ARPBs should be designed not as instruments for redistributing existing market shares, but as mechanisms that generate positive-sum gains through product differentiation, value-chain upgrading, and enhanced coordination among producers. Effective branding policies require supportive institutional and infrastructural conditions; without them, public brands risk becoming symbolic labels with limited developmental impact.

First, governments should prioritize product–region matches based on comparative advantages and value-chain potential. The strong performance of livestock- and vegetable-related ARPBs, contrasted with the weaker effects for grain and aquaculture, suggests that branding policies should avoid uniform, "one-brand-fits-all" approaches. Ex-ante feasibility assessments, ecological suitability evaluations, and market demand analysis can help ensure that new ARPBs reinforce genuine differentiation rather than creating redundant or low-value labels. Similar practices have been institutionalized in the EU's PDO/PGI system, where product–territory coherence is a key criterion for registration.

Second, the effectiveness of ARPBs depends heavily on credible quality governance. The superior outcomes observed for GI-based ARPBs highlight the importance of traceability systems, third-party certification, and legally enforceable quality standards. Strengthening these institutional mechanisms can reduce information asymmetry, enhance reputation, and sustain long-term premium effects. Policymakers may thus consider tighter integration between ARPBs and GI protection, as well as the establishment of independent oversight bodies to safeguard brand integrity.

Third, implement differentiated strategies for distinct development stages. Given the "congestion effect" observed in the East and the "catch-up effect" in the West, a uniform policy is inefficient. For the Central and Western regions, governments should continue to use ARPBs as a lever to break infrastructure bottlenecks. Investment should target cold-chain logistics and processing centers to help local products access national markets. For the Eastern region, the focus must shift from "quantity" to "quality." Instead of creating new brands in already saturated markets, policy efforts should pivot toward brand consolidation, industrial upgrading, and exiting low-efficiency segments. This helps mitigate the diminishing marginal returns caused by excessive internal competition.

Fourth, inclusive governance frameworks are essential to ensure that smallholders and rural households share the benefits generated by ARPBs. Although branding can raise regional visibility, the distribution of gains may be skewed toward leading firms without institutions that facilitate smallholder participation. Cooperative models, contract farming arrangements, technical assistance, and preferential credit programs can help farmers meet brand standards and participate in higher-value segments of the supply chain.

Fifth, establish inclusive benefit-sharing mechanisms. To mitigate the risk of elite capture, policies should encourage models that link leading enterprises with smallholders (e.g., "Company + Cooperative + Farmers"), ensuring that the premium generated by ARPBs trickles down to ordinary farmers.

Finally, branding should be embedded within broader rural development strategies. ARPBs complement policies related to agrifood modernization, environmental sustainability, financial inclusion, and territorial planning. Coordinating branding efforts with these policy domains enhances their long-run effectiveness and avoids fragmented interventions. The Chinese experience thus provides valuable lessons for other emerging economies: place-based branding can be a powerful development tool, but only when supported by strong institutions, inclusive governance, and sustained investment in value-chain infrastructure.

CRediT authorship contribution statement

Chengji Yang: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Methodology, Data curation. **Zhongting Yi:** Supervision, Software, Resources, Data curation. **Rongrong Bai:** Writing – review & editing, Visualization, Methodology, Data curation. **Hongdong Guo:** Writing – review & editing, Supervision, Resources, Project administration, Investigation, Funding acquisition, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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References

Allen, G., 2007. Place branding: New tools for economic development. Des. Manage. Rev. 18 (2).
Baron, R.M., Kenny, D.A., 1986. The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. J. Pers. Soc. Psychol. 51 (6), 1173–1182.
Becker, G.S., 2002. Human capital. The concise encyclopedia of. economics 2, 1–12.
Belletti, G., Marescotti, A., Touzard, J.-M., 2017. Geographical indications, public goods, and sustainable development: the roles of actors' strategies and public policies. World Dev. 98, 45–57.
Bérard, L., Marchenay, P., 2006. Local products and geographical indications: taking account of local knowledge and biodiversity. Int. Soc. Sci. J. 58 (187), 109–116.
Bowen, S., 2010. Development from within? the potential for geographical indications in the global south. The Journal of World Intellectual Property 13 (2), 231–252.
Cai, X., Lu, Y., Wu, M., Yu, L., 2016. Does environmental regulation drive away inbound foreign direct investment? evidence from a quasi-natural experiment in China. J. Dev. Econ. 123, 73–85.
Callaway, B., Sant'Anna, P.H., 2021. Difference-in-differences with multiple time periods. J. Econ. 225 (2), 200–230.
Chambolle, C., Saulpic, O., 2006. Growers vs. merchants bargaining on the price of Champagne grapes and the role of contracts when bargaining is unbalanced. Journal of Wine Economics 1 (2), 95–113.
Chetty, R., Looney, A., Kroft, K., 2009. Salience and taxation: Theory and evidence. Am. Econ. Rev. 99 (4), 1145–1177.
Ciccone, A., Hall, R.E., 1996. Productivity and the Density of Economic Activity. The American Economic Review 86 (1), 54–70.
Delgado-Ballester, E., Munuera-Aleman, J.L., Yague-Guillen, M.J., 2003. Development and validation of a brand trust scale. Int. J. Mark. Res. 45 (1), 35–54.
Duan, H., Wang, Z., Yi, Z., Su, X., 2024. Network embeddedness, entrepreneurial bricolage, and family farm sustainability. Frontiers in Sustainable Food Systems 8, 1361882.
Fan, Y., 2006. Branding the nation: what is being branded? J. Vacat. Mark. 12 (1), 5–14.
Giovannucci, D., Barham, E., Pirog, R., 2010. Defining and marketing "local" foods: Geographical indications for US products. The Journal of World Intellectual Property 13 (2), 94–120.
Goodman-Bacon, A., 2021. Difference-in-differences with variation in treatment timing. J. Econ. 225 (2), 254–277.
Halleck Vega, S., Elhorst, J.P., 2015. The SLX model. J. Reg. Sci. 55 (3), 339–363.
Hu, X., Cheng, D., & Li, C. (2013). *China Agricultural Regional Public Brand Development Report.* China Agriculture Press. (In Chinese.
Jiang, Y., Pu, Y., Ding, Y., et al., 2023. Premium and synergy effects of geographical indications and corporate brands for agricultural products: a case study of green tea. Econ. Geogr 43 (9), 179–186. In Chinese.
Jin, S., Mei, Z., Duan, K., 2022. Coupling Coordination of China's Agricultural Environment and Economy under the New Economic Background. Agriculture 12 (8), 1147.

