

**A Study on
the University-industry Linkages
in China**

–Theoretical and Empirical Analysis

By Su Dejin

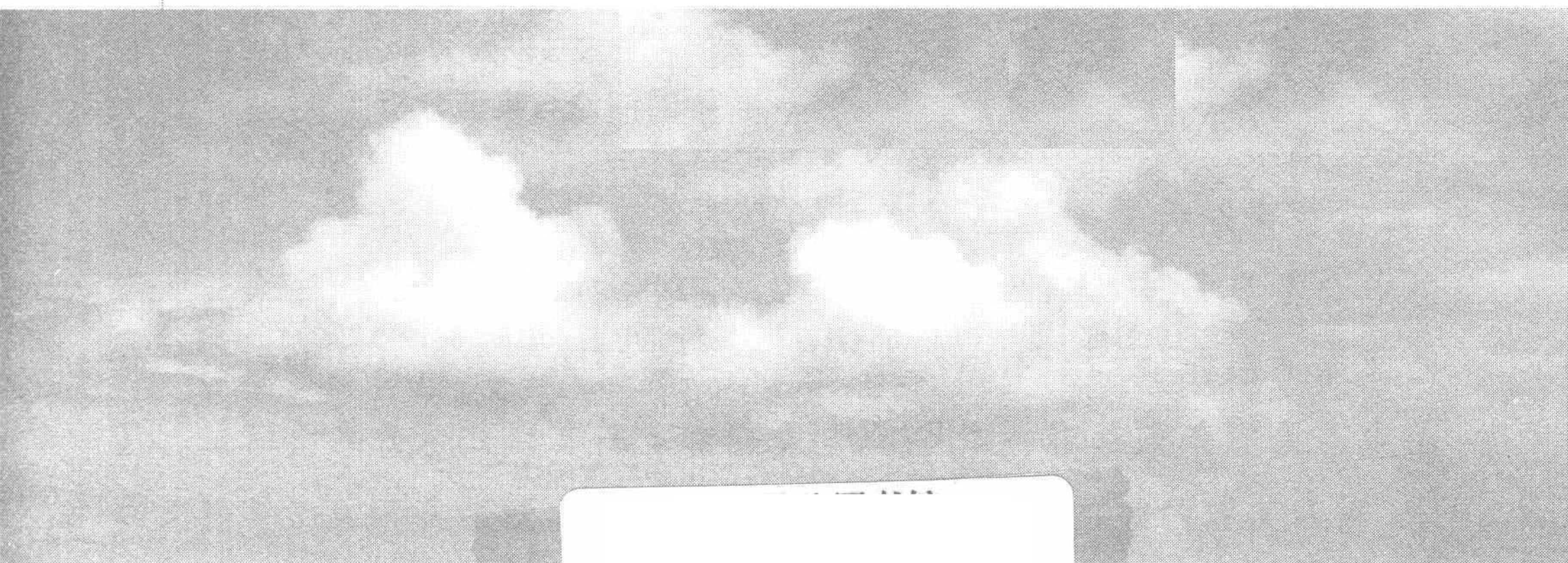


经济科学出版社
Economic Science Press

1. 2014年教育部人文社会科学研究青年基金项目[项目批准号：14YJC630113],
项目名称《中资企业在发展中国家的创业成长路径研究：基于东道国双元网络嵌入的视角》
2. 江苏省优势学科建设工程二期“国家治理与现代审计科学”

A Study on the University-industry Linkages in China

—Theoretical and Empirical Analysis



经济科学出版社
Economic Science Press

图书在版编目 (CIP) 数据

中国情境下的产学研合作研究：理论与实证分析 = A

Study on the University-industry Linkages in China:

Theoretical and Empirical Analysis: 英文/苏德金著.

—北京：经济科学出版社，2015.9

ISBN 978 - 7 - 5141 - 6141 - 0

I. ①中… II. ①苏… III. ①产学研合作 - 研究 -
中国 - 英文 IV. ①G520

中国版本图书馆 CIP 数据核字 (2015) 第 240554 号

责任编辑：李 雪

责任校对：刘 昕

责任印制：邱 天

**A Study on the University-industry Linkages in China:
Theoretical and Empirical Analysis**

中国情境下的产学研合作研究：理论与实证分析

苏德金 著
Su Dejin

经济科学出版社出版、发行 新华书店经销

社址：北京市海淀区阜成路甲 28 号 邮编：100142

总编部电话：010 - 88191217 发行部电话：010 - 88191522

网址：www. esp. com. cn

电子邮件：esp@ esp. com. cn

天猫网店：经济科学出版社旗舰店

网址：http://jjkxcbs. tmall. com

固安华明印业有限公司印装

710 × 1000 16 开 13.5 印张 250000 字

2015 年 10 月第 1 版 2015 年 10 月第 1 次印刷

ISBN 978 - 7 - 5141 - 6141 - 0 定价：48.00 元

(图书出现印装问题，本社负责调换。电话：010 - 88191502)

