Commercialization of IP Rights in CHINA
Commercialization of IP Rights in CHINA

ELIZABETH CHIEN-HALE, MARCO TONG, DAVID AI, AND CHRIS BAILEY
## Contents

*Foreword* vii  
*Introduction* ix  
*About the Authors* xv

### 1 Introduction to the Chinese Legal Framework for Commercialization 1

I. Background 2  
II. “Big IP”: Numbers and Analysis of the Numbers 4  
III. National Policies: “Big IP” to “Strong IP” with Commercialization as a Pillar 9  
IV. Recent Legislative Changes Relevant to Commercialization 16  
V. Conclusion and Practical Advice 29

### 2 Intellectual Property Commercialization in China in View of Patent Commercialization 33

I. Introduction 34  
II. The Definition, Origin, and Status Quo of Intellectual Property Commercialization in China 35
# Commercialization of IP Rights in China

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>III.</td>
<td>The General Policies of China in Intellectual Property Commercialization</td>
<td>40</td>
</tr>
<tr>
<td>IV.</td>
<td>The Interior and Exterior Motivations of Business Entities in Intellectual Property Commercialization in China</td>
<td>42</td>
</tr>
<tr>
<td>V.</td>
<td>Conclusion</td>
<td>57</td>
</tr>
</tbody>
</table>

3 Technology Transfer among Academic Institutions in China 59

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>Background of China’s University System</td>
<td>60</td>
</tr>
<tr>
<td>II.</td>
<td>Technology Transfer among China’s Academic Institutions</td>
<td>69</td>
</tr>
<tr>
<td>III.</td>
<td>Tsinghua University: The Most Successful Case</td>
<td>76</td>
</tr>
<tr>
<td>IV.</td>
<td>Conclusion</td>
<td>94</td>
</tr>
</tbody>
</table>

4 Deal Dynamics for Intellectual Property Exploitation: Licensing, Joint Ventures, and Wholly Foreign-Owned Entities 97

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I.</td>
<td>Introduction</td>
<td>98</td>
</tr>
<tr>
<td>II.</td>
<td>Technology Licensing</td>
<td>106</td>
</tr>
<tr>
<td>III.</td>
<td>Joint Ventures</td>
<td>114</td>
</tr>
<tr>
<td>IV.</td>
<td>Taking It Offshore—Co-Investing Overseas</td>
<td>135</td>
</tr>
<tr>
<td>V.</td>
<td>Going It Alone—the Wholly Foreign-Owned Enterprise</td>
<td>138</td>
</tr>
<tr>
<td>VI.</td>
<td>Conclusion</td>
<td>140</td>
</tr>
</tbody>
</table>

Index 143
One of the key issues that sparked the U.S.–China trade war involves intellectual property (IP). While the focus has been on forced technology transfers as well as outright theft of IP, there is another way in which technology flows into China. Yearly, there are many routine business transactions where a foreign owner of IP willingly and lucratively transfers its IP to China via licensing. The authors of this book have written an exceptional guide for anyone interested in the field of technology licensing to China.

Chapter 1 provides the political and structural background for the transactions as well as the various laws and regulations that apply to licensing. While this may seem at first to be something that should be available freely, the reality is that there is no one ready source to capture all the rules that might apply. Chapter 2 includes some historical insight into how the Chinese government views these transactions. Readers should bear in mind that unlike private enterprises in the United States, China has a strategic plan for the importation as well as domestic development of technology. As noted in chapter 3, any successful transaction must fall under and support the Chinese government
overarching goal of going from a technology importer to self-sufficiency and, ultimately, be a technology innovator. This theme is stressed multiple times in the book. For the reader interested in the rapid development of Chinese academic institutions, where education and commercialization intersect, chapter 4 provides a critique of the current system, which might be most beneficial to the Chinese institutions themselves.

Each of the authors demonstrates firsthand knowledge of the transactions from a different perspective. The most useful parts of the book contain “practical advice,” which should be heeded. The book should serve as a tool even for those experienced in licensing transactions. For those who have not previously dealt with China, the book will provide clear and concise background and analysis to help one navigate this complex field.

Professor Anna M. Han
Interim Dean
Santa Clara University
School of Law
Introduction

Background

The number of ways in which patents are being utilized in the United States has increased dramatically in recent years. Traditionally, patents were viewed as corporate assets for the purpose of protecting a company’s prized innovation. More and more patent owners are using patents as commercial tools with which to build and thwart business relationships, assert market influence, and incubate new companies.

