



创新全球化丛书

Asymmetric Innovation Strategy:
Innovation Globalization of Chinese Firms
(Theoretical Volume)

非对称创新战略: 中国企业的跨越

(理论辑)

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本专著受国家自然科学基金重点项目资助 (编号: 71132007)
(Sponsored by National Natural Science Foundation of China,
Key Project 71132007)

科学出版社

北 京

内 容 简 介

中国企业创新全球化经历“创新走出去”、“创新走上去”、“创新走进去”的三步跨越过程,作为参与全球竞争的后来者,中国企业在追赶过程不仅要面临外来者劣势、传统优势的劣势,更要应对来源国劣势的挑战。本书旨在总结创新全球化追赶过程中涌现出来的中国企业解决方案,提出了“非对称创新战略”这一理论框架,基于创新网络全球化、创新能力全球化、创新组织全球化和创新治理全球化四大体系,呈现了中国企业的独特管理智慧。本书是团队历时6年凝练出来的思想集成,希望所提出的理论框架能指导更多企业优化全球化创新网络布局,探索适合企业各自特点的技术追赶战略。本书不仅能为理论研究者持续探究中国企业创新全球化提供系统架构,更希望能为我国企业跨国发展实践提供指导。

本书可供从事社会科学相关研究的相关同仁、企业中高层管理人员、管理科学领域高年级学生,以及对创新研究感兴趣的广大社会精英阅读。

图书在版编目(CIP)数据

非对称创新战略:中国企业的跨越:理论辑/魏江等著. —北京:科学出版社, 2017.12

(创新全球化丛书)

ISBN 978-7-03-056090-2

I. ①非… II. ①魏… III. ①企业管理—研究—中国 IV. ①F279.23

中国版本图书馆CIP数据核字(2017)第316282号

责任编辑:魏如萍/责任校对:贾娜娜

责任印制:霍兵/封面设计:无极书装

科学出版社出版

北京东黄城根北街16号

邮政编码:100717

<http://www.sciencep.com>

中国科学院印刷厂印刷

科学出版社发行 各地新华书店经销

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2017年12月第 一 版 开本:720×1000 1/16

2017年12月第一次印刷 印张:20 1/4

字数:420 000

定价:152.00 元

(如有印装质量问题,我社负责调换)



前 言

本专著是《创新全球化：中国企业的跨越（案例辑）》（以下简称《案例辑》）的姊妹篇，我们试图通过本专著和《案例辑》来构建起中国企业创新全球化追赶的独特战略体系，形成有中国特色的非对称创新战略理论。本专著原先计划书名为“创新全球化：中国企业的跨越（理论辑）”，过去几个月我们在思考这样一个问题：透过创新全球化背景下的中国企业跨越，其基本规律是什么？现在改书名为《非对称创新战略：中国企业的跨越（理论辑）》，就是想大胆提出这个构念，为后续理论的深入和完善提出早期的架构。该理论架构是我们在过去近 20 年创新研究基础上形成的，还不成熟，但先“垒个地基”。未来我们团队将聚焦该体系框架，不断在理论构念、要素框架、假设验证和方法支撑等方面持续深化，以期在波澜壮阔的全球化变革时代，为中国企业的创新发展留下些注脚。

正如在《案例辑》中提及的一样，好像我们昨天还在讨论引进外资、“三来一补”、OEM（original equipment manufacturer，代工）等问题，今天却发现中国已经成为世界上最大的资本输出国，特别是 2008 年以来，中国企业在海外的并购风起云涌，成为全球产品市场、要素市场的“搅局者”。同时也看到，中国企业在发挥资本优势走出去的同时，也面临一系列新的扩张陷阱——制度陷阱、技术陷阱、文化陷阱，等等。正是这些陷阱的存在，导致中国企业或投资决策失误、或并购整合失败、或技术整合失效、或全球治理失控。出现这些问题，是因为中国企业作为全球市场的后来者，要同时面对“来源国劣势”和“外来者劣势”双重挑战，前者带来的挑战更大，因为我国企业国际话语权和技术主导权的缺失，以及价值观、制度差异的存在，消除“来源国劣势”的时间跨度会更长。这与发达国家企业进入发展中国家时所面临的挑战不同，发达国家的企业进入发展中国家时，主要是面临“外来者劣势”，这种劣势可以凭借东道国所提供的政策优先权（如为了吸引外资所提供的大量优惠政策）和企业自身的技术优先权（如技术先发者的能力优势）去弥补，但是，中国企业走出去过程中，不但不能享受政策优惠，反而处处被打压，所以，中国企业全球化道路将更加艰巨，也更能显出“弄潮儿”的英雄本色。

