

# 混合所有制改革、地方国企依赖与 国有企业创新升级

马红, 侯贵生

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**摘要:** 地方政府干预被认为与国有企业创新升级的步履迟缓有着密不可分的关系,文章就此结合中国新兴加转轨的制度背景和特殊的所有权制度安排,重点关注地方国企依赖对国有企业创新升级的影响,同时考察了混合所有制这一国有企业股权改革的新举措对两者关系的间接影响。文章从投入、产出和升级三方面衡量企业的创新升级水平,结果表明:第一,地方政府的国企依赖行为抑制了国有企业的创新产出和升级水平,但并没有造成创新投入的下降;第二,混合所有制优化了国有企业的内部治理结构,进而有利于削弱地方国企依赖对国有企业创新产出和升级水平的影响;第三,在不同的行业市场竞争程度和不同的地区市场化水平下,地方国企依赖对国有企业升级水平的影响存在差异性。这一研究在防止地方过度竞争、加快构建统一市场和深化国企改革等方面都具有较强的现实意义与政策参考价值。

**关键词:** 地方国企依赖;混合所有制;企业创新升级

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## 一、引言

2016

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Klenow 2009

Hsieh

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## 二、理论分析和研究假设

### (一)地方国企依赖对国有企业创新升级的影响

GDP

2014

He

Tian 2013

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“ ”

2018

Baggs 2007

2013

H1a H1b H1c

H1a

H1b

H1c

(二)混合所有制对地方国企依赖与国有企业创新升级之间关系的间接影响

2016

“ ”

Choi 2011

2017

“ ”

2016

H2

H2

### 三、研究设计

(一)研究样本选取

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2008-2016

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 368

Wind  
 2008–2016  
 (二)模型构建

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$$R\&D_{j,t+1} = \alpha_0 + \alpha_1 LSD_{j,t} + a_2 Control_{j,t} + Industry + \varepsilon_{j,t} \quad (1)$$

$$Patent_{j,t+1} = \alpha_0 + \alpha_1 LSD_{j,t} + a_2 Control_{j,t} + Industry + \varepsilon_{j,t} \quad (2)$$

$$Grow_{j,t+1} = \alpha_0 + \alpha_1 R\&D_{j,t} + \alpha_2 LSD_{j,t} + a_3 R\&D_{j,t} \times LSD_{j,t} + a_4 Control_{j,t} + Industry + \varepsilon_{j,t} \quad (3)$$

Hall 2005 2016 2016  
 1 R&D  
 2 Patent  
 3 Grow  
 2012 2017 3 R&D  
 Grow  
 1 3 LSD  
 GDP  
 GDP  
 Yang He 2014 2018  
 1 3 Control 2017  
 2017  
 Size Age  
 Lev Cash  
 Capital Labor  
 Industry  
 1 3 j t j t

$$R\&D_{j,t+1} = \alpha_0 + \alpha_1 LSD_{j,t} + \alpha_2 MO_{j,t} + \alpha_3 LSD_{j,t} \times MO_{j,t} + a_4 Control_{j,t} + Industry + \varepsilon_{j,t} \quad (4)$$

$$Patent_{j,t+1} = \alpha_0 + \alpha_1 LSD_{j,t} + a_2 MO_{j,t} + \alpha_3 LSD_{j,t} \times MO_{j,t} + a_4 Control_{j,t} + Industry + \varepsilon_{j,t} \quad (5)$$

$$Grow_{j,t+1} = \alpha_0 + \alpha_1 R\&D_{j,t} + \alpha_2 LSD_{j,t} + a_3 MO_{j,t} + a_4 R\&D_{j,t} \times LSD_{j,t} + a_5 R\&D_{j,t} \times LSD_{j,t} \times MO_{j,t} + a_6 Control_{j,t} + Industry + \varepsilon_{j,t} \quad (6)$$