In the People’s Republic of China, intellectual property (IP) is a new legal and social concept. For instance, formal legislation for patents was first introduced in the 1980s and the Patent Law has been successfully amended three times, with the Fourth Amendments under consideration for the past several years. Although the core concepts behind IP in many aspects contradict the socialist ideal of pooled community resources, general social awareness and acceptance of IP rights in China has grown during the past several decades. Readers no doubt have read a fair amount of media reporting on the rampant counterfeiting and other infringing activities in China, but readers most likely have also read the paradoxical press reports
regarding the phenomenal growth in numbers of Chinese patent applications, issued patents, and in other intellectual property rights. One of the objectives in this book is to reveal the story behind this growing stockpile of IP rights; the Chinese government has openly pronounced that the growth in numbers is not its final goal in IP policies, and that the future of IP in China will be in the commercialization and protection of the IP rights.

**Commercialization in the United States vs. China**

There is a close linkage between commercialization activities, such as licensing and acquisition of patents, and enforcement efforts in the United States. Commercialization success in the United States is usually backed by the threat of a lawsuit and a strong enforcement system through the courts. For historical reasons, the commercialization channels of IP rights in China have always been more commerce-oriented rather than enforcement-oriented; that is, in China, patents are applied to products, allocated to support licensing and sales, utilized to form the technology basis of new businesses, and used as conduits for introducing foreign technologies into China in exchange for a share of the Chinese market. The inherent emphasis on the commercial roles of patents in China, rather than as legal rights protected by the court system, is quite natural when the development of the IP infrastructure in China is taken into consideration. The Chinese patent system had a humble beginning starting in the 1980s. Compared to the West, there was little innovation. Compared to the West, China’s enforcement system was both incomplete and too complicated.
Compared to the West, China’s counterfeit industry wielded much more influence. Finally, underlying the Chinese socialist economy, there has always been a shared sense that innovative fruit, along with other resources, belongs to the community. Again, the notion of private ownership of IP rights runs counter to the socialist ideal of sharing common resources in a society. Therefore, IP protection was slow to gain acceptance among the public and within the court system. For all these reasons, patent rights have taken on different roles in Chinese society than they have in Western society.

Who Should Read This Book

This book is written to reach a wide audience. Although it will no doubt be an easier read for readers with either a background in intellectual property law or in Chinese law, the book is intended for anyone interested in patent licensing in China, including, for example, non-legal professionals in finance or executives in a company.

In additional to legal information, this book also highlights some hard-to-find anecdotal information usually passed around as “war stories” among colleagues. Together, we aim to give readers the necessary background and set the right expectations so that they may approach licensing negotiations from a position of strength and knowledge.

How to Use This Book

This book is intended to serve as an introductory reference guide to help readers navigate the various channels of IP commercialization in China.
The first chapter provides the foundation information such as historical background, regulatory framework, and enforcement infrastructure, which together govern the procurement, enforcement, and transfer of patent rights in China.

The later chapters provide channels of commercialization of patents in China in several contexts: corporate (ZTE), universities (Tsinghua University), and joint ventures.

Chapter 2, entitled “Intellectual Property Commercialization in China in View of Patent Commercialization,” is written by Marco Tong, a seasoned in-house IP licensing executive at the Chinese telecom giant ZTE. Marco gives his perspectives as a domestic corporate rights owner, providing an insider’s views on the definition, motivation, status, and policies behind the commercialization of intellectual property in China.

Chapter 3, entitled “Technology Transfer among Academic Institutions in China,” is written by David Ai. David was formerly with the City University of Hong Kong and is now the Chief Innovation Officer of the University of Hawaii system. In his chapter, David describes the unique ecosystem of technology transfer and university-industry partnerships within higher educational institutions in China, using Tsinghua University as a case study.

Chapter 4, entitled “Deal Dynamics for Intellectual Property Exploitation: Licensing, Joint Ventures, and Wholly Foreign-Owned Entities,” is written by Chris Bailey. Chris is the managing partner in the Shanghai office of the IP firm Rouse. In this capacity, he has assisted many foreign IP rights holders to invest in China over the past several decades. In his chapter, Chris describes the roles and risks associated with investing and developing intellectual property rights in foreign-invested entities in China.
Our Next Steps

First, the Sino-U.S. relationship is undergoing profound changes at the moment as the Trump administration engages in intense trade negotiation with China to open up a new relationship between the two countries with major deviations from the guiding principles of the past several decades. China is making rapid changes to its legal and other infrastructure frameworks to accommodate the changes. Therefore, readers are advised to check for updates frequently.

