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1995 6

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(2014)

[1] (2011)

[2]

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[3]

(2015) R&D

Tykvova(2000)

[4]

Gebhardt(2000 2006) [5-6] (2002)

[7]

Engel Keilbach (2007)

[8]

2011

R&D [9]

Chesbrough 2003 R&D

R&D

[10] (2019)

R&D

[11]

(2018)

[12]

(2016) [13] (2015)

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[14]

(2017)

[15] (2017)

R&D (2018)

[16] (2015)

[17] (2019)

[18]

(2019)

[19]

2009 2017 31

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R&D

H1 R&D

试用水印

H2

H3

R&D

2009 2017

(*R&D*)

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(2015)[20] *R&D* *R&D*

(2015)[21]

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2015)[21-22]

试用水印

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2 2 31 2009 2017

R&D

$$\log(PN_{it}) = \alpha + \rho \mathbf{w_i^{'}log(PN_t)} + \beta_1 \log(RDF_{it}) + \beta_2 \log(TINV_{it}) + \beta_3 \log(VC_{it}) + \mathbf{Z} + \mu_i + \gamma_t + \varepsilon_{it}$$

$$\varepsilon_{it} = \lambda \mathbf{m}_{\mathbf{i}\ t}^{'} + \nu_{it}$$

i

t μ_i

λ_t ε_{it} ε_{it} μ_i

$\mathbf{w}_{\mathbf{i}}^{'}\mathbf{log(PN_t)} = \sum_{j=1}^{n} w_{ij} \log(PN_{jt})$ $\mathbf{m}_{\mathbf{i}\ t}^{'} = \sum_{j=1}^{n} m_{ij}\varepsilon_{jt}$

Z

$$\mathbf{log(PN_t)} = (\mathbf{I} - \rho \mathbf{w}_{\mathbf{i}}^{'})^{-1}\{ \quad + \beta_1 \mathbf{log(RDF_t)} + \beta_2 \mathbf{log(TINV_t)} + \beta_3 \mathbf{log(VC_t)} + \quad \mathbf{Z} + \quad + \ _{\mathbf{t}} + \ _{\mathbf{t}}\}$$

$$_{\mathbf{t}} = \lambda \mathbf{m}_{\mathbf{i}\ t}^{'} + \ _{\mathbf{t}}$$

$\mathbf{log(RDF_t)}$

$$\frac{\partial \mathbf{log(PN_t)}}{\partial \mathbf{log(RDF_t)}} = (I - \rho \mathbf{w}_{\mathbf{i}}^{'})^{-1}\beta_1$$

$(I - \rho \mathbf{w}_{\mathbf{i}}^{'})^{-1}\beta_1$

$(I - \rho \mathbf{w}_{\mathbf{i}}^{'})^{-1}\beta_1$

i j ω_{ij}

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试用水印

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$$I = \frac{31\sum_{i=1}^{31}\sum_{j=1}^{31}\omega_{ij}(x_i - \overline{x})}{\sum_{i=1}^{31}\sum_{j=1}^{31}\omega_{ij}(x_i - \overline{x})^2}$$

x_i i

$$I_i = \frac{(x_i - \overline{x})}{S^2}\sum_{j\neq i}^{31}\omega_{ij}(x_i - x_j)$$

