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中国高校创新成果转移及对创新的影响①

□□□以专利转让为例

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摘要:专利转让是高校创新成果转移的重要方式□本文采用我国高校的专利转让数据研究了高校专利转让的概况以及专利转让对创新的影响.研究发现高校在专利转让市场中的参与度越来越高□发明专利和隶属于制造业的专利是高校转让样本的重要组成部分□专利转让正向影

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1.1.2 与专利转让相关的文献

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[5]. , **2.2 主要变量定义**

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2.3 实证模型

$$\ln(1+\# of patents)_{i,t+1} = \beta_0 + \beta_1 \times liquidity_{it} + \beta_2 \times \ln RD_{it} + \beta_3 \times \ln Researchers_{it} + \beta_4 \times scale_{it} + university_i + year_t + \varepsilon_{it} \quad (1)$$

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3 实证结果

3.1 高校专利转让概况

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3.1.1 高校参与度

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表3 高校占比排序

Table 3 The top ten active universities in patent trading sample

		/%	
1		4.25	
2		3.95	
3		2.93	
4		2.34	
5		1.87	
6		1.83	
7		1.82	
8		1.79	
9		1.76	
10		1.69	

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3.1.2 专利类型构成

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表5 行业分布(%)

Table 5 Industry composition of patent trading sample

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2001	0.00	0.00	100.00	0.00	0.00	0.00
2002	0.00	0.00	100.00	0.00	0.00	0.00
2003	7.14	0.00	92.86	0.00	0.00	0.00
2004	0.00	0.00	97.30	0.00	0.00	2.70
2005	0.00	0.00	100.00	0.00	0.00	0.00
2006	0.00	2.82	80.28	1.41	0.00	15.49
2007	2.86	0.00	92.38	0.00	0.00	4.76
2008	0.63	0.32	89.27	2.84	0.63	6.31
2009	0.76	0.51	90.15	1.77	2.53	4.29
2010	1.10	0.00	90.31	2.64	2.86	3.08
2011	1.42	0.12	91.35	1.90	1.54	3.67
2012	0.93	0.00	85.73	3.34	1.47	8.53
2013	0.60	0.15	89.90	2.49	1.44	5.43
2014	1.28	0.19	89.83	1.76	1.14	5.80
2015	0.97	0.05	86.19	4.97	1.55	6.28
2016	0.68	0.34	86.71	3.14	2.02	7.11
2017	1.35	0.21	87.73	2.10	1.16	7.46
2001—2017	1.04	0.20	88.11	2.68	1.46	6.51

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表6 变量的描述性统计

Table 6 Summary statistics

# of patents	124.87	212.61	0	40	1 165	5 708
# of inventions	67.33	139.75	0	12	836	5 708
# of utilities	55.24	97.68	0	16	569	5 708
liquidity(%)	1.07	0.54	0	1.18	2.35	5 708
liquidity_invention(%)	1.25	0.79	0	1.43	3.05	5 708
liquidity_utility(%)	0.79	0.46	0	0.90	1.76	5 708
( )	1.24	2.74	0.00	0.24	17.28	5 708
( )	411.28	598.26	3	215	3 893	5 708
( )	1 157.99	1 490.13	46	718	9 376	5 708

3.2.2 基本结果

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表7 高校的专利流动性对创新的影响

Table 7 The effect of patent liquidity on innovation

	(1)	(2)	(3)	(4)
	ln (1 + # *of patents*)			
liquidity	1.633***	0.619***	0.136***	0.125***
	(0.07)	(0.07)	(0.05)	(0.05)
ln *RD*		0.057***		0.022***
		(0.01)		(0.00)
ln *Researchers*		0.470***		0.135***
		(0.06)		(0.04)
scale		0.364***		−0.118
		(0.10)		(0.08)
Constant	1.082***	−3.600***	1.654***	1.385***
	(0.06)	(0.36)	(0.04)	(0.50)
Observations	5 708	5 708	5 708	5 708
University FE	No	No	Yes	Yes
Year FE	No	No	Yes	Yes
Adjusted_R^2	0.215	0.468	0.854	0.855

注：***、**、* 1%、5%、10% ， .

表8 高校的专利流动性对创新的影响——稳健性检验

Table 8 The effect of patent liquidity on innovation: Robustness check

	(1)	(2)	(3)	(4)
	ln (1 + # *of patents*)$_{t+2}$			
liquidity	1.553***	0.554***	0.118**	0.108**
	(0.07)	(0.07)	(0.05)	(0.05)
ln *RD*		0.046***		0.021***
		(0.01)		(0.00)
ln *Researchers*		0.451***		0.128***
		(0.07)		(0.05)
scale		0.417***		−0.045
		(0.10)		(0.09)
Constant	1.341***	−3.465***	1.980***	1.303**
	(0.07)	(0.38)	(0.04)	(0.53)
Observations	5 059	5 059	5 059	5 059
University FE	No	No	Yes	Yes
Year FE	No	No	Yes	Yes
Adjusted_R^2				

表9 高校的专利流动性对创新的影响——分专利类型

Table 9 The effect of patent liquidity on innovation: different types of patents

	(1)	(2)
	ln (1 + # *inventions*)	ln (1 + # *of utilities*)
liquidity_invention	0.165***	
	(0.03)	
liquidity_utility		0.386***
		(0.06)
ln *RD*	0.018***	0.026***
	(0.00)	(0.01)
ln *Researchers*	0.067**	0.121**
	(0.03)	(0.05)
scale	-0.146**	-0.236**
	(0.07)	(0.09)
Constant	1.907***	1.389**
	(0.41)	(0.57)
Observations	5 708	5 708
University FE	Yes	Yes
Year FE	Yes	Yes
Adjusted_R^2	0.897	0.807

注: ***、**、* 1%、5%、10% , .

