

# Analysis of the Public Policy and Regional Advantages of the Flow of Start-ups to the Greater Bay Area of China-Based on Guangzhou, Shenzhen and Zhuhai

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**Abstract:** Start-ups are a powerful tool to promote national and regional economic development and to seize a favourable position in globalisation, but also a focus point and a new engine to optimise China's industrial structure and promote domestic economic growth in the new era. The paper first adopts a statistical approach to select relevant data trends from 2008 to 2020; then uses a regression model to quantitatively analyse how the two variables affect the flow of start-ups to the Greater Bay Area, and finds that different factors have different effects on the flow of start-ups. Finally, policy recommendations are made in terms of implementing the two dimensions of formulating public policies and enhancing regional advantages, which have positive implications for encouraging and developing startup activation. It also provides useful perspectives and pioneering experiences for latecomers to land in various regions, thus promoting the overall development process of innovation and entrepreneurship in China and achieving common prosperity.

**Keywords:** Start-Ups; Public; Policy; Regional Advantages; The Greater Bay Area

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## 1. Introduction

How to guide the development of start-ups has been a topic of discussion. Start-ups are all types of businesses that have just been established, do not have sufficient capital and resources and have difficulties in raising finance. During the rapid development period, most do not have a mature business plan and development direction, and their understanding of policies and industries is too superficial. In this paper, startups in Guangzhou, Shenzhen and Zhuhai, from 2015 to 2020, are selected as the research objects. Two influencing factors, policy factors and regional advantages, were first constructed, and then further divided into four influencing factors - the intensity of government support funds, foreign direct investment, the level of financial development, and the number of university students per 10,000 population. (1) Overall, all factors have significant effects on the entrepreneurial activities of start-ups, with foreign direct investment negatively related to entrepreneurial activities and the level of financial development positively related to entrepreneurial activities; (2) Different factors have heterogeneous effects on the entrepreneurial activities of start-ups in different cities. Finally, based on the findings of this paper, policy recommendations for improving entrepreneurial activity among start-ups are proposed.

## 2. Literature Review

Gan and Liu (2017) analyzed the formation mechanism and countermeasures of innovation factor agglomeration from the agglomeration dynamics of various innovation combination factors in economic space<sup>[1]</sup>. Cheng (2019) elaborated the theoretical basis of innovation factor agglomeration and summarized the theoretical model of the law of innovation factor agglomeration combining geographical and organizational structures<sup>[2]</sup>. Li(2008) suggested that start-ups are characterized by high investment, high growth and high risk, and that too many regulations and procedures may discourage entrepreneurs from starting their own businesses, while

government funding and service support may have a beneficial effect on enterprises<sup>[3]</sup>. The more open the market environment, the more attractive it will be to entrepreneurs. In an open market environment, entrepreneurs can more easily access the human, technological and financial resources needed to start a business, and startups can have greater room for growth (Guo, Wang, & Jing, 2017)<sup>[4]</sup>. Qi(2020) analyses the advantageous industries in three cities and suggests that the government should play the role of the "visible hand" in order to promote the concentration of innovation factors in the advantageous industries<sup>[5]</sup>.By combing through the relevant studies, it can be seen that the research on startup development in academia has embodied characteristics: most of the scholars' studies generally focus on qualitative analysis and policy comprehensiveness perspectives, and their views are comprehensive, clear and logical. Another proportion of scholars have focused on similarities and differences, as well as summarising the influencing factors and proposing targeted corrections. However, the vast majority of studies lack quantitative analysis.The innovation of this paper is to draw on Teng (2019) study on the impact of business environment on the entrepreneurial activity of technology-based start-ups, drawing on his theoretical model to quantitatively analyse the influencing factors<sup>[6]</sup>.

### 3. Research methodology

#### 3.1 Dependent variable

This paper defines start-up entrepreneurial activity by referring to Liu,(2008), where the number of start-ups per adult within a city measures start-up entrepreneurial activity(Sta-u<sub>it</sub>).<sup>[7]</sup>

#### 3.2 Independent variables

##### 3.2.1 Public Policy

Gov<sub>it</sub>.is defined as the share of government funding in the private economy.

