LNU 辽宁大学经济学部
Faculty of Economics, Liaoning University

No. C2022002 **2022-09-27**

$$Y_{it} = \alpha_{it} + \beta_0 Y_{it-1} + \beta_1 ER_{it} + \beta_2 ER_{it}^2 + \beta_3 X_{it} + \varepsilon_{it}$$

1

	GTFP	*ER*	*CY*	*FAR*	*EDU*	*MAR*
GTFP		1.04	1.04	1.04	1.03	1.04
ER	1.10		1.10	1.10	1.09	1.08
CY	2.24	2.25		1.50	2.03	2.23
FAR	2.14	2.14	1.43		2.09	2.14
EDU	2.45	2.46	2.25	2.43		1.71
MAR	1.81	1.77	1.79	1.81	1.25	

ADF 2

2 ADF

ADF	*P*

1%

Kao Pedroni Westerlund

3

3

			P
Kao	*ADF*	-8.326 7	0.000 0
	MPP	-0.481 5	0.315 1
Pedroni	*PP*	-21.39 1	0.000 0
	ADF	-19.62 0	0.000 0
Westerlund	*Variance ratio*	-3.737 5	0.000 1

DIF-GMM

SYS-GMM

DIF-GMM

SYS-GMM *DIF-GMM*

DIF-GMM *DIF-GMM*

SYS-GMM 4

DIF-GMM *SYS-GMM* *AR* 1 *AR* 2 *Sargan*

DIF-GMM *SYS-GMM*

DIF-GMM *SYS-GMM* U

SYS-GMM *DIF-GMM*

SYS-GMM 1

7.38 7.38

7.38

2

1%

3

5%

1%

4

	1	2
	DIF-GMM	*SYS-GMM*
L. GTFP	-0.253 7***	-0.188 1***
	(0.014 4)	(0.015 7)
ER	0.009 0**	0.011 8**
	0.004 1	(0.004 8)
ER^2	-0.000 7***	-0.000 8***
	0.000 1	(0.000 1)
CY	-0.178 4**	0.033 8
	0.070 4	(0.080 2)
FAR	-0.393 1***	-0.324 3**
	(0.051 3)	(0.137 8)
EDU	-0.112 7***	-0.062 0***
	(0.019 8)	(0.015 2)
MAR	0.037 4***	-0.008 1
	(0.010 6)	(0.014 7)
CONS	2.669 5***	2.209 8***
	(0.130 9)	(0.096 7)
AR(1)	0.005 8	0.004 6
AR(2)	0.162 5	0.555 3
Sargan	0.582 2	0.958 7

* ** *** 10% 5% 1%

DIF-GMM *SYS-GMM* 5 *DIF-GMM* *SYS-GMM* 1% 1% U

5

	3	4
	DIF-GMM	*SYS-GMM*
L. GTFP	-0.251 1***	-0.196 3***
	(0.012 8)	0.013 1
ER	0.298 7***	0.376 7***
	(0.078 7)	0.104 6
ER^2	-0.041 5**	-0.075 3***
	0.017 7	0.023 8
CY	-0.250 1***	0.015 9

	0.056 8	0.045 7
FAR	-0.403 5***	-0.459 6***
	0.056 4	0.106 8
EDU	-0.109 2***	-0.053 6***
	0.017 3	0.016 6
MAR	0.037 6***	0.004 8
	0.010 9	0.018 6
CONS	2.696 9***	2.184 7***
	0.140 1	0.111 5
AR(1)	0.005 3	0.004 8
AR(2)	0.148 0	0.540 3
Sargan	0.566 6	0.964 9

* ** *** 10% 5% 1%

6 1 1%
5%
U 19.56
19.56

19.56

2 1%
1%
U 15.72 15.72

15.72

6

	4	5
	TC	*EC*
L. TC	-0.219 9***	
	0.009 1	
L. EC		-0.236 6***
		0.024 9
ER	-0.031 3***	0.028 3***
	0.010 7	0.009 7
ER^2	0.000 8**	-0.000 9***
	0.000 4	0.000 3

CY	-0.407 5***	0.374 9***
	0.073 7	0.110 8
FAR	-0.573 4***	0.377 7*
	0.144 9	0.205 4
EDU	0.241 5***	-0.364 3
	0.025 7	0.045 1
MAR	-0.150 9***	0.136 9***
	0.029 3	0.024 5
CONS	1.369 1***	2.786 6***
	0.113 8	0.235 1
AR(1)	0.000 8	0.000 2
AR(2)	0.492 5	0.517 8
Sargan	0.900 1	0.954 4

* ** *** 10% 5% 1%

7 1

12.23

2 1%

1%

U 7.06

7.06

7.06

7

	6	7
L. GTFP	0.149 5	-0.401 3***
	0.217 7	0.116 2
ER	-0.161 4	0.011 3***
	0.210 5	0.003 7
ER^2	0.013 2	-0.000 8***
	0.036 3	0.000 1
CY	-1.768 1	0.300 8
	1.445 8	0.215 9
FAR	0.282 5	-0.632
	1.184 5	

EDU	-0.808 8*	-0.047 5
	0.429 5	0.030 7
MAR	0.501 1	-0.007 9
	0.324 6	0.024 7
CONS	5.914 9***	2.358 5***
	1.909 3	0.182 8
AR(1)	0.000 0	0.056 9
AR(2)	0.308 8	0.152 7
Sargan	1.000 0	0.995 6

* ** *** 10% 5% 1%

2004-2016

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- **Study on the influence and mechanism of environmental regulation on green development of mining industry**

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Abstract: The green development of mining industry is the necessary way to realize the effective development of mineral resources and ecological environment protection. Environmental Regulation is an important driving force and starting point to promote the green development of mining industry.Based on the provincial panel data from 2004 to 2016,this paper empirically tests the direct mechanism, transmission mechanism and regional heterogeneity of the impact of environmental regulation on mining green development by using dynamic panel model and systematic GMM estimation method.The results show that: There is an inverted "U" relationship between environmental regulation and green development of mining industry. Environmental regulation affects the level of green development of mining industry through technical efficiency and technological progress.There is an inverted "U" relationship between environmental regulation and technical efficiency, and a "U" relationship between environmental regulation and technological progress. Environmental regulation in the southeast coastal areas has no impact on the green development of mining industry, while the relationship between environmental regulation and green development of mining industry in the central and western inland areas presents an inverted "U" shape. Therefore, the government should improve the environmental regulation system and set the intensity of environmental regulation according to local conditions; strengthen scientific management and improve technical efficiency; strengthen technological innovation and promote technological progress; so as to continuously improve the level of green development of mining industry.

Key words: environmental regulation;green total factor productivity;green development of mining industry