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3.2.3 专利转让对高校创新影响的异质性

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表 10　高校的专利流动性对创新的影响——分高校类型

Table 10 The effect of patent liquidity on innovation: Different types of universities

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	ln (1 +# *inventions*)	ln (1 +# *of utilities*)	ln (1 +# *inventions*)	ln (1 +# *of utilities*)	ln (1 +# *inventions*)	ln (1 +# *of utilities*)	ln (1 +# *inventions*)	ln (1 +# *of utilities*)
liquidity_ invention	0.160***		0.238***		0.181**		0.140***	
	(0.05)		(0.06)		(0.07)		(0.05)	
liquidity_ utility		0.395***		0.394***		0.272*		0.387***
		(0.13)		(0.14)		(0.14)		(0.08)
ln *RD*	0.017**	0.041***	0.009	0.006	0.023	0.024	0.023***	0.034***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)	(0.01)
ln *Researchers*	0.045	0.105	0.082	0.111	−0.108	−0.093	0.058	0.128*
	(0.06)	(0.11)	(0.05)	(0.09)	(0.13)	(0.15)	(0.05)	(0.08)
scale	−0.090	−0.208	0.047	0.348	−0.128	−0.025	0.267	−0.017
	(0.13)	(0.18)	(0.20)	(0.29)	(0.14)	(0.18)	(0.17)	(0.29)
Constant	1.930**	1.272	1.446	−1.356	1.878***	0.489	−1.226	−0.647
	(0.79)	(1.17)	(1.33)	(1.87)	(0.63)	(0.89)	(1.00)	(1.69)
Observations	1 503	1 503	1 717	1 717	538	538	1 950	1 950
University FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted_R^2								

表 11　高校科研人员的资质对影响产生的异质性

Table 11 The heterogeneous effects of patent liquidity on innovation by researchers' qualification

	(1)	(2)	(3)	(4)
	ln (1 + # *inventions*)	ln (1 + # *of utilities*)	ln (1 + # *inventions*)	ln (1 + # *of utilities*)
liquidity_invention	0.205 ***		0.113 ***	
	(0.04)		(0.04)	
liquidity_utility		0.517 ***		0.244 ***
		(0.08)		(0.08)
ln *RD*	0.010 *	0.028 ***	0.026 ***	0.025 ***
	(0.01)	(0.01)	(0.01)	(0.01)
ln *Researchers*	0.032	0.078	0.089 *	0.155 *
	(0.04)	(0.07)	(0.05)	(0.08)
scale	−0.005	0.050	−0.220 ***	−0.361 ***
	(0.14)	(0.19)	(0.07)	(0.11)
Constant	1.256	−0.227	2.197 ***	2.031 ***
	(0.86)	(1.16)	(0.47)	(0.66)
Observations	3 036	3 036	2 672	2 672
University FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adjusted_R^2	0.899	0.813	0.894	0.801

注： ***、**、*　　1%、5%、10%　　，　　.

表 12　高校的社会网络关系对影响产生的异质性

Table 12 The heterogeneous effects of patent liquidity on innovation by social networks

	(1)	(2)	(3)	(4)
	ln (1 + # *inventions*)	ln (1 + # *of utilities*)	ln (1 + # *inventions*)	ln (1 + # *of utilities*)
liquidity_invention	0.231 ***		0.101 ***	
	(0.04)		(0.04)	
liquidity_utility		0.292 ***		0.323 ***
		(0.09)		(0.08)
ln *RD*	0.014 ***	0.013 **	0.024 ***	0.042 ***
	(0.00)	(0.01)	(0.01)	(0.01)
ln *Researchers*	0.084 *	0.108	0.031	0.126 *
	(0.05)	(0.08)	(0.05)	(0.07)
scale	−0.176	−0.078	−0.061	−0.316 ***
	(0.15)	(0.20)	(0.07)	(0.11)
Constant	2.809 ***	1.222	0.344	

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续表 14

Table 14 Continues

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	ln □1 + # *inventions*□	ln □1 + # *of utilities*□	ln □1 + # *inventions*□	ln □1 + # *of utilities*□
ln *RD*	0.021 ***	0.023 ***	0.009	0.033 ***
	□0.00□	□0.01□	□0.01□	□0.01□
ln *Researchers*	0.108 **	0.154 **	0.004	0.076
	□0.04□	□0.07□	□0.05□	□0.08□
scale	-0.225 **	-0.337 ***	-0.001	-0.062
	□0.09□	□0.11□	□0.08□	□0.16□
Constant	2.437 ***	2.098 ***	0.795	0.048
	□0.56□	□0.70□	□0.51□	□0.94□
Observations	3 905	3 905	1 803	1 803
University FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adjusted_R^2	0.894	0.806	0.872	0.787

注： *** □ ** □ * 1%□5%□10% □ .

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4 结束语

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