在走出去的企业中，有一支力量特别值得敬佩和重视，那就是创新导向、技术导向的海外投资（包括并购和绿地投资）。例如，截至 2015 年，华为在全球布局了 26 个研发中心，海尔收购通用白电并在全世界设立了 5 个研发中心，吉利成功

收购沃尔沃并建立欧洲研发中心，万向仅在美国就收购了 30 多家技术型企业。这些企业已经跨出了创新全球化的步伐，探索出了整合全球创新资源实现技术赶超的新路子。如前所述，由于中国企业面临“来源国劣势”和“外来者劣势”双重挑战，能够在短时间内取得如此成就，非常不容易。课题组试图追溯过去 30 多年中国企业在创新全球化过程中的艰难探索，把这个过程分为“创新走出去”、“创新走进来”和“创新走上去”的“三步跨越”，经过大量案例研究，发现这个历程值得骄傲，这样的探索前无古人。

总体上，“三步跨越”按照三个重要的时间节点来划分，即改革开放开始、1998 年亚洲金融危机及创新型国家建设战略的提出、2008 年全球金融危机爆发。根据这三个节点，第一阶段（从 1978 年到 2000 年前后）称为“创新走出去”，主要特征是我国企业以出口导向下技术引进的方式，以产品出口、国外伙伴合作为通道，学习先发企业的技术和经验，再通过设备生产线引进、技术引进，提高自身的技术能力和产品品质。这个阶段属于创新追赶的初期阶段，通过产品出口和技术引进双向互动，实现了国内国外两个市场的技术需求对接，完成了初步的技术学习和自身能力积累，提高了制造能力。第二阶段（2000 年前后到 2008 年前后）称为“创新走进来”，该阶段主要特征是，我国企业通过制造导向下的技术集成创新，在海外设立制造基地，以制造基地为依托，按照东道国的制度惯例进行技术型收购和整合。在此过程中，企业通过零距离学习海外前端技术，然后与自身技术进行集成，实现技术赶超。第三阶段（2008 年前后至今）称为“创新走上去”，该阶段的主要特征是品牌导向下的技术引领模式。这个阶段企业向高端化、品牌化发展，以我国企业为主导进行技术含量高、附加值高的高端市场开拓和高端技术研发，在此过程中逐步建立起真正国际一流的企业，它属于最高层次的创新国际化行为。这个阶段刚刚起步，未来的路还很长。

我国企业创新全球化的“三步跨越”过程，一是不断应对国际经济秩序重构带来挑战的过程。我国作为后发国家，通过溢出机制来获取核心技术、关键技术的难度日益加大，必须通过制度创新，以新的规则和治理体系去整合全球创新资源。二是不断应对国际产业分工纵深发展带来挑战的过程。全球产业链水平分工和垂直整合的频率加快，全球产业呈现网络国际化、生产体系化、产业集群化、区域经济集团化格局。为此，我国的企业必须创新研发、组织创新，建立起组织内和组织间协同、本土与全球协同的动态创新网络。三是不断应对战略性新兴产业加快发展带来挑战的过程。我国整个经济形态正在从资源要素和投资驱动为主向创新驱动为主转变，传统制造为主的企业必须跨技术边界、知识边界，通过不同领域的技术知识整合来掌握未来技术主导权。四是不断应对多元化制度差异带来冲突的过程。中国企业全球化发展起步晚，能力和经验严重不足，作为“小学生”的中国企业要与作为“研究生”的先发企业同台竞争，确实交了不少“学费”，