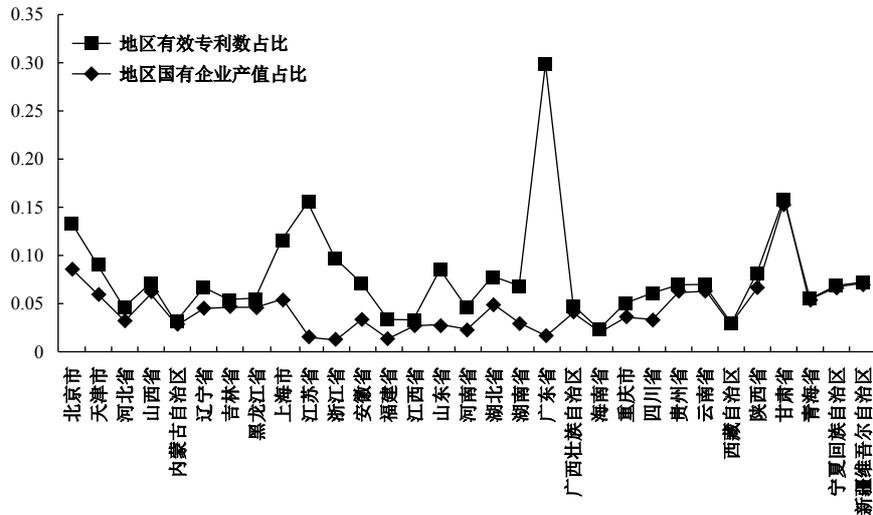


图 1 2008–2016年全国各省份的创新产出水平与国企依赖程度的对比

表 2 主要变量的相关系数

变量	R&D	Patent	Grow	LSD	MO	Size	Age	Lev	Capital	Labor
R&D	1									
Patent	0.019 2	1								
Grow	0.009 6	0.081 6	1							
LSD	-0.089 0***	-0.045 1**	0.085 8***	1						
MO	0.015 9	0.022 3	0.065 6***	-0.201 2***	1					
Size	-0.036 5**	0.322 9***	0.038 6**	-0.109 6	-0.019 2	1				
Age	0.015 5*	-0.111 5***	-0.150 1***	-0.251 6**	0.174 5	0.210 3	1			
Lev	-0.012 7*	0.037 7*	0.010 9*	0.062 2	0.009 4	0.362 9**	0.069 0	1		
Capital	0.143 7***	0.136 3***	0.149 3**	-0.069 0	0.059 7**	-0.323 6	0.056 5**	-0.252 7	1	
Labor	0.078 2***	-0.034 0*	-0.030 7*	0.051 5	-0.012 2	0.408 6	-0.001 2	0.195 7	-0.340 4	1
Cash	-0.109 8***	0.013 9	0.071 1***	-0.011 9	-0.014 6	0.074 2	-0.041 2	-0.193 4	-0.119 4**	0.094 5

注：\*、\*\*和\*\*\*分别表示通过10%、5%和1%的显著性水平检验。下同。

表 3 地方国企依赖影响国有企业创新升级的回归结果

变量	R&D <sub>j,t+1</sub>		Patent <sub>j,t+1</sub>		Grow <sub>j,t+1</sub>	
	(1)	(2)	(3)	(4)	(5)	(6)
R&D <sub>j,t</sub>					1.319 7(1.04)	2.921 8(1.21)
LSD <sub>j,t</sub>		-0.000 1 (-0.02)		-3.234 9*** (-8.58)		-0.688 4* (-2.03)
LSD <sub>j,t</sub> × R&D <sub>j,t</sub>						-0.272 1** (-2.04)
Size <sub>j,t</sub>	0.000 6** (2.53)	0.000 6** (2.45)	-0.174 2*** (-3.37)	-0.079 4** (-2.25)	0.147 8*** (7.30)	0.143 8*** (7.07)
Age <sub>j,t</sub>	0.001 0** (2.49)	0.001 0** (2.06)	-0.809 2*** (-9.83)	-0.896 2*** (-6.40)	-0.155 9*** (-6.06)	-0.157 4*** (-6.11)
Lev <sub>j,t</sub>	-0.001 8* (-1.91)	-0.001 8* (-1.91)	-0.001 8 (-0.01)	-0.309 1 (-1.47)	0.162 5*** (3.00)	0.161 8*** (2.99)
Capital <sub>j,t</sub>	0.008 7*** (2.85)	0.008 7*** (2.79)	2.659 4*** (4.22)	2.898 8*** (4.23)	3.029 0*** (5.60)	3.030 7*** (5.62)
Labor <sub>j,t</sub>	0.000 5** (2.17)	0.000 5** (2.15)	4.775 7*** (3.45)	3.222 2** (2.09)	0.013 4 (0.99)	0.013 5 (0.99)