Fdi<sub>it</sub>. is defined as the share of total investment in foreign-invested enterprises in GDP at the end of the year.

##### 3.2.2 Regional advantages.

Fin<sub>it</sub> is defined as the balance of deposits and loans of financial institutions as a percentage of GDP.

Us<sub>it</sub>.is defined as the number of university students as a proportion of the total population.

#### 3.3 Control variables

Ip<sub>it</sub> closely related to household wealth, with the more wealth an individual has, the more likely he or she is to start a business.Therefore, the income level of the population is chosen as the control variable.

#### 3.4 Empirical model

In order to verify the impact of the two factors on the entrepreneurial activity of startups, an empirical model is constructed according to the research hypothesis proposed in this paper as follows:

$$\text{Sta-u}_{it} = \beta_0 + \beta_1 \text{Gov}_{it} + \beta_2 \text{Fdi}_{it} + \beta_3 \text{Fin}_{it} + \beta_4 \text{Us}_{it} + \beta_5 \text{Ip}_{it} + E_{it}$$

## 4. Results

### 4.1 Overall sample

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change	Durbin-Watson
						F Change	df1	df2		
1	.731 <sup>a</sup>	.535	.522	189347.946	.535	42.500	1	37	.000	
2	.825 <sup>b</sup>	.681	.664	158843.778	.147	16.575	1	36	.000	.542

a. Predictors: (Constant), Fin  
b. Predictors: (Constant), Fin, Fdi  
c. Dependent Variable: Start-ups

Figure 1. Summary of the total sample

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-911322.566	174707.623		-5.216	.000		
	Fin	297257.181	45597.110	.731	6.519	.000	1.000	1.000
2	(Constant)	-620155.744	163080.121		-3.803	.001		
	Fin	253184.191	39753.671	.623	6.369	.000	.926	1.080
	Fdi	-29036911.2	7132118.141	-.398	-4.071	.000	.926	1.080

a. Dependent Variable: Start-ups

Figure 2. Total sample coefficient

Using stepwise regression with the inclusion of control variables, Fdi and Iip were found to have a significant impact on start-ups. The coefficient of Fdi is negative and significant at 1% confidence level, indicating that Fdi has a dampening effect on the Sta-us; the coefficient of Fin is positive, and significant at 1% confidence level, indicating that the financial environment has a significant role in promoting start-ups.

### 4.2 Sub-city analysis

#### 4.2.1 Guangzhou

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change	Durbin-Watson
						F Change	df1	df2		
1	.864 <sup>a</sup>	.746	.723	109639.361	.746	32.391	1	11	.000	
2	.917 <sup>b</sup>	.842	.810	90905.926	.095	6.001	1	10	.034	
3	.954 <sup>c</sup>	.911	.881	71807.871	.069	7.027	1	9	.026	2.634

a. Predictors: (Constant), Fin  
b. Predictors: (Constant), Fin, Iip  
c. Predictors: (Constant), Fin, Iip, Us  
d. Dependent Variable: Start-ups

Figure 3. Summary of Guangzhou

The level of Iip, Fin and Ust had a significant impact on start-ups. The coefficients are negative and significant at 1% confidence level, indicating that the Ust has a dampening effect on start-ups; the coefficients of Fin and Iip are positive and significant at 1% confidence level, indicating that the financial environment and residents' income level have a significant contribution to start-ups.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-1237668.922	257414.215		-4.808	.001		
	Fin	392684.929	68997.701	.864	5.691	.000	1.000	1.000
2	(Constant)	-940351.406	245527.939		-3.830	.003		
	Fin	225959.801	88910.523	.497	2.541	.029	.414	2.415
	Ilp	7.088	2.894	.479	2.450	.034	.414	2.415
3	(Constant)	71759.416	428252.548		.168	.871		
	Fin	179655.751	72371.440	.395	2.482	.035	.390	2.565
	Ilp	14.657	3.658	.991	4.007	.003	.162	6.185
	Us	-10290793.0	3882196.350	-.512	-2.651	.026	.265	3.770

