Research on the Influence of the Development of Xiamen Pilot Free Trade Zone on Regional Economy under the Background of the Belt and Road

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Abstract: This article compiled the panel data of 253 prefecture-level cities from 2009 to 2019 from the China Economic Net statistical database and the statistical yearbooks of each city, and used the emerging policy evaluation method-synthetic control method to empirically evaluate the Xiamen Free Trade zone from the prefecture level. The establishment has a short-term promotion effect on the regional economy. The empirical results show that the establishment of the Xiamen Free Trade zone can be considered to have a positive effect on the local economy at a significance level of 5%. The overall economy has increased by 1.76 percentage points, the investment effect has increased by 3.32 percentage points, and the level of financial openness an increase of 9.46 percentage points, a significant boost to local economic growth. The trade creation effects of import and export respectively show the characteristics of “one negative and one positive”. Although the free trade zone has problems such as lack of import policy dividends, insufficient competitive advantages of cross-strait trade industries, and insufficient promotion of economic growth by the tertiary industry, it has not fully released its promotion effect, which is still more in line with the functional positioning of the “core zone of cross-strait trade center” and greatly promoted exchanges and in-depth cooperation with the “Maritime Silk”.

1. Introduction

Fujian is the core zone of the 21st-Century Maritime Silk Road and the second batch of provinces and cities listed as free trade zone. In the “Belt and Road “ initiative and the new round of domestic free trade zone regional strategic layout, “Free Trade zone” and the implementation of the two policies of the “21st-CenturyMaritime Silk Road Initiative “, Fujian, as the second-tier provinces and cities with the superimposed benefits of the first-tier provinces and cities, has ushered in an unprecedented endogenous driving force and major opportunities for regional economic transformation and upgrading. The country and cross-strait cooperation have huge potential. On the basis of historical policy foundation and economic environment, it has both advantages of Taiwan, location, maritime passage and first-to-be-tested policy. The superposition of advantages may produce a huge magnetic attraction effect after the gradual emergence of the advantages.

With the implementation of the dual policies, Xiamen’s self-employment has multiple connotations and advantages, such as the special economic zone, the economic zone on the west side of the Taiwan Straits, the Taiwanese investment zone, the urbanization of Xiamen-Zhangquan Springs, the integration of internal and external Xiamen islands, and the “two islands on both sides of the strait” free trade zone. The trade zone can better realize the interaction and common development of the two core strategies. First of all, in terms of regional economic linkage, the free trade zone network along “the Belt and Road” through the free trade zone as a hub can fully release the economic radiation response of “the Belt and Road” by gathering industries and linking various regions. In addition, in terms of institutional innovation, the free trade zone has carried out innovative measures in such zones as investment liberalization, trade facilitation, financial development and innovation, and the approval system “simplification of administration and delegation of powers”. It is extremely conducive to the optimization of “the Belt and Road”

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business environment under the rule of law and the upgrading of domestic economic growth momentum, and deepens the depth of exchanges and cooperation in international trade. Therefore, the positive promotion of the Xiamen Free Trade Zone will not only radiate the entire Haixi Economic Zone, and even the economic and trade cooperation between the two sides of the Taiwan Strait, it will have a profound significance for the construction and development of "the Belt and Road" Maritime Silk Road under the new normal of China's economy.

2. Research Content and Methods

Through combing the existing literature, it is found that there have been many studies on the Shanghai-Tianjin-Guangdong-Fujian Free Trade zone, but there is little research on the impact of the free trade zone on the local economy which is based on the functional positioning of Xiamen Free Trade Area as a cross-strait emerging industry and modern service industry cooperation demonstration zone, Southeast International Shipping Center, cross-strait regional financial service center and cross-strait trade center, Xiamen serves as the fulcrum of the "Maritime Silk" in the "Belt and Road" initiative. This article uses counterfactual analysis and synthetic control methods, using the added value of regional GDP, fixed asset investment, import and export volume, and foreign currency loan balance of financial institutions in 252 prefecture-level cities from 2009 to 2019 as proxy variables of GDP, and after preprocessing the data, use the synthetic control method to select the best-fitting control group for the establishment of local economic indicators in the free trade zone, and then use the control group to predict the relevant economic indicators when the free trade zone is not established, and compare the "counterfactual" predicted value and actual value are processed and analyzed. On this basis, it is judged whether the establishment of a free trade zone has a positive or negative effect on local economic growth. The functional positioning and the establishment of the free trade zone will study the promotion effect of the local zone.