2013

2007

## (三)混合所有制调节效应的回归结果与分析

	4	1	2	4		
1					LSD	
MO	2	1			LSD	
LSD×MO	2				LSD	
			LSD×R&D			
					H2	4
3	4		5			4
			LSD			
LSD×MO						
					H2	

表 4 混合所有制调节效应的回归结果

变量	R&D <sub>j,t+1</sub>		Patent <sub>j,t+1</sub>		Grow <sub>j,t+1</sub>	
	(1)	(2)	(3)	(4)	(5)	(6)
R&D <sub>j,t</sub>					3.554 4 (0.91)	3.806 7 (1.68)
LSD <sub>j,t</sub>	0.001 3 (0.51)	-0.004 7 (-1.56)	-4.139 3** (-3.62)	-3.310 6*** (-3.87)	-0.657 6*** (-6.51)	-0.654 1*** (-6.47)
MO <sub>j,t</sub>	0.000 3 (0.72)	0.002 3 (0.11)	0.011 0 (0.21)	0.023 6 (0.46)	0.009 1 (0.62)	0.005 0 (0.32)
LSD <sub>j,t</sub> ×MO <sub>j,t</sub>		0.004 4** (1.98)		1.057 0*** (3.80)		
LSD <sub>j,t</sub> ×R&D <sub>j,t</sub>					-0.330 9** (-2.35)	-0.030 3** (-2.47)
LSD <sub>j,t</sub> ×R&D <sub>j,t</sub> ×MO <sub>j,t</sub>						5.539 2** (2.85)
Size <sub>j,t</sub>	0.000 7* (1.79)	0.000 7* (1.94)	0.123 0*** (2.66)	0.377 4*** (2.70)	0.188 1** (8.85)	0.188 3*** (8.86)
Age <sub>j,t</sub>	0.001 7** (2.21)	0.001 7** (2.27)	-0.195 8** (-2.05)	-0.208 2** (-2.18)	-0.062 3** (-2.06)	-0.062 3** (-2.06)
Lev <sub>j,t</sub>	-0.001 3 (-0.97)	-0.001 3 (-0.97)	-0.224 7 (-1.24)	-0.231 9 (-1.28)	0.132 6** (2.44)	0.131 7** (2.42)
Capital <sub>j,t</sub>	0.012 1*** (2.62)	0.012 4*** (2.68)	1.031 3* (1.67)	1.073 0* (1.75)	2.873 1*** (4.81)	2.876 7*** (4.82)
Labor <sub>j,t</sub>	0.000 8** (2.35)	0.000 8** (2.45)	0.087 6** (2.05)	0.078 2* (1.83)	0.000 1 (0.01)	0.000 2 (0.02)
Cash <sub>j,t</sub>	-0.017 6* (-1.77)	-0.016 6* (-1.67)	-0.368 5 (-1.31)	-0.303 2 (-1.08)	-1.055 8*** (-5.10)	-1.225 4*** (-5.11)
Industry	控制	控制	控制	控制	控制	控制

续表 4 混合所有制调节效应的回归结果

变量	R&D <sub>j,t+1</sub>		Patent <sub>j,t+1</sub>		Grow <sub>j,t+1</sub>	
	(1)	(2)	(3)	(4)	(5)	(6)
N	2 944	2 944	2 944	2 944	2 944	2 944
调整后R <sup>2</sup>	0.225 9	0.227 4	0.208 1	0.213 3	0.247 4	0.249 6
Hausman检验	25.43 (0.000 0)	27.20 (0.000 0)	333.56 (0.000)	308.58 (0.000 0)	264.14 (0.000 0)	264.04 (0.000 0)

4 5 6 6 5 6  
 6 R&D  
 LSD×R&D 5 6  
 MO 6 LSD  
 LSD×R&D×MO  
 H2

(四)内生性与稳定性

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2018 “ ” “ ”  
 “ ”  
 1 0 5