a. Dependent Variable: Start-ups

Figure 4. Guangzhou coefficients

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change	Durbin-Watson
						F Change	df1	df2		
1	.935 <sup>a</sup>	.874	.862	127192.214	.874	76.088	1	11	.000	1.249

a. Predictors: (Constant), Fin  
b. Dependent Variable: Start-ups

Figure 5. Summary of Shenzhen

## 4.2.2 Shenzhen

The level of Fin has a significant impact on start-ups. The coefficient of Fin is positive and significant at 1% confidence level, indicating that the level of financial development has a significant contribution to start-ups.

## 4.2.3 Zhuhai

The level of Ilp, Ust and Gov had a significant impact on start-ups. The coefficient of Ust is negative and significant at 1% confidence level, indicating that Ust has a dampening effect on start-ups; the coefficients of Ilp and Gov are positive and significant at 1% confidence level, indicating that these two factors have a significant contribution to start-ups.

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-1110384.656	176065.270		-6.307	.000		
	Fin	380075.517	43572.318	.935	8.723	.000	1.000	1.000

a. Dependent Variable: Start-ups

Figure 6. Shenzhen coefficients

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	Change Statistics			Sig. F Change	Durbin-Watson
						F Change	df1	df2		
1	.942 <sup>a</sup>	.886	.876	8466.726	.886	85.861	1	11	.000	
2	.983 <sup>b</sup>	.966	.960	4836.118	.080	23.716	1	10	.001	
3	.992 <sup>c</sup>	.984	.979	3510.168	.018	9.982	1	9	.012	2.149

a. Predictors: (Constant), Ilp  
b. Predictors: (Constant), Ilp, Us  
c. Predictors: (Constant), Ilp, Us, Gov  
d. Dependent Variable: Start-ups

Figure 7. Summary of Zhuhai

Coefficients <sup>a</sup>								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-51134.086	7996.605		-6.394	.000		
	llp	1.861	.201	.942	9.266	.000	1.000	1.000
2	(Constant)	62154.976	23707.482		2.622	.026		
	llp	1.604	.126	.811	12.692	.000	.825	1.213
	Us	-1559325.124	320199.250	-.311	-4.870	.001	.825	1.213
3	(Constant)	-1656.919	26533.631		-.062	.952		
	llp	1.063	.194	.538	5.479	.000	.184	5.430
	Us	-2243115.844	317577.817	-.448	-7.063	.000	.442	2.264
	Gov	169597.436	53680.229	.282	3.159	.012	.222	4.505

a. Dependent Variable: Start-ups

## 5. Conclusion and policy recommendations

(1)The significant influence of all factors on startup entrepreneurial activity in the flow of startups to the Greater Bay Area, with Gov, Ust and Fdi showing a negative correlation and only Fin showing a positive correlation.

(2)Different factors have equally heterogeneous effects on start-up entrepreneurial activity in different cities.

The suggestions are as follows.

(1) Implementing more precise public policies

In lagging regions, upfront government investment can make a significant difference, serving the purpose of promoting start-ups. Government support for investment should be judged in the light of the situation.

Foreign capital tends to invest in companies with high interest and quick returns, but this can bring about a decline in market confidence in foreign capital and can deliberately reduce its use. However, start-ups often develop in areas that are new and uncharted, and where there is no mature domestic market to draw on.

(2) Further enhance the location advantage and find the right city positioning

The biggest difficulty faced by start-ups is the shortage of capital and the need to have a steady supply of cash flow to achieve growth, while the instability of their own development generally makes it difficult to obtain support from financial institutions in the pre-start-up phase. It is important to lower the threshold for loans to finance start-ups.

The government should be prepared to grasp the direction of the market and implement a talent triage system to guide start-ups to communicate with a variety of highly qualified university students.

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