3. An Empirical Analysis of the Economic Effects of the Establishment of Xiamen Free Trade Zone in Fujian

3.1 Synthetic Control Method Model Setting and Variable Description

Abadie and Gardeazabal (2003) first proposed the synthetic control method and applied it to identify the economic cost of terrorist activities in the Basque Country in Spain, and conducted an empirical analysis of the actual effects of the promulgation of California's tobacco control law in 2010. Compared with the double difference method, this method can achieve the feasibility of fitting the data of the "control group that does not exist in reality that are not subject to the same policy intervention" when evaluating the effect. Therefore, the estimated error of the effect can be relatively avoided. As the synthetic control method is gradually discovered and used on the basis of the "counterfactual" framework, this article refers to the economic effects of Ning Xianmei (2020) on the cities where Guangdong Province and the three free trade zones are located on the basis of the benchmark model. The research and Liu Binglian and Lu Cheng's (2018) economic growth dynamic path research and the model used will select different aspects of economic effects such as investment, trade creation, and financial open innovation, and select the corresponding proxy variables for panel data from 2009 to 2019. Evaluate and demonstrate the effect of policy implementation in the four years since the establishment of the Xiamen Free Trade zone.

Based on the availability and stability of the data, this paper selects the sample interval for the study as 11 periods of annual data from 2009 to 2019. The Xiamen zone of the China (Fujian) Pilot Free Trade zone was established on March 1, 2015. Therefore, we will divide the period from 2009 to the beginning of 2015 into the period before the establishment of the free trade zone, and divide the period from 2015 to 2019 into the period from 2015 to 2019. The time period after the establishment of the trade zone. It was selected that before the end of 2019, there have been 37 provinces and cities free trade in Shanghai, Tianjin, Guangzhou, Fujian, Liaoning, Zhejiang, Hubei, Sichuan, Shaanxi, Chongqing, Henan, Hainan, Shandong, Jiangsu, Guangxi, Hebei, Yunnan, and

Heilongjiang. Districts are established, and to select a control group, you need to delete these zones that have been subject to policy intervention. Therefore, this article takes Xiamen City as the processing group, and other 252 prefecture-level cities across the country (except Hong Kong, Macao, and Taiwan) except for the provinces and cities that established the free trade zone above as the control group, and find out the processing group The optimal weight combination of some regions in the control group is to avoid errors as much as possible to fit the economic situation of Xiamen City after March 2015 assuming that the free trade zone policy is not implemented, so that after the implementation of the free trade zone strategy, it will be true The economic variables of trade, investment, and finance in Xiamen are compared with the economic variables of synthetic Xiamen, and the effect of the free trade zone strategy on the regional economy of Xiamen is obtained.

In terms of variable selection, this article selects economic growth-related economic variables such as trade, investment and financing, import and export, and financial openness to conduct empirical analysis and research on Xiamen and Synthetic Xiamen, and to ensure data stability, availability and avoid policy influence Therefore, we choose (1) the growth value of regional GDP as the high-frequency proxy variable of economic growth, instead of adopting the GDP data that is susceptible to seasonal factors and the quarterly research cycle; (2) In terms of investment and financing effects, the selection and the fixed asset investment volume that has both a long-term equilibrium relationship with GDP and a two-way causal relationship is used as a proxy variable of investment, Lafeng Zhang (2011) research shows that short-term GDP is greatly affected by fixed asset investment in the past five years; (3) In terms of trade, the import value and export value will be selected for research, and the trade effect will be evaluated by the changes in the import value and export value before and after the establishment of the free trade zone; (4) There are currently no direct variables related to financial opening, but Refer to the existing research in Ning Xianmei (2020) using the balance of loans in domestic and foreign currencies of financial institutions as one of the measurement indicators in this regard. In addition, this article also focuses on the functional positioning of Xiamen to build an Asia-Pacific financial center and a container hub port to study and evaluate the shipping logistics of Xiamen, and select the port's water freight turnover as the evaluation index.

In addition, due to the cross-influence of the above economic variables, when one of the variables is used as the explained variable, this article uses the remaining economic variables as its predictor, that is, the above four economic variables are mutually predictive variables. And constantly adjust the combination of predictors to ensure the credibility of the empirical results.

3.2 Empirical Evaluation of Xiamen Free Trade zone’s Economic Effect on Xiamen

This paper fits the promotion effects of production, investment, trade, and finance in Xiamen from 2009 to 2019. The empirical results are as follows.

3.2.1 Economic Growth Effect

Most cities have a weight of 0. Only the following five cities have positive weights, namely Dongguan, Taiyuan, Ningbo, Hangzhou, and Jinhua. The sum of their weights is 1. The empirical results show that the root mean square error percentage (RMSPE value) is 0.0415503, that is, the fitting error is 4.15%. The weight of the report shows that Xiamen’s regional GDP is best represented by these five cities before the implementation of the free trade zone policy.. It can be seen that the gap between the true value and the fitted value at the initial stage of the fitting is not large, and the promotion of the free trade zone strategy is not obvious. It may be caused by the time lag effect of the free trade zone policy on the increase of regional GDP. of. However, after the establishment of the free trade zone in March 2015, the difference between the two observation lines gradually increased, and the real value began to be significantly higher than the predicted value. During this period of time, Xiamen City did not have other external economic policies. , Inferred that the free trade zone strategy has a very significant promotion effect on local production. It is worth noting that both observation lines showed a clear downward trend around 2018, or were closely related to the Sino-US trade war in early 2018.