表 5 地方国企依赖影响国有企业创新升级的工具变量检验结果

变量	R&D <sub>j,t+1</sub>	Patent <sub>j,t+1</sub>	Grow <sub>j,t+1</sub>
	(1)	(3)	(2)
R&D <sub>j,t</sub>			1.000 2(0.46)
LSD <sub>j,t</sub>	-0.002 3(-0.77)	-2.037 3**(-2.24)	-1.568 1***(-5.53)
LSD <sub>j,t</sub> ×R&D <sub>j,t</sub>			-0.003 0***(-3.11)
Control <sub>j,t</sub>	控制	控制	控制
Industry	控制	控制	控制
N	2 944	2 944	2 944
Adj. R <sup>2</sup>	0.232 2	0.289 3	0.273 8
K-P Wald F-statistic	14.089	14.102	13.236

H1

2.

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2008

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表 6 样本变更的稳定性检验结果

变量	R&D <sub>j,t+1</sub>	Patent <sub>j,t+1</sub>	Grow <sub>j,t+1</sub>
	(1)	(3)	(2)
R&D <sub>j,t</sub>			1.547 9(0.88)
LSD <sub>j,t</sub>	-0.134 9(-0.02)	-4.075 2***(-3.43)	-0.623 5**(-2.27)
LSD <sub>j,t</sub> ×R&D <sub>j,t</sub>			-0.198 0**(-2.29)
Control <sub>j,t</sub>	控制	控制	控制
Industry	控制	控制	控制
N	1 176	1 176	1 176
Adj. R <sup>2</sup>	0.230 4	0.205 5	0.247 2
Hausman检验	25.49(0.000 0)	130.72(0.000 0)	262.65(0.000 0)

2

GDP

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表 7 解释变量替换的稳定性检验结果

变量	R&D <sub>j,t+1</sub>	Patent <sub>j,t+1</sub>	Grow <sub>j,t+1</sub>
	(1)	(3)	(2)
R&D <sub>j,t</sub>			1.547 9(0.88)
LSD <sub>j,t</sub>	-0.134 9(-0.02)	-4.075 2***(-3.43)	-0.623 5**(-2.27)
LSD <sub>j,t</sub> ×R&D <sub>j,t</sub>			-0.198 0**(-2.29)
Control <sub>j,t</sub>	控制	控制	控制
Industry	控制	控制	控制
N	2 944	2 944	2 944
Adj. R <sup>2</sup>	0.230 4	0.205 5	0.247 2
Hausman检验	25.49(0.000 0)	130.72(0.000 0)	262.65(0.000 0)

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GMM

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表 8 GMM估计方法的稳定性检验结果

变量	R&D <sub>j,t+1</sub>	Patent <sub>j,t+1</sub>	Grow <sub>j,t+1</sub>
	(1)	(3)	(2)
R&D <sub>j,t</sub>	0.500 3*** (3.07)		2.649 4(1.10)
Patent <sub>j,t</sub>		0.022 7*** (3.73)	
Grow <sub>j,t</sub>			0.114 8*** (4.43)
LSD <sub>j,t</sub>	-0.001 9(-1.37)	-2.850 7*** (-7.61)	-0.817 6** (-2.01)
LSD <sub>j,t</sub> ×R&D <sub>j,t</sub>			-1.226 9** (-2.38)
Control <sub>j,t</sub>	控制	控制	控制
Industry	控制	控制	控制
N	2 944	2 944	2 944

续表 8 GMM估计方法的稳定性检验结果

变量	R&D <sub>j,t+1</sub>	Patent <sub>j,t+1</sub>	Grow <sub>j,t+1</sub>
	(1)	(3)	(2)
SARGAN(P值)	15.666 69(0.788 1)	16.548 3(0.754 2)	17.369 1(0.700 2)
AR(2)(P值)	-1.142 1(0.253 4)	-1.569 4(0.161 6)	-1.601 6(0.149 3)