(版权所有 侵权必究 举报电话：010 - 88191586)

电子邮箱：dbts@ esp. com. cn)

序 言

在知识经济时代，大学是最具活力的创新源泉。在过去的几十年里，产学合作一直是高校创业与技术创新研究领域的热点话题，吸引了国内外学者的极大关注。产学合作被认为是一种以社会和市场需求的为导向的运行机制，能够有效地提升科研的应用价值，丰富科学理论的实践基础，为产业注入更多的智力资本，进而推动。已有的文献将产学合作概括为两大范畴：第一，技术转移，包括高校专利授权与转让、产学合作研究、依托研究、咨询服务，以及其他形式的合作；第二，基于高校的创业活动，如大学衍生企业、大学校办产业等。

我国在产学合作实践领域取得了一定成效。然而，与发达国家（美国、英国、日本等）相比较，我国高校与产业在技术创新需求、成果转化、产业链升级转型等方面的合作宽度和深度仍然有待加强。因此，本书立足于中国建设创新型国家的具体情境，基于产学合作推动技术进步与经济发展的背景假设，挖掘影响产学合作的诸多层面因素，进而为高校与政府部门制定强化产学合作的相关政策提供一定的理论指导，为相关实践者积极开展产学合作提供更有现实依据。

本书一共有八章。第一章介绍了本书的研究背景、目的与框架。为了加深我们对产学合作影响技术进步与经济发展的内在逻辑关系的理解，第二章侧重分析了大学在国家创新系统中的角色，强调作为培养高级人才、开展科学研究、推动技术转化的大学是国家创新系统重要的组成部分。第三章则以北京高校为例，分析大学在区域创新系统

中的作用，再次证明产学合作对当地的技术进步与经济发展有着至关重要的作用。鉴于大学在国家创新系统与区域创新系统中的重要作用，第四章采用时间序列的方法，总结了过去几十年中国所出台的主要科技政策，论述其对产学合作产生的可能影响，强调政府在产学合作中应该发挥引导性职能。第五章选择江苏省南京市作为研究对象，介绍了南京市政府最近几年所出台的主要科技政策（如“321 人才计划”、“紫金人才计划”），并且论述了这些政策是如何影响产学合作的，包括通过财政支持的手段鼓励高校引进优秀科学人才；通过资金与税收的优惠手段鼓励高校将最新的科研成果转移到产业领域等。第六章以我国著名高校南京大学为例，论述高校自身的科技政策是如何影响产学合作机制的，而产学合作又将为高校带来哪些优势。鉴于大学衍生企业是最复杂、最高级的产学合作形式，第七章研究了北京大学与清华大学在此领域的相关经验，尝试为高校更加有效、更加成功地推动大学衍生企业的创办提供一个理论模型的指导。第八章从微观的战略视角出发，以大学衍生企业作为调查样本，论述创业导向、与母校的关系强度、新创绩效三者之间的内在逻辑关系，为实践者推动产学合作提供战略性指导。

南京大学商学院 刘春林 教授、博导
2015 年 7 月

PREFACE

It is widely acknowledged that universities are the most vibrant source of innovation in the knowledge – based economy. In this regard, university – industry linkages (UILs) is still a hot issue within academic entrepreneurship and technological innovation over the past decades. Previous literature suggested that UILs have two categories. The first is technology transfer through university patents' licensing, university – industry joint research, contract research, consulting services, and other collaborations. The second is university – based new businesses creation, such as university spin – offs (USOs) and university – affiliated enterprises.

Unfortunately, there is much literature in UILs within developed countries, but relatively little research directly provides comprehensive understanding of China's UILs. In this respect, this book aims to provide both a theoretical and an empirical contribution by studying how UILs promote technological progress and economic growth in the context of China.

This book consists of eight chapters. Chapter 1 introduces research background, objectives and outline of this book. Chapter 2 examines the relationship between universities (especially entrepreneurial ones) and National Innovation Systems (NIS) to enhance our understanding of the influencing effects of UILs on technological progress and economic growth. The purpose of Chapter 3 is to provide insight into the relationship among universities, UILs and Regional Innovation Systems (RIS) based on the case of

Beijing, China. Focusing on the China's context, Chapter 4 introduces the major state – level S&T policies which might have important influence on UILs. Chapter 5 chooses Nanjing, Jiangsu Province as a focal research region to enhance our understanding of the roles of regional S&T policies in stimulating UILs. Taking an example of Nanjing University (NJU), Chapter 6 aims to examine how university – level S&T policies promote UILs. Considering that USOs are the most prominent and sophisticated form of UILs. Chapter 7 tries to propose a feasible model for launching USOs by conducting analysis of Peking University (PKU) and Tsinghua University (THU) in China. PKU and THU have created numerous USOs based on their effective knowledge transfer and intellectual patents' application, thereby researching viable ways to drive the linkages between universities (academic results) and high – tech market (commercialization). From strategic perspective, the aim of Chapter 8 is to examine the roles of entrepreneurial orientation (EO) and the *guanxi* network with parent university (GNPU) in the creation of USOs.