为此,必须提高多元文化、多元制度下的适应和生存能力,建立起与全球化发展相适应的创新治理机制和风险控制机制。

在分析和探究我国企业全球化创新“三步跨越”的问题和经验时,发现创新全球化建构的过程,深层次反映在全球化创新网络、全球化创新能力、全球化创新组织和全球化创新治理四大体系的构建过程,其中,创新网络是创新资源整合的基础,创新能力是技术追赶的核心,创新组织是创新实施的主体,创新治理是持续追赶的保证。为此,本书按照“创新网络全球化”、“创新能力全球化”、“创新组织全球化”和“创新治理全球化”四个方面,来深入研究我国企业实现技术追赶的内在逻辑。

在编写过程中,为了纲举目张,我们仍然采用“概论+四大体系”的思路展开。第一篇总论首先在《案例辑》的基础上,简要总结中国企业创新全球化的“三步跨越”历程及背后的理论逻辑;其次,基于课题组近20年(特别是近6年)的研究成果,总体提出中国企业的非对称创新战略的架构;最后,基于“创新网络—创新能力—创新组织—创新治理”的四大体系逻辑,提出非对称创新战略的核心理论问题。四大体系部分则分别针对“创新网络全球化”“创新能力全球化”“创新组织全球化”“创新治理全球化”四大模块,通过规范分析、案例研究、问卷调查、二手数据等多种研究方法揭示中国企业全球化创新网络布局,探索技术追赶的战略逻辑。要特别说明的是,与《案例辑》类似,尽管我们试图各有侧重地总结中国企业的实践,但这并不说明单个企业或者某些企业只在某一个方面有创新性探索,因为任何企业的全球化创新追赶都是“网络—能力—组织—治理”四要素协同作用的结果。

“创新网络全球化”部分,构建起了基于组织、地理、知识边界拓展的创新网络演化过程,从关系节点嵌入角度探讨了全球创新网络的组织构成与演化,从知识整合与组织经济学视角分析了创新网络的地理分布,从知识搜索角度分析了中国后发企业跨知识边界的全球创新网络架构。

“创新能力全球化”部分,探究后发企业构建起与全球化发展相适应的创新能力提升轨迹,一是分析了制度变革中产生的机会窗口如何帮助后发企业逐步构建创新能力,二是分析了跨边界整合与无边界创新生态视角下,后发企业如何利用技术变革产生的机会,实现技术创新能力的累积和调整。

“创新组织全球化”部分,围绕组织内部网络和组织外部网络两大类型,分析了制度合法性视角下、海外子公司模块化设计视角下跨边界研发网络的组织设计,整合了这两大视角,提出了技术架构和组织架构的同构/异构匹配模式在设计跨边界研发网络架构中扮演的角色。

“创新治理全球化”部分,围绕海外研发进入模式、海外子公司治理、组织身份认同和区域制度认同四个方面,分析了对全球研发系统架构治理的影响机制。

重点探讨两个理论问题，一是海外子公司在双重制度压力下内外合法性的平衡，以及合法性战略与组织结构的耦合机制；二是结合组织身份认同和区域制度认同，从全局视角解构了设计和治理全球研发系统架构的应对措施。

本专著是作者将近 20 年（特别是最近 6 年）理论研究成果的总结，希望所构建的中国企业“非对称创新战略”这一理论框架，能够为探究中国企业创新全球化这一现象提供理论启示，也为中国企业创新走出去、走进去和走上去的过程提供指导。本专著最大的理论贡献在于构建起了中国企业“非对称创新战略”这一框架，从制度型态（institutional regime）、市场型态（market regime）和技术体制（technological regime）三大情境，创新网络、创新能力、创新组织和创新治理等四大要素，解构了中国后发企业创新全球化背后的理论逻辑。此外，本专著提出的“基于组织、地理、知识边界拓展的创新网络全球化”框架拓展了创新网络理论，探讨了“制度变革—技术变革”双重驱动后发企业能力赶超，深化了创新能力理论，从合法性、模块化和全局视角分析全球研发网络组织设计，以及从组织身份认同、区域制度身份认同讨论全球创新网络治理，对网络组织和网络治理的文献亦有重要贡献。

本专著是国家自然科学基金重点项目（编号：71132007）研究成果的理论辑，工作量非常大，每个文字里都凝聚了全体课题组成员的心血。我作为课题负责人，负责整个项目的总设计，以及各篇研究过程的总指导、总校订，各个篇章的撰写分工如下。