From the treatment effect, it can be seen that the treatment effect before the establishment of the free trade zone fluctuates roughly around zero, and it peaks briefly after the establishment of the free trade zone, which may be due to the short-term policy dividend effect brought about by the formal implementation of the free trade zone, and then fell. To a negative value; the treatment effect rebounds to a positive value and is expected to be positive for a period of time in the future, indicating that the free trade zone policy has promoted a certain increase in the GDP of Xiamen.

3.2.2 Investment Effect

The empirical results show that most cities have a weight of 0, and only the following four cities have a positive weight, namely, Dongguan, Taiyuan, Ningbo, and Lhasa. The sum of their weights is 1. The empirical results show that the root mean square error percentage is 0.02334099, that is, the fitting error is 2.33%. The weight of the report shows that the total fixed asset investment in Xiamen is best represented by these four cities before the implementation of the free trade zone policy. According to the changes in the regional GDP of real Xiamen and synthetic Xiamen, it can be observed that after the establishment of the free trade zone in March 2015, the gap between the real value and the fitted value has begun to increase.

From the treatment effect, it can be seen that the treatment effect before the establishment of the free trade zone fluctuates around zero, indicating that the fitting effect is good; after the establishment of the free trade zone, the treatment effect has a positive value for a longer period of time, and the growth rate slowed down in the later period, and it has not been temporarily. The fall indicates that the free trade zone policy has promoted a certain increase in the GDP of Xiamen zone, and the promotion effect is relatively strong.

3.2.3 Trade Effect Evaluation

3.2.3.1Import Trade Effect

The empirical results show that most cities have a weight of 0, and only the following four cities have positive weights, namely, Dongguan, Taiyuan, Ningbo, and Lhasa. The sum of their weights is 1. The empirical results show that the root mean square error percentage is 0.0206264, that is, the fitting error is 2.06%. According to the reported weight, the import status of Xiamen is best represented by these four cities before the free trade zone policy is promulgated and passed.

Before the establishment of the free trade zone, the overall situation is very close, well-fitted, and the trend is basically the same. The changes in the real Xiamen and synthetic Xiamen's regional GDP are very close. After the free trade zone was established in March 2015, the real value and the fitting The difference in value starts to increase, and the true value drops drastically. The free trade zone strategy has no significant or even negative promotion effect on Xiamen's trade in terms of imports. With reference to Jijun Kang and Weiwei Zheng(2021) on the trade effects of Henan Free Trade zone, the possible reason is that the current policy dividend of the Free Trade zone has a greater role in promoting the development of export trade, and there is a lack or strength of relative preferential policies for imports. Insufficient; or because in the early stage of policy intervention, consumption habits and income conditions have not changed much in the short term, so the consumption of imported goods will not increase significantly in the short term, and the effect of import trade is therefore difficult to release. It is worth noting that the two lines have a downward trend around 2018, or are closely related to the Sino-US trade war in early 2018. In particular, the list of products with 10% tariffs includes natural and synthetic rubber, tires and other products. Xiamen's rubber imports fell and prices rose, and imports fell by 6.1% over the same period last year.

From the treatment effect, it can be seen that the treatment effect before the establishment of the free trade zone fluctuates around zero, indicating that the fitting effect is relatively good. After the establishment of the free trade zone, it can be seen that the free trade zone has a significant negative effect on Xiamen's imports, and reached the lowest value in 2018; after that, the treatment effect has shown a slight rebound, which may be due to the free trade zone's policy on Xiamen. There is a policy time lag effect in import trade.

3.2.3.2Export Trade Effect

Xiamen has a relatively large gap between the real value of the export trade effect and the composite value in the later stage of the forecasting stage. The following interference factors may exist:

(1) Prior to the establishment of the Xiamen Free Trade Ares, the zone already enjoyed many preferential trade policies related to taxation, port supervision, and foreign exchange management brought about by the establishment of special economic zones, as well as the Xiangyu and Haicang Free Trade Port zone. To a certain extent, it interferes with the fitting of the real value of Xiamen's foreign trade import and export volume.

(2) The situation of export trade is also very likely to be disturbed by the deterioration and friction of the political and economic ecology of the two sides of the strait and Taiwan's current "island lock" policy against the mainland. In 2019, Xiame''s foreign trade imports and exports totaled 641.29 billion yuan, and the total imports and exports with Taiwan was 228.08 billion yuan, accounting for 35.5% of the total foreign trade. Although the cross-strait frictions have not greatly reduced the attractiveness of Taiwanese capital in the Economic Zone on the west side of the Taiwan Strait, the use of the mainland to Taiwan under the Taiwanese economy has been hit hard in the export of goods and services, resulting in a poor fit of export effects.