Professor Liu Chunlin
Nanjing University

ACKNOWLEDGEMENTS

Without financial support from the “Humanity and Social Science Youth Foundation of Ministry of Education of China” [grant no. 14YJC630113; 15YJA630027] and the “China Postdoctoral Science Foundation” [grant no. 2014M561629], this book would not have been realized. In addition, the publication of this book is supported by “the Priority Academic Program Development of Jiangsu Higher Education Institution”.

No great accomplishment is achieved alone. I am grateful for all those who help me complete this book. I would like to thank my supervisors, Professor Liu Chunlin from Nanjing University of China and Professor Sohn Dongwon from Inha University of South Korea who provided me many helpful comments for the accomplishment of this book. I am grateful for the data collection supports provided by Professor Yan Hongjian and Professor Su Zhis-han from Sichuan University of China.

I also thank my institutions Nanjing Audit University and Nanjing University, for without the supports of my institutions and my colleagues at those institutions, none of these would have been possible. I would like to acknowledge the following reviewers, who contributed their time and expertise, suggested additional materials, offered frank criticism, and in the end helped make this a much better book: Zhou Dayong, Gu Liang, Pan Weiling, Murad Ali, Gong Xun, Zhu Haiwei, Pan Xiao, and Tu Qiao. Especially, I would like to give my special thanks to my family whose patience

and love enabled me to overcome the difficulties. Finally, I thank the editor Li Xue for her hard work and great assistance with the publication of this book. The responsibility for remaining errors and omissions is mine.

Su Dejin

CONTENTS

CHAPTER 1	INTRODUCTION	1
1.	Overview	1
2.	Objectives of This Book	5
3.	Outlines of This Book	6
CHAPTER 2	UNIVERSITIES AND NATIONAL INNOVATION SYSTEMS	10
1.	National Innovation Systems	11
1.1	National Innovation Systems	11
1.2	China's National Innovation Systems	13
2.	Universities	15
2.1	University in National Innovation Systems	15
2.2	University and Technological Progress in China	18
CHAPTER 3	UNIVERSITIES AND REGIONAL INNOVATION SYSTEMS: THE CASE OF BEIJING	22
1.	Introduction	23
2.	Perspective Review	25
2.1	Universities in RIS	25
2.2	The USOs and RIS	27
3.	Universities in Beijing and RIS	30

3.1	The Advantages of Universities in Beijing in Terms of Resource-based View	31
3.2	Universities in Beijing and Regional Innovation Competency	46
4.	Discussion	52
5.	Policy Implications for Universities and Regional Government	54
5.1	Implication for Financial Policy	55
5.2	Implication for University Policy	56
5.3	Implication for Academic Entrepreneurship	56
5.4	Implication for Korea	57
6.	Conclusion	58
CHAPTER 4 STATE – LEVEL S&T POLICIES AND UNIVERSITY – INDUSTRY LINKAGES		59
1.	Introduction	59
2.	The Chinese Context	60
3.	An Evolution of State-level S&T Policies with Respect to University-industry Linkages	62
3.1	University-affiliated State Key Laboratories	62
3.2	China Spark Program	64
3.3	Program 863	65
3.4	“Torch Program”	66
3.5	Science Park: the Case of Zhongguancun Science Park	69
3.6	University Science Parks	71
3.7	“Project 211”	73

3. 8	“Project 985”	74
3. 9	State-level University Technology Transfer Centers	75
3. 10	“Program 111”	76
3. 11	Medium-and-Long-Term Talents Strategy	77
4.	Roles of State-level S&T Policies in University-industry Linkages	78
4. 1	Improving Academic Faculty	79
4. 2	Enhancing University-industry Collaborations	80
4. 3	Supporting University Spin-off Formation	81
5.	Discussions	84
5. 1	Managerial Implications	85
5. 2	Limitations and Future Research	86
6.	Conclusions	86
CHAPTER 5 REGIONAL S&T POLICIES AND UNIVERSITY – INDUSTRY LINKAGES: THE CASE OF NANJING		
1.	Introduction	88
2.	The UILs in Nanjing	91
3.	Nanjing’s Regional S&T Policies with Respect to UILs	92
3. 1	Five Key S&T Policies	92
3. 2	“Eight Key Plans”	95
3. 3	321 Talent Plan	99
4.	Discussions	101
4. 1	The UILs of Nanjing Universities	101
4. 2	The Effects of Regional S&T Policies on UILs	102