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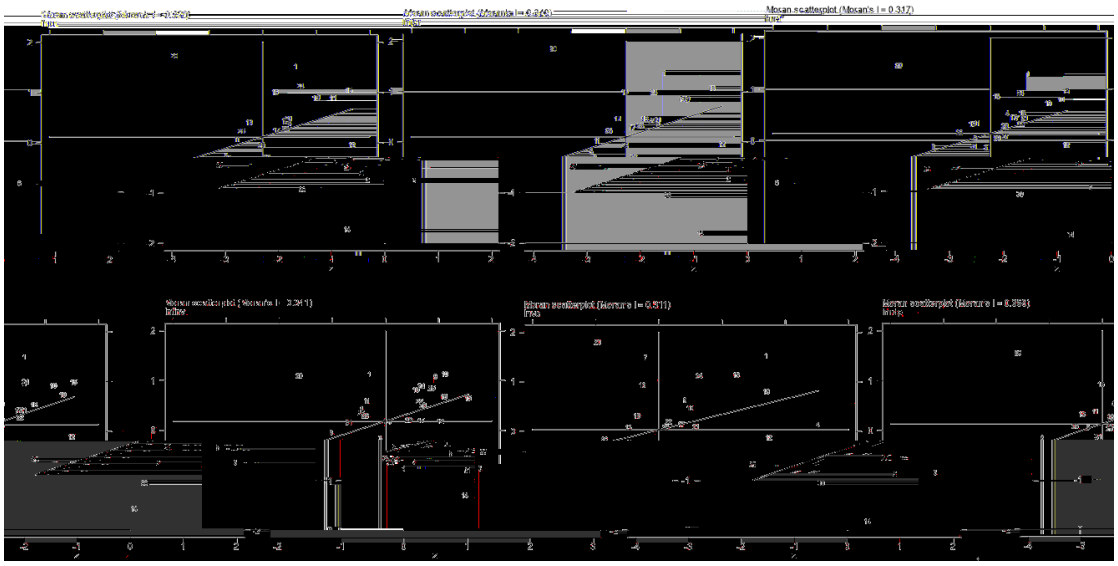
R&D *R&D*

2009	0.284***	0.313***	0.288***	0.261***	0.394***	0.310***
	(0.003)	(0.001)	(0.002)	(0.006)	(0.000)	(0.001)
2010	0.272***	0.288***	0.278***	0.250***	0.395***	0.151*
	(0.003)	(0.001)	(0.002)	(0.004)	(0.000)	(0.083)
2011	0.361***	0.362***	0.319***	0.306***	0.382***	0.060
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.386)
2012	0.342***	0.328***	0.337***	0.331***	0.383***	0.133
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.120)
2013	0.331***	0.319***	0.335***	0.344***	0.383***	-0.023
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.919)
2014	0.334***	0.334***	0.328***	0.358***	0.383***	0.128
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.135)
2015	0.346***	0.334***	0.332***	0.347***	0.383***	0.263***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.005)
2016	0.347***	0.351***	0.328***	0.367***	0.383***	0.296***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
2017	0.315***	0.318***	0.333***	0.364***	0.368***	0.189**
	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.039)

试用水印



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Pahnke (2015)

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试用水印

	(1)SAC W	(2)SAC W^d	(3)SAR W	(4)SAR W^d	(5)SDM W	(6)SDM W^d	(7)SEM W	(8)SEM W^d

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	(1)SAC W	(2)SAC W^d	(3)SAR W	(4)SAR W^d	(5)SDM W	(6)SDM W^d

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试用水印

:

	(1)SAC W	(2)SAC W^d	(3)SAR W	(4)SAR W^d	(5)SDM W	(6)SDM W^d	(7)SEM W	(8)SEM W^d

试用水印

*** ** *

	(1)SAC W	(2)SAC W^d	(3)SAR W	(4)SAR W^d	(5)SDM W	(6)SDM W^d

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Research on Innovation Capital Efficiency and Spatial Spillover Effect

Abstract: This paper uses spatial econometric model to model the impact mechanism of venture capital, R&D investment and high-tech investment on technological innovation. The results show that the contribution of R&D investment and high-tech industry investment to technological innovation is far greater than that of venture capital. R&D investment has the most significant effect on technological innovation efficiency, and technological innovation has a positive spatial spillover effect. This is related to China's institutional environment and industrial policy. In addition, in the comparative study of spatial autocorrelation, spatial autoregression and spatial Durbin model, it is found that the spatial autoregression model has the best effect. The conclusion of this paper provides theoretical reference and experience reference for the government and relevant departments to improve the efficiency of technological innovation in China.

Keywords: Venture Capital; Technological Innovation; R&D Investment; High-tech Investment; Spatial Econometrics

试用水印