Since the fitting effect of the predictive variables before the implementation of the free trade zone in Xiamen is not ideal, the authenticity and effectiveness of the "positive promotion effect of the free trade zone on exports" reflected in the treatment effect trend needs to be further tested in the future.

3.2.4 Financial Opening Effect

The empirical results show that the weight of most cities is 0, and only the following four cities have positive weights, namely Dongguan City, Lhasa City, Guiyang City, and Jinhua City. The empirical results show that the root mean square error percentage is 0.07347452, that is, the fitting error is 7.34%. According to the reported weights, the level of financial openness in Xiamen is best represented by these four cities before the free trade zone policy is promulgated.

Before the establishment of the free trade zone, it was generally close, well-fitted, and the trend was basically the same. The overall trend is that the true value is basically above the fitted value of the regional GDP, but it can be seen that the free trade zone policy was implemented in March 2015 The initial real value was temporarily below the fitted value and the gap was not large. It began to be higher than the fitted value around 2017, and the gap gradually widened. It can be seen that the positive promotion effect of the free trade zone strategy in the initial stage is not obvious, and then gradually Enhanced. Perhaps it is caused by the time lag effect of the free trade zone policy on the increase of regional GDP.

From the treatment effect, it can be seen that the general trend of the treatment effect before the establishment of the free trade zone is around zero fluctuations, indicating that the fitting effect is good; after the establishment of the free trade zone, the treatment effect has a significantly longer positive value, and around 2017 The slight decline and the slowdown after the climb indicate that the free trade zone policy has promoted a certain increase in the GDP of the Xiamen zone, and the promotion effect is relatively strong.

3.3 Robustness Test

This article refers to the robustness test method of Zhihong Han (2019), considering that if a placebo test is performed on a prefecture-level city, the fitting effect of its synthetic control (which can be represented by the mean square prediction error) is already very high before the policy is implemented. If the policy is poor, the effect after the implementation of the policy may fluctuate greatly and the result is not credible. Therefore, this paper only retains 212 prefecture-level cities whose MSPE before the intervention did not exceed 1.5 times the MSPE before Xiamen intervention.

From the placebo test results of 212 prefecture-level cities, it can be observed that, except for the

import trade effect after the policy intervention, the error distribution of the other cities is significantly lower than that of the other cities, and the overall economic growth reflected by the investment, finance, and production effects of Xiamen after the policy intervention is true The difference between the value and the composite value is significantly greater than that of the other 211 cities. That is to say, the probability that the impact of the free trade zone policy on regional economic growth is accidental is 1/212 (~0.0047), that is, other prefecture-level cities have The estimated probability of the same large policy effect in the city is only 0.47%. This means that in the traditional statistical inference, this article can believe that the Xiamen Free Trade zone has a positive effect on the local economy at the 5% level of significance.

4. Conclusion and Inspiration

4.1 Conclusion

The overall results show that the establishment of the Xiamen Free Trade zone has a significant role in promoting local economic growth. The annual added value of regional GDP increased by 1.76 percentage points; the ratio of total fixed asset investment to regional production value increased by 3.32 percentage points; due to trade liberalization, the reduction of global production factor flow costs and the agglomeration of financial services through the Internet The financial agglomeration effect brought about by the knowledge spillovers generated by the organization is reflected in the increase in the ratio of the loan balance of financial institutions to the regional production value by 9.46 percentage points; the ratio of trade imports to the regional production value decreased by 1.66 percentage points. The creative effect of trade with exports presents the characteristics of “one negative and one positive”, that is, the stimulus to the creative effect of export trade is significantly higher than that of import trade in volume. The robustness test of the above results through the placebo test found that the promotion of Xiamen’s economy by the establishment of the free trade zone is by no means an accidental factor, and it has strong robustness.

The empirical and test results in this article support the theoretical inference that the degree of trade liberalization promotes economic growth, and affirm the positive effect of the free trade zone policy and the “Maritime Silk Road” policy on the economic effects of the two sides of the strait and the international community.

4.2 Inspiration

From the empirical results and related analysis, it can be concluded that the free trade zone strategy has a significant promotion effect on Xiamen’s regional economic growth as a whole, but in this process there are still insignificant promotion effects on import trade, and the cross-strait trade industry has not yet formed a competitive advantage. , The flow of talents is not convenient enough, the lack of trade-oriented talents, and the tertiary industries such as high-tech industries and service industries still need to improve economic growth. It is necessary to effectively release the free trade zone’s role in promoting Xiamen’s economy through future policy dividends in supplementing trade, promoting the improvement of the business environment, and enhancing industrial competitive advantages.

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