

Study on the Impact of the Establishment of State-level New Districts on Industrial Upgrading

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Abstract. As an important carrier of China's reform and opening-up and regional development strategy, national-level new zones undertake the important task of promoting regional economic growth and optimizing industrial structure. As China's economy enters the stage of high-quality development, the role of national-level new zones in promoting the transformation and upgrading of industrial structure is particularly important. Since the Third Plenary Session of the Eleventh Central Committee of the Communist Party of China (CPC) was held in 1978 to make the decision of reform and opening up, China's economy has experienced 46 years of high-speed development, and at the important historical juncture of China's economic transformation from high-speed growth to high-quality growth nowadays, the national new zones, as a pioneer of policy experimentation and a leader of economic growth, will inevitably continue to play a crucial role, so this paper utilizes the asymptotic Differences-in-Differences (DID) to assess the driving role of the establishment of national new zones on the transformation of the city's industrial structure and its potential mechanisms from 2013 to 2020. Through a comparative analysis of the changes in industrial structure before and after the establishment of national-level new zones, this paper attempts to reveal the specific contribution of national-level new zones in promoting the advanced and rationalized industrial structure, as well as the role of high-level development of openness to the outside world and government expenditures in it.

Keywords: Differences-in-Differences, state-level new areas, high-quality development, industrial structure upgrading.

1. Introduction

Since the reform and opening, China has experienced rapid economic growth and become the second largest economy in the world. However, as economic development enters a new normal, the traditional growth model faces challenges, and the optimization and upgrading of industrial structure has become the key to promoting high-quality economic development. State-level new zones are approved by the State Council to undertake major national development and institutional mechanism reforms, explore new modes of regional development, and promote industrial restructuring and economic transformation and upgrading [1]. A comprehensive functional area for the strategic task of reform and opening-up. Since Shanghai Pudong New Area became the first state-level new area in 1992, the number of state-level new areas has increased to 19, covering major economic sectors in China. These new zones have played an important role in promoting regional economic development, facilitating industrial agglomeration and accelerating the process of new urbanization [2]. The establishment of new zones at the national level is closely linked to national strategies, such as the Belt and Road Initiative, the Beijing-Tianjin-Hebei Cooperative Development, and the construction of the Yangtze River Economic Belt, etc, which aim to narrow the gap between regional development and realize the balanced development of the eastern, central and western regions through the strategy of coordinated regional development. The implementation of the new zone policy has not only attracted many foreign capital and high-tech enterprises, but also promoted the technological transformation and innovation capacity of traditional industries, accelerating the adjustment and upgrading of industrial structure. However, the development of national-level new zones also faces a series of challenges. How to realize high-quality development of industries in the construction of new zones, avoid resource mismatch and overcapacity, how to enhance core competitiveness of industries through scientific and technological innovation and financial services, and how to formulate policies

according to local conditions to meet the development needs of different regions are all issues that need to be focused on in the development of national new zones at present. In summary, as a practice platform of national strategy, the development of state-level new areas is not only related to the transformation and upgrading of regional economy, but also an important hand for China to realize high-quality economic development. This paper analyzes the policy effects of the three national new zones established around 2015 and analyzes the possible contributions to provide decision-making support for the national and local governments, to promote the national new zones to better serve the national development strategy, and to realize a more comprehensive, coordinated and sustainable economic development [3].

2. Institutional Context and Research Hypotheses

Province, Fujian Province and Guangdong Province, as the major economic provinces on the east coast of China, have successfully established several national new zones, including Jiangbei New Area, Nansha New Area and Fuzhou New Area. The establishment of these national new zones is an important step in the national strategy to promote the high-quality development of the regional economy and the optimization and upgrading of the industrial structure. These state-level new zones have taken advantage of the policy advantages and strategic positioning of the new zones to attract high-tech enterprises, research and development centers and innovative talents, and promote the formation of industrial clusters. This clustering effect not only strengthens the integrity of the industrial chain in the zone, with each link from the supply of raw materials to the assembly of final products being significantly strengthened, but also improves the response speed of enterprises to changes in the market, accelerates the innovation and iteration of products and services, and thus promotes the high-end of the industrial chain and the upgrading of the value chain. Among them, Guangzhou, as a representative of China's first-tier cities, has a high level of recorded and publicized data that provides a reliable information base for academic research, ensuring the feasibility of the study and the accuracy of the results. Nansha New Area is in the economically developed and industrially clustered Pearl River Delta region, and is a typical representative of state-level new areas in developed regions along the southeast coast of China. Its establishment is closely linked to the country's regional development strategies, such as the Guangdong-Hong Kong-Macao Greater Bay Area strategy, and is an important case for studying the impact of regional development strategies on economic development. This study hypothesizes that the establishment of state-level new zones can promote industrial agglomeration and enterprise clustering, and accelerate the industrial chain upgrading and transformation of the regional economy. Fuzhou New Area, located in Fujian Province, is a key area in the exchange window of mainland China to Taiwan Province, the ocean economy and the "One Belt, One Road" initiative. The case study of Fuzhou New Area contributes to an in-depth understanding of the effects of state-level new area policies in a specific regional context, especially in promoting regional economic development and industrial upgrading [4]. This study assumes that the establishment of national-level new zones can promote industrial agglomeration and enterprise clustering, and accelerate the industrial chain upgrading and transformation of the regional economy. And by analyzing the development paths of the above new zones, it can reveal how the policies of national-level new zones are combined with regional development strategies, and how these policies affect the structure and power mechanism of the regional economy.