5. Conclusion	102
CHAPTER 6 UNIVERSITY – LEVEL S&T POLICIES AND UILS: THE CASE OF NANJING UNIVERSITY	104
1. Introduction	104
2. Nanjing University’s S&T Policies	106
2.1 University Technology Transfer Center (UTTC)	106
2.2 Incentive Policies for UILs	107
2.3 University Financial Support	108
2.4 Industry-University Joint Research Bases	109
2.5 University Science Park	110
3. Discussions	113
3.1 A Summary of Research Questions	113
3.2 Implications	114
3.3 Research Limitations	118
3.4 Future Research	118
4. Concluding Remarks	119
CHAPTER 7 A MODEL TO LAUNCH UNIVERSITY SPIN – OFFS: THE CASE OF PKU AND THU	120
1. Introduction	121
2. Research Background	123
2.1 The Silicon Valley Model	123
2.2 The Context of Chinese USOs	124
3. Proposed Model: To Launch Spin-offs from Chinese Universities	125
3.1 University Internal Factors	127
3.2 Policy Factors	130

3.3	Industrial Factors	133
3.4	Market Factors	135
4.	Discussion and Conclusion	137
CHAPTER 8 ENTREPRENEURIAL ORIENTATION, GUANXI		
NETWORK WITH PARENT – UNIVERSITY AND		
UNIVERSITY SPIN – OFFS		
1.	Introduction	140
2.	Literature Review and Hypotheses	142
2.1	Entrepreneurial Orientation (EO)	142
2.2	Guanxi in Entrepreneurship	145
2.3	Startups' Performance (SP)	147
2.4	Relationships among EO, GNPU, and SP	148
3.	Research Method	155
3.1	Questionnaire	155
3.2	Data Collection	156
4.	Empirical Analysis and Hypothesis Testing	157
4.1	Sample	157
4.2	Hypothesis Testing and Results	159
5.	Discussion	170
5.1	Contributions	171
5.2	Limitations and Future Directions	173
6.	Conclusion	174
REFERENCES		175

目 录

第 1 章 绪论	1
1. 概述	1
2. 研究目的	5
3. 研究框架	6
第 2 章 高校与国家创新系统	10
1. 国家创新系统	11
1.1 国家创新系统	11
1.2 中国的国家创新系统	13
2. 大学	15
2.1 国家创新系统中的高校	15
2.2 中国的高校与技术进步	18
第 3 章 高校与区域创新系统：以北京为例	22
1. 引言	23
2. 理论回顾	25
2.1 区域创新系统中的高校	25
2.2 大学衍生企业与区域创新系统	27
3. 北京的高校与区域创新系统	30

3.1	资源基础观视角下的北京高校优势	31
3.2	北京高校与区域创新能力	46
4.	讨论	52
5.	对高校与地方政府的政策启示	54
5.1	对财政政策的启示	55
5.2	对高校政策的启示	56
5.3	对高校创业的启示	56
5.4	对韩国的启示	57
6.	结论	58

第4章 国家层面的科技政策与产学合作

59

1.	引言	59
2.	中国情境	60
3.	与产学合作相关的国家科技政策	62
3.1	高校附属国家重点实验室	62
3.2	星火计划	64
3.3	863 计划	65
3.4	国家火炬计划	66
3.5	科技园区	69
3.6	大学科技园	71
3.7	211 工程	73
3.8	985 工程	74
3.9	国家级大学技术转移中心	75
3.10	111 计划	76
3.11	中长期人才发展规划纲要	77
4.	国家科技政策在产学合作中的作用	78

4.1	提高学术研究能力	79
4.2	强化产学研合作力度	80
4.3	孵化大学衍生企业	81
5.	讨论	84
5.1	政策启示	85
5.2	不足与研究建议	86
6.	结论	86
第5章	区域科技政策与产学研合作：以南京为例	88
1.	引言	88
2.	南京产学研合作概况	91
3.	与产学研合作相关的南京市科技政策	92
3.1	五大重点科技政策	92
3.2	八项人才计划	95
3.3	321 人才计划	99
4.	讨论	101
4.1	南京高校的产学研合作	101
4.2	区域科技政策在产学研合作中的作用	102
5.	结论	102
第6章	高校科技政策与产学研合作：以南京大学为例	104
1.	引言	104
2.	南京大学的主要科技政策	106
2.1	高校技术转移中心	106
2.2	针对产学研合作的激励政策	107
2.3	高校财政支持	108