篇目	协调人	文字执笔人
第一篇：总论	魏江	第 1 章：魏江、刘洋
第二篇： 创新网络全球化	刘洋	第 2 章：潘秋玥、刘洋 第 3 章：刘洋、江诗松 第 4 章：潘秋玥、黄学 第 5 章：应瑛、刘洋 第 6 章：郭爱其、魏江
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借此机会要感谢国家自然科学基金重点项目子课题负责人李海洋教授、蔡宁教授、顾新建教授、邬爱其教授、刘景江副教授等的创造性贡献，以及孙国辉教授级高工、王颂博士、应瑛博士、王诗翔博士、潘秋玥博士等的辛勤付出。正是大家的全力合作，本专著才得以顺利问世。

魏 江

2017 年秋于浙江大学启真湖畔

Preface

This book is the companion volume of the book entitled *Innovation Globalization of Chinese Firms*. By publishing both the theoretical and the case volumes, we propose a framework of asymmetric innovation strategy with which, we believe, Chinese firms' innovation globalization need to be understood. We originally entitled this book as (Theoretical Volume). In the past few months, I found myself constantly pondering the question: What logical pattern underpins Chinese firms' catch-up in innovation globalization? We now term this pattern "asymmetric innovation strategy". This is a bold attempt, as the idea of asymmetric innovation strategy is not as yet an established theory. Nevertheless, this idea, and its related framework, come out of my twenty years of research in innovation, and I think it should benefit the academic audience, not by specifying (or exhaustive) theoretical causalities, but by suggesting a heuristic for fruitful thinking. In the future, I and my research team will continue to engage with the framework that is proposed in this book, digging deeper into the various factors and their relations as we move along. We hope that our effort will leave a valuable footnote to Chinese firms innovation experiences as they navigate through this great age of fast changing globalization.

We wrote in *Innovation Globalization of Chinese Firms (Case Volume)* (hereinafter referred to as the case volume) to show how things have changed. It seems but yesterday that we were focusing on issues such as "attracting foreign investment", "the three-plus-one trading-mix", and OEM. Within a few years these issues have become largely irrelevant, for China is now one of the biggest capital exporting countries in the world. Since 2008, Chinese firms have reported several eye-catching cases of mergers and acquisitions overseas, making themselves the noisemaker in the global market. However, as Chinese firms made inroads into the global market, they found themselves susceptible to a series of expansion traps, such as institutional traps, technological traps and cultural traps. These traps accounted for the many mistakes that Chinese firms made in investment decisions, M&A integration, technology integration and global governance. The fact is, Chinese firms face double challenges as they enter the global market: the liability of origin, and the liability of foreignness. Of these two,

the former poses stronger threat. Chinese firms lack voices in the global discourse; they also suffer from the present structure of western technology domination. It would therefore take a long span of time for Chinese firms to overcome the liability of country of origin. This situation is different from one which firms in developed countries face as they enter developing countries. Firms in developed countries face only the liability of foreignness, which can be mitigated by host countries' preferential investment policies and firms' technological advantages. Things have never been quite 'fair' for Chinese firms, but perhaps it is this unfairness that gives Chinese firms' global adventures a gleam of heroic aura, and hence making them more noteworthy.

Among these heroic Chinese battlers, one group of firms deserves our particular admiration and attention. They are firms that make innovation-oriented and technology-oriented overseas investment (including M&A and greenfield investments). For example, by 2015, Huawei had established 26 R&D centers globally. Haier had acquired GE's white goods business and had established 5 R&D centers globally. Geely successfully acquired Volvo and was on its way to set up its European R&D center. As for Wanxiang, the company acquired 30 technical firms in the US alone. These firms have worked out new ways to integrate global innovation resources and to achieve catch-up. These are no commonplace achievements, considering the double challenges that these firms faced, and the short period of time that these firms used to get there. Our purpose, then, is to retrace Chinese firms' adventures of innovation globalization in the last 30 years. We have mapped out a three-stage pattern that is common to successful Chinese firms, namely, "innovation as moving out", "innovation as moving in" and "innovation as moving up". This pattern is perhaps unique to Chinese global adventurers, and for that matter, their adventures are worthy of our pride.