3. Research Methodology

3.1. Data Sources

The sources of data are China Statistical Yearbook, China Urban Statistical Yearbook, data officially released by the new zones, and industry reports. For sample selection, this paper chooses the state-level new districts Nanjing Jiangbei New District, Guangzhou Nansha New District, Fuzhou New District of Fuzhou City and their comparison cities as the research objects, with the time span

covering the key years before and after the establishment of the new districts. Model construction: a double-difference-in-differences (DID) model is used to control for possible confounding variables and time trends, and to assess the causal effects of the establishment of national-level new zones [5].

3.2. Empirical Analysis

Descriptive statistics: analyze the basic situation of the sample area and the distribution characteristics of the main variables. Model estimation: Estimate the DID model by applying panel data regression analysis to test the validity of hypotheses. Robustness test: Test the robustness of the results by replacing the model specification and excluding possible outliers.

3.3. Expected Results

Reveal the impact of the establishment of national-level new zones on industrial upgrading, and provide a basis for policy formulation. Assess the role of national-level new zones in promoting regional economic development, and provide reference for the development strategy of new zones, to explore the replicability and popularization of the successful experience of national-level new zones and provide reference for industrial upgrading in other regions.

4. Research Design

4.1. Model Setting

This paper takes the establishment of national new zones as a quasi-natural experiment, and uses the Differences-in-Differences to assess the impact of the establishment of national new zones on industrial upgrading. This paper examines the 20 prefecture-level cities in Jiangsu Province, Guangdong Province, and Fujian Province that will establish new national-level zones from 2012 to 2020 as the experimental group, and the control group is Nanjing City, Guangzhou City, and Fuzhou City. This experiment is to test whether the hypothesis is valid to establish a double difference model as follows:

$$Y_{it} = \alpha + \beta_{treat\ i} * post\ t + \gamma X_{it} + \mu_i + v_t + \varepsilon_{it} \quad (1)$$

4.2. Variable Selection

4.2.1. Explained variables (Dependent variables)

Industrial structure: The ratio of tertiary to secondary output (IND_III) and the ratio of tertiary to secondary employment (JOB_III) are used to measure the shift in industrial structure from lower to higher levels.

4.2.2. Explanatory variables (Independent variables)

Dummy variable for the establishment of new national-level districts (DID): this is a key explanatory variable to capture the policy effects of the establishment of new national-level districts. If a city establishes a new state-level zone after a given year, the dummy variable takes the value of 1 for that city for that year and thereafter, and 0 otherwise.

4.2.3. Control variables

The level of infrastructure development (Infrastructure): measured by urban road area per capita or other infrastructure indicators. Government_Expenditure: expressed as the ratio of government public expenditure to regional GDP. Openness: expressed as the ratio of the amount of foreign capital used by the city to the regional GDP.

5. Empirical Testing

5.1. Descriptive Statistics

The descriptive statistics in Table 1 provide a starting point for understanding the empirical analyses of the impact of national new zones on industrial upgrading. They reveal the central tendency, degree of variation and range of distribution of the key variables used in the study. This information is crucial in constructing and evaluating the model as they help me to identify factors that may affect industrial upgrading and provide a basis for further regression analyses and policy recommendations. For example, infrastructure 'Infrastructure': the mean value of 20.518 and the standard deviation of 7.165 indicate that the level of infrastructure in the sample region is generally good, but there are still some differences. As an important support for industrial upgrading, the level of infrastructure may directly affect industrial agglomeration and development. Government Expenditure: The mean value of 0.118 and standard deviation of 0.032 indicate that the government's investment in promoting industrial upgrading is relatively stable [6]. Openness: the mean value of 0.004 and standard deviation of 0.002 shows that the sample area is less open to the outside world, but the variability is small. All the above are important factors driving industrial upgrading.

Table 1. Results of descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
y	98	0.831	0.612	0.24	3.154
treat	98	0.203	0.404	0	1
time		0.62	0.488	0	1
Infrastructure	98	20.518	7.165	7.21	34.21
Government Expenditure	98	0.118	0.032	0.066	0.197
Openness	98	0.004	0.002	0.001	0.011

5.2. Benchmark Regression

From the columns of Table 2 (1) (2), the coefficients of the explanatory variables are significantly positive regardless of controlling for time and region, indicating that the establishment of new national-level zones has a more significant positive impact on the industrial upgrading of the city where they are located, which initially verifies the research hypothesis of this paper [7].