H1

## 五、考虑外部环境因素的进一步分析

2016

Goolsbee 1998

$$Grow_{j,t+1} = \alpha_0 + \alpha_1 R\&D_{j,t} + \alpha_2 LS D_{j,t} + a_3 HHI_{j,t} + a_4 LS D_{j,t} \times R\&D_{j,t} + a_5 LS D_{j,t} \times R\&D_{j,t} \times HHI_{j,t} + a_6 Control_{j,t} + Industry + \varepsilon_{j,t} \quad (7)$$

$$Grow_{j,t+1} = \alpha_0 + \alpha_1 R\&D_{j,t} + \alpha_2 LS D_{j,t} + a_3 Mar_{j,t} + a_4 LS D_{j,t} \times R\&D_{j,t} + a_5 LS D_{j,t} \times R\&D_{j,t} \times Mar_{j,t} + a_6 Control_{j,t} + Industry + \varepsilon_{j,t} \quad (8)$$

7 HHI 2008 Han Yao 2010

8 Mar

2016

7 8

9 1 7

3

HHI

LSD×R&amp;D×HHI

LSD×R&amp;D×HHI

2

3

LSD×R&amp;D 1%

10%

表 9 进一步分析的回归结果

变量	Grow <sub>j,t+1</sub>					
	全样本	行业竞争 程度较低	行业竞争 程度较高	全样本	地区市场化 水平较高	地区市场化 水平较低
	(1)	(2)	(3)	(4)	(5)	(6)
R&D <sub>j,t</sub>	3.926 0 (1.57)	8.549 1 (1.43)	8.057 5 (1.19)	0.979 4 (1.46)	3.342 2 (0.79)	6.923 3 (1.33)
LSD <sub>j,t</sub>	-0.607 5*** (-5.45)	-0.469 5*** (-3.21)	-0.612 0*** (-3.54)	-0.672 5*** (-5.84)	-0.631 7*** (-5.18)	-0.605 7*** (-3.36)
HHI <sub>j,t</sub>	-0.571 1 (-1.23)					
Mar <sub>j,t</sub>				0.001 5 (0.13)		
LSD <sub>j,t</sub> ×R&D <sub>j,t</sub>	-9.804 4*** (-2.98)	-5.028 5*** (-3.67)	-3.500 9* (-1.79)	-6.332 1*** (-2.83)	-4.556 2* (-1.73)	-4.402 6*** (-3.36)
LSD <sub>j,t</sub> ×R&D <sub>j,t</sub> ×HHI <sub>j,t</sub>	-7.362 2** (-2.21)					
LSD <sub>j,t</sub> ×R&D <sub>j,t</sub> ×Mar <sub>j,t</sub>				5.741 1** (2.09)		
Size <sub>j,t</sub>	0.159 9*** (5.70)	0.090 1** (2.54)	0.227 2*** (4.93)	0.193 3*** (8.15)	0.170 5*** (6.66)	0.231 0*** (5.63)
Age <sub>j,t</sub>	0.176 2*** (2.82)	0.054 7** (2.29)	0.021 67* (2.42)	-0.054 4* (-1.69)	-0.034 2 (-0.92)	-0.104 9** (-2.06)
Lev <sub>j,t</sub>	-0.034 5 (-1.06)	-0.257 0** (-2.20)	0.100 4 (1.02)	0.134 3** (2.46)	0.151 5** (2.13)	0.104 9 (1.21)
Capital <sub>j,t</sub>	2.923 1*** (2.73)	3.035 9*** (9.25)	2.867 4*** (8.74)	2.895 3*** (4.91)	2.649 4*** (11.00)	3.293 4*** (10.09)
Labor <sub>j,t</sub>	0.003 0 (0.18)	0.005 6 (0.25)	0.009 1 (0.38)	0.000 5 (0.04)	0.017 4 (1.07)	0.037 8 (1.56)
Cash <sub>j,t</sub>	-4.943 4** (-2.05)	-0.609 4* (-1.98)	-0.000 8* (-1.76)	-6.847 6*** (-4.89)	-5.196 8** (-2.08)	-5.681 2*** (-5.58)
Year	控制	控制	控制	控制	控制	控制
Industry	控制	控制	控制	控制	控制	控制
N	2 944	1 480	1 464	2 944	1 888	1 056
调整后R <sup>2</sup>	0.228 4	0.170 5	0.230 0	0.248 7	0.236 0	0.285 1
Hausman检验	219.58 (0.000 0)	121.25 (0.000)	113.38 (0.000 0)	264.00 (0.000 0)	171.33 (0.000 0)	103.81 (0.000 0)