Our three-stage framework centers around three critical events in China's recent history: the beginning of the economic reform in 1978, the Asian financial crisis in 1998 (it was around the same time that the Chinese government initiated the innovation-driven national strategy), and the global financial crisis in 2008. The first stage spans from 1978 to roughly 2000. We call it "innovation as moving out" because at this stage it was characteristic of Chinese firms, especially export-oriented manufacturers, to learn from leading firms in developed economies through importing technologies and production lines and collaborating with foreign partners. This is the primary stage of technological catch-up. Innovations occur when Chinese firms import advanced technologies to manufacture products for exportation, building up their

learning and technological capacities in the meanwhile. The second stage, “innovation as moving in”, spans from 2000 to around 2008. Chinese firms started establishing manufacturing plants overseas and, within the regulatory frameworks of host countries, conduct technology-based mergers and acquisitions. At this stage, innovations occur when Chinese firms communicate with latest technological development in foreign countries face-to-face. By integrating these state-of-the-art technologies into their existing knowledge bases, firms achieved technological catch-up. The third stage, which begins around 2008, we call it “innovation as moving up”. At this stage, Chinese firms were increasingly motivated to leave their traditional low-end domains and move into high-end market sectors where technology is sophisticated and where technological added value is high. Chinese firms strive to build up brand images, research into cutting-edge technologies, and maintain market leading positions through technological advantages. At this third stage, innovation matters not because it boosts up firms’ learning capacities or capitalizes firms’ knowledge stock; rather, innovation is central to the process whereby Chinese firms become first-class global names. The “innovation as moving up” stage is but just beginning. It points towards a future with no obvious conclusions.

The three-stage framework delineates a process whereby Chinese firms faced challenges of diverse natures in their global adventures. First, Chinese firms were penalized by the restructuring of international economic orders. As late comers to the global market, Chinese firms used to rely on spill-over mechanisms to obtain core technologies. This practice made it increasingly difficult for firms to access advanced technologies. Sooner or later, firms arrived at a stage where they were pushed to integrate global innovation resources through new rules and new governance systems. Secondly, Chinese firms continuously dealt with challenges brought by the in-depth development of international industry division. The global industrial chain division and vertical integration develop more frequently while the global industry shows an international network, production system, industrial clustering, regional economic group pattern. To this end, Chinese firms must innovate their R&D organization and activate the communication within the organization and inter-organizational collaboration. Thirdly, Chinese firms gradually learnt to cope with challenges in the background of fast growing strategic emerging industries. China is transforming from the resource-and investment-oriented mode to innovation-oriented mode, and thus, traditional manufacturing firms had to step across their technological and knowledge boundaries in order to achieve technological advantages. Fourthly, Chinese firms

constantly responded to institutional conflicts. Chinese firms that started late in globalization had limited ability or experience. They were the pupils of the international market, and paid a substantial amount of tuition fees in order to learn from, and to compete with, more mature students of the game. To survive, Chinese firms felt the urgency to adapt. That such adaptation took place in a multi-cultural and multi-institutional context meant that firms needed to establish innovation governance mechanisms and risk-control systems that matched globalized development.

As we read into the stories of our sample firms stories of how these firms have gone through three steps of innovation to achieve global expansion we see that four theoretical constructs emerge to capture firms' successful (or unsuccessful) endeavors in their globalized innovation. We label these constructs, respectively, globalization of innovation network, globalization of innovation capacity, globalization of innovation organization, and globalization of innovation governance. Together these constructs form a heuristic framework whereby Chinese firms' globalized innovation could be made sense of, and its success (or failure) assessed. In our heuristic framework, innovation network is the structural basis for innovation resource integration, innovation organization the executor of innovation activities, innovation capacity the core of technological catch-up, and innovation governance the guarantee of sustainable technological catch-up. With this network-capacity-organization-governance (NCOG) framework, we hope to illustrate to our readers some of the inner logics that are at work during Chinese firms' technological catch-up.