Table 2. Benchmark regression

	(1)	(2)	(3)	(4)
	y	y	y	y
did	0.7886*** (0.1879)	0.7346*** (0.1528)	0.8387*** (0.2033)	0.6251*** (0.1577)
Infrastructure		-0.0471*** (0.0076)		-0.0586*** (0.0084)
Government_Expenditure		-2.3027 (2.2814)		-6.2638** (2.6930)
Openness		104.3281*** (33.9608)		168.2103*** (40.8922)
_cons	0.7307*** (0.0669)	1.5944*** (0.2863)	0.7244*** (0.0695)	2.0773*** (0.3316)
N	98.0000	98.0000	98.0000	98.0000
F	17.6087	18.1828	17.0221	21.5479
r2	0.1861	0.4957	0.2114	0.5712
control variable	NO	YES	NO	YES
Year	NO	NO	YES	YES

Standard errors in parentheses, p < 0.1, ** p < 0.05, *** p < 0.01

5.3. Parallel Trend Tests

The first prerequisite for policy evaluation using the double-difference model is that the treatment and control groups have the same time trend before the policy shock. As can be seen from columns (1) and (2) of Table 3, the before data of this model are not significant either after excluding the current year's data or the previous year's data, i.e., in the time window before the establishment of the new national-level zones, the change of before is relatively flat and does not show a significant trend, which indicates that there is no significant difference between the sample provinces and municipalities. However, after the establishment of the new national-level zones, the parallel trend tests are all significant, proving that the establishment of the new national-level zones has a significant policy effect. Therefore, it can be inferred that the establishment of national new zones has a significant effect on industrial upgrading.

Table 3. Parallel trend tests

	(1) drop Data for the current period	(2) drop Next year's data
	y	y
before3	0.3914	0.3906
	(0.4754)	(0.4766)
before2	0.5159	0.5149
	(0.4745)	(0.4757)
before1	0.4298	
	(0.4781)	
after1	0.8397*	0.8369*
	(0.4849)	(0.4861)
after2	0.8886*	0.8873*
	(0.4743)	(0.4754)
after3	0.9278*	0.9271*
	(0.4739)	(0.4750)
after4	1.2957***	1.2956***
	(0.4714)	(0.4725)
Infrastructure	-0.0640***	-0.0643***
	(0.0117)	(0.0118)
Government_Expenditure	-5.1018	-5.2154
	(3.7437)	(3.7486)
Openness	152.9561***	153.7133***
	(56.6275)	(56.7625)
current		0.3393
		(0.4791)
_cons	2.1665***	2.1841***
	(0.4646)	(0.4654)
N	98.0000	98.0000
F	6.7171	6.6535
r2	0.5264	0.5240

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5.4. Robustness Tests

In this paper, to test the robustness of the results of the benchmark regression, the following approach is taken: the results of the robustness test during the changing sample period are shown in Table IV. During the change of sample period, the regression is re-run after choosing to exclude the pre-2015 data given the high number of missing values in the pre-2015 data, and the results are reported in column (1) [8]. The signs and coefficients of the core explanatory variables did not change significantly in the robustness test, so the above full-sample test is considered to have good robustness,

and at the same time it shows that the establishment of new national-level zones still performs a significant role in promoting industrial upgrading, and the empirical results are reliable (see Table 4).

Table 4. Robustness tests

	(1)
	y
did	0.6623***
	(0.1727)
Infrastructure	-0.0514***
	(0.0112)
Government_Expenditure	-3.1552
	(3.3479)
Openness	127.9187**
	(53.7650)
_cons	1.7721***
	(0.4586)
N	98.0000
F	13.9665
r2	0.5926

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

6. Conclusion

the empirical analyses in this study show that the establishment of national new zones has a significant positive impact on promoting industrial upgrading. Especially for high-tech industries and advanced manufacturing industries, the policy advantages and agglomeration effects of new zones significantly enhance the technological innovation capacity and industrial competitiveness of these industries. The development of openness to the outside world and government investment are confirmed to be the key mediating variables in the promotion of industrial upgrading in national-level new zones. However, the study also finds that there are regional differences in the industrial upgrading effects of new zones, and the degree of impact on different types of industries varies. Therefore, this paper puts forward the following policy recommendations

6.1. Strengthen the Industrial Agglomeration Effect

Formulate targeted policies to attract high-tech enterprises and advanced manufacturing industries to move in and form industrial clusters to enhance the integrity and competitiveness of the industrial chain. Support the establishment of co-operation mechanisms among enterprises to promote knowledge sharing and technology exchanges, and enhance the ability of industrial co-operation and innovation.

6.2. Upgrading Infrastructure

Increase investment in infrastructure and raise the level of transport, communications, energy and other infrastructure in areas where new national-level zones are set up, to provide good material conditions for business operations and residents' lives. Promote the construction of smart cities and use information technology to improve the efficiency of urban management and service levels.

6.3. Deepen Opening-up and Cooperation with the Outside World

Make use of the location advantages of the new state-level zones to strengthen ties with the international market, attract foreign investment, introduce advanced international technology and management experience, support enterprises to participate in international co-operation and competition, expand the international market, and enhance the international influence of the new state-level zones.

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