9

4

8

3

Mar

LSD×R&amp;D×Mar

LSD×R&D×Mar

5

6

LSD×R&D

10%

1%

## 六、结论与启示

“ ”

2008–2016

GDP

“ ”

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## **Mixed Ownership Reform, Local SOE Dependence and the Innovation and Upgrading of State-owned Enterprises' Innovation: An Empirical Research Based on Manufacturing Industry**

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**Summary:** Under the basic economic system with public ownership as the mainstay, state-owned enterprises of China rely on their dominant economic status and strong innovative R&D resources, which should be the main force and vanguard of the country's innovation-driven development, but there are many problems in the innovation behavior of state-owned enterprises at present, such as lack of motivation, inadequate investment, and inefficiency. For a long time, local government intervention is considered to be closely related to the slow pace of innovation and upgrading of state-owned enterprises. Therefore, local government behavior will inevitably have an impact on corporate innovation. Based on this, considering the institutional background of the transitional transition and the special ownership system arrangement in China, this paper mainly studies the influence of the local SOE dependence on innovation input, innovation output and the upgrading level of state-owned enterprises, and analyzes the regulation effect of mixed ownership as a factor of the ownership structure.

On the basis of the theoretical analysis, this paper takes the data of state-owned listed companies in China as samples to do empirical research. The results show that: (1) The local SOE dependence has a significant negative effect on the innovation output and upgrading level of state-owned enterprises, but its influence on the innovation input of state-owned enterprises is not significant; (2) The mixed ownership system optimizes the internal governance structure of state-owned enterprises, and thus improves the negative effect of the local SOE dependence on the innovation output and upgrading level of state-owned enterprises; (3) In the further study on the regulation effect of external environmental factors, it is proved that the improvement of the

parent company's involvement intensity in the board of directors, supervisors, and the management of the invested enterprises. It is found that the CVC parent company which is competitive with invested enterprises is more likely to generate opportunistic behaviors such as imitation and theft, which will inhibit the innovation efforts of invested enterprises. Therefore, the industry competition intensity between the two parties has a significant inhibitory effect on the innovation patent output of invested enterprises. However, the involvement intensity of the CVC parent company has actively promoted the innovative R&D investment and patent output of invested enterprises. In addition, the competitive CVC parent company increases its involvement in the board of directors, board of supervisors and management of invested enterprises, which can partially reduce the information asymmetry, supervise and restrain the behavior of invested enterprises, and thus promote the R&D of invested enterprises.

Based on the above conclusions, this paper points out that: we should encourage large enterprises with good conditions to develop the innovative combination of industry and finance such as "industry + venture capital funds", strengthen the protection and enforcement of intellectual property, take the joint investment strategy with independent venture capital institutions, give priority to the investment in start/ups located close to each other, and increase the participation of the CVC parent company in the management of invested enterprises, effectively improving the efficiency of technological innovation output of invested enterprises and promoting the technology innovation performance of invested enterprises.

**Mg{"yqt fu**<CVC; competition intensity; technology innovation; involvement intensity; propensity score matching

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degree of market competition in the industry and the level of regional marketization are conducive to curbing the negative impact of the local SOE dependence on the upgrading of state/owned enterprises.

The main contributions of this paper are as follows: First, starting from the innovation and upgrading, this paper broadens the inherent research scope of corporate innovation behavior and reveals the different impacts of the local SOE dependence on state/owned enterprises' innovation input, innovation output and upgrading level. Second, unlike the previous literature on local protection through comprehensive index, this paper discusses the impact of local SOE dependence on the innovation and upgrading of state/owned enterprises from the dual perspectives of market segmentation and administrative intervention. Third, based on the new measure of state/owned enterprise equity reform, namely, mixed ownership, this paper considers the regulation effect of the internal equity structure factors of enterprises, and verifies whether mixed ownership is conducive to alleviating the negative impact of the local SOE dependence on the innovation output and upgrading level of state/owned enterprises.

**Mg{"yqt fu**<local SOE dependence; mixed ownership; upgrading of enterprises' innovation