The book is structured as follows. Chapter one outlines the three-step process of Chinese firms' innovation globalization, drawing from some materials of the case volume, and highlighting key logical points. The book then summarizes our research findings in the recent five years and presents, in summary forms, what we call Chinese firms' asymmetric innovation strategy. This is followed by a more detailed elaboration of the four components of asymmetric innovation strategy, that is, innovation network, innovation capability, innovation organization and innovation governance. Here, we use a number of qualitative and quantitative research methods to reveal the strategic logic that underlines Chinese firms' technological catch-up and innovation globalization.

Readers need to notice that although we present these components separately, in practice they are often inter-related. It is not as if a firm or a group of firms could choose to specialize in a particular component of globalized innovation. Firms' global innovation catch-up need be seen as the synergistic effect of the all four

components, namely, network, capability, organization and governance.

- Innovation network globalization

In this section, we construct the evolutionary process of innovation from multiple perspectives. First, we use the perspective of nodal relationships to discuss the organization and evolution of global innovation networks. We then use the perspective of organizational economics to discuss the geographical distribution of innovation networks. Finally, we use the perspective of knowledge search to discuss Chinese firms' trans-boundary global innovation network structures.

- Innovation capability globalization

In this section, we explore late-comers' path of innovation capability improvement and adaptation to globalization. First, we analyze how opportunity windows generated by institution evolution help late-comers to build innovation capability. Second, we use the ideas of trans-boundary integration and boundary-less ecosystems to discuss how it is possible for late-comers to accumulate innovation capability by using chances in the process of technological advances.

- Innovation organization globalization

In this section, we focus on two types of organizational networks, that is, intra-and inter-organization networks. Using the perspectives of institutional legitimacy and modular organization, we discuss the design and integration of trans-boundary R&D networks. We integrate these two perspectives to show how isomorphism/isomerism match in technological and organizational structures plays a role in the design of trans-boundary R&D networks.

- Innovation governance globalization

In this section, we relate to some important issues of innovation globalization: overseas R&D entry, overseas subsidiaries governance, organizational identification and regional institutional identification. By so doing we aim to identify factors that impact on global R&D network governance. The section focuses on two theoretical issues. First, overseas subsidiaries' inside/outside legitimacy balance, and in relation to this, the coupling mechanisms that link firms' legitimacy strategies to their organizational structures. Secondly, the competing terrains of organizational identification and regional institutional identification. Examining this contestation closely would allow us to come up with ways that address the design and governance of global R&D networks.

This book is a summary of six years of research findings of our research team. We hope that our theoretical framework will provide inspirations for academics who are

interested in exploring Chinese firms' innovation and globalization, and offer practical guidance for Chinese firms in their moving out, moving in and moving up stages. The most important contribution of this book is suggested in its title: Chinese firms' asymmetric innovation strategy. This mental framework, which integrate multiple regimes (i.e. the institutional regime, the market regime, and the technological regime) and multiple components (i.e. innovation network, innovation capability, innovation organization and innovation governance), allows us to capture the underlying logics of Chinese firms' innovation globalization. Apart from this, the book makes some minor theoretical contributions. For instance, the idea that globalized innovation network can be viewed as either organizational, geological or knowledge-categorical adds to innovation network theories. The idea that institutional and technological transformations are double engines for latecomers' catch-up enriches theories of innovation capability. Finally, the idea that the design and governance of global innovation network is a complex issue, the addressing of which requires multiple perspectives ranging from legitimacy, modularity, organizational identification to regional institutional identification contributes to the literature of network organization and network governance.

The book is sponsored by the National Natural Science Foundation Key Project (No.71132007). It is the outcome of a lot of hard work from every member of my research team. As the team leader I am responsible for the overall design of the project. I laid out the structure of the book and did the final editing and proofreading. The text is co-penned by members of my research team, including myself. Specifically, the following chart lists the authors of individual chapter.

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We would like to take this opportunity to thank the very constructive contributions from our colleagues, who are also sub-component directors of the project: Professor Li Haiyang, Professor Cai Ning, Professor Gu Xinjian, Professor Wu Aiqi and Associate Professor Liu Jingjiang. We are also grateful to colleagues who have assisted us most selflessly throughout the project: Professor Sun Guohui, Dr. Wang Song, Dr. Ying Ying, Dr. Pan Qiuyue, and Dr. Wang Shixiang.

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Zijingang Campus, Zhejiang University, 2017

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