Kavaratzis, M., 2005. Place branding: a review of trends and conceptual models. Mark. Rev. 5 (4), 329–342.
La Ferrara, E., Chong, A., Duryea, S., 2012. Soap operas and fertility: evidence from Brazil. Am. Econ. J. Appl. Econ. 4 (4), 1–31.
Levine, R. (2005). Finance and growth: theory and evidence. *Handbook of economic growth*, 1, 865-934.
Li, Y., 2021. Mechanism and implementation path of agricultural regional branding in promoting rural revitalization. Economic Issues 9, 97–103. In Chinese.
Li, P., Lu, Y., Wang, J., 2016. Does flattening government improve economic performance? evidence from China. J. Dev. Econ. 123, 18–37.
Li, F., Ye, Q., Zhang, Y., 2022. Dual driving mechanism and effect of government and market in the construction of regional public brand for agricultural products: An exploratory research based on grounded theory. Journal of Southwest University (Social Science Edition) 48 (2), 82–94 (In Chinese).
Likoudis, Z., et al., 2016. Consumers' intention to buy protected designation of origin and protected geographical indication foodstuffs: the case of Greece. Int. J. Consum. Stud. 40 (3), 283–289.
Liu, C., Lu, Y., 2015. Firm investment and export demand uncertainty: evidence from China. J. Int. Econ. 97 (1), 89–105.
Liu, Y., Nong, Y., 2025. Dilemma and strategy of building regional public brands for agricultural products under the empowerment of e-commerce. E-Commerce Letters 14, 1613.
Ma, Z., Qiao, G., 2024. Can creating an agro-product regional public brand improve the ability of farmers to sustainably increase their revenue? Sustainability 16 (9), 3861.
Menapace, L., Moschini, G., 2012. Quality certification by geographical indications, trademarks and firm reputation. Eur. Rev. Agric. Econ. 39 (4), 539–566.
Ministry of Agriculture and Rural Affairs of the PRC, 2022. In: Social Capital and Investment Rural and Agricultural Guidelines. Beijing, China.
Moschini, G., Menapace, L., Pick, D., 2008. Geographical indications and the competitive provision of quality in agricultural markets. Am. J. Agric. Econ. 90 (3), 794–812.
Natsuda, K., Igusa, K., Wiboonpongse, A., Thoburn, J., 2012. One Village one Product–rural development strategy in Asia: the case of OTOP in Thailand. Canadian Journal of Development Studies/revue Canadienne D'études Du Développement 33 (3), 369–385.
Ohe, Y., Kurihara, S., 2013. Evaluating the complementary relationship between local brand farm products and rural tourism: evidence from Japan. Tour. Manag. 35, 278–283.
Oi, J.C., 1992. Fiscal reform and the economic foundations of local state corporatism in China. World Polit. 45 (1), 99–126.
Pan, Y., Guan, H., 2023. Model of regional public brand building for agricultural products in China, influencing factors and insights from Japan's experience. Journal of Commercial Economics 6, 101–104.
Porter, M.E., 1998. *Clusters and the new economics of competition*. Harv. Bus. Rev. 76 (6), 77–90.
Qie, H., Chao, Y., Chen, H., Zhang, F., 2023. Do geographical indications of agricultural products promote county-level economic growth? China Agricultural Economic Review 15 (3), 666–681.
Rodrik, D., 2013. Structural change, fundamentals, and growth: an overview. Institute for Advanced Study 23, 1–12.
Skinner, A.M., 2009. Napa Valley, California: A model of wine region development. In: *Wine tourism around the world*. Routledge, pp. 283–296.
Tu, C., Wang, A., 2012. The economics of regional public brands of agricultural products: a reputation-based signaling model. J. Bus. Econ. 11, 10.
European Union. (2006). Regulation (EEC) No. 510/2006 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs. *Official Journal of the European Union*, No. L 93.
Van der Ploeg, J.D., et al., 2000. Rural development: from practices and policies towards theory. Sociol. Rural. 40 (4), 391–408.
Yan, W., Yudong, Y., 2003. Sources of China's economic growth 1952–1999: incorporating human capital accumulation. China economic review 14 (1), 32–52.
Yang, Y., et al. (2024). The impact of regional public brands on the online sales of agricultural products: Is online reputation 'empowering' or 'negative'?. *Chinese Rural Economy*, 7. (In Chinese).
Yang, D., et al., 2025. The Income effect of Regional Public Brands of Agricultural Products under the Goal of Common Prosperity: Empirical evidence from Formerly Impoverished Counties. Journal of Management World 41 (07), 149–175. In Chinese.
Zhang, Z., et al., 2024. Little brands, big profits? effect of agricultural geographical indicators on county-level economic development in China. Agriculture 14 (5), 767.
Zheng, X., Huang, Q., Zheng, S., 2022. The identification and applicability of regional brand-driving modes for agricultural products. Agriculture 12 (8), 1127.