Furthermore, we understand that each type of intellectual property rights—patents, trademarks, copyrights—shares some commonalities, and yet each also has its own unique set of legal considerations. The writers of this book decided at the onset that we would restrict our discussions to the commercialization of patents. Given patents’ rigorous disclosure requirements and arguably the most robust protection scope, we focus on patents only for the first edition of the book. If well received, we will be adding other IP rights to the discussion in future editions.
About the Authors

Elizabeth Chien-Hale received her bachelor’s degree in mechanical/aerospace engineering, and majored in computational linguistics/artificial intelligence in her graduate studies. After working as an engineer in both fields, she turned her attention to law. She received her JD degree from the University of Hawaii and completed an LLM program in international and comparative law at the Georgetown University Law Center, before returning to practice law in Silicon Valley with several prominent law firms there. She is well acquainted with areas of technology including telecommunication, artificial intelligence, Internet security, public/private key distribution, and semiconductors. Her past clients in these areas include the Hong Kong University of Science of Technology, Apple, Palm, Nortel, and 3Com.

Ms. Chien-Hale started her practice in cross-border U.S.-China intellectual property matters when she moved to Baker & McKenzie’s Hong Kong office in 2000. Since then, her practice has been devoted to cross-border IP issues, especially those relating to Taiwan, China, and the United States. Ms. Chien-Hale is an experienced patent prosecutor and has
assisted in many IP litigation matters. She also has rich in-house experience, having worked with multinational corporations such as Apple Inc. and Eaton Corp.

Ms. Chien-Hale has been invited to be a research scholar at the College of Law at the Peking University, and a visiting scholar at the IP Center of the Institute of Law, Chinese Academy of Social Sciences.

Xin (Marco) Tong joined ZTE Corporation in 2014 as senior licensing director. He dealt with patent licensing, international cooperation, strategic cooperation, and monetization, and successfully closed several deals. He established a global IP monetization network for ZTE.

He was appointed general manager of Shenzhen Inteq Technologies Co., Ltd in 2016, which is a subsidiary of ZTE Corporation acting as an IP monetization platform. Inteq’s business includes but is not limited to patent licensing, patent transaction, patent funds, and patent financing. Mr. Tong’s main focus is to explore the future of and proper commercial model for IP monetization in China.

Mr. Tong graduated from Nanjing University Law School and is qualified at the China Bar. He can use Chinese and English as working language.

David Ai is chief innovation officer and director of the Office of Innovation and Commercialization at the University of Hawaii System (UH), which he joined in March 2018. He was also chairman of International Strategy Committee at AUTM (Association of University Technology Managers) from 2017 to 2019, and chaired AUTM Asia Conference in 2017 that was held in Hong Kong. Prior to UH, he was director of Knowledge
Transfer at the City University of Hong Kong from 2014 to 2018. David also worked for Stanford’s Office of Technology Licensing for six years, managing inventions while spearheading Stanford’s technology marketing effort in China.

Previously, Mr. Ai was chief advisor at Hitachi Corporate VC until 2006, where he oversaw two successful acquisitions and one initial public offering among the four venture capital investments he led.

Earlier, Mr. Ai founded an award-winning e-healthcare business in Beijing. Also, as CEO he secured $6 million in venture capital investment in the first foreign-owned cancer center in Shanghai. In the 1990s, he was vice president and general manager at Varian Medical (NYSE: VAR), vice president of marketing at Cirque (acquired by ALPS Japan), and project manager at Hewlett-Packard.

Mr. Ai received a BS in psychology (National Taiwan University), an MS in computer science (Indiana University), an MBA (Stanford), and a JD (Santa Clara University). He is a registered patent attorney (California).

Chris Bailey has lived and worked in China for more than 20 years. He is a principal in Rouse, a leading intellectual property law and consulting firm, where his career has focused on intellectual property management, enforcement, monetization, and commercialization.

He has been involved in numerous IP-related transactions, including establishment of joint ventures and licensing in a range of sectors, such as medical devices, advanced manufacturing, and environmental technologies. He has a particular interest in helping startups and small technology companies. He has served as an advisor to Tsinghua’s X-Lab entrepreneurship
platform and is an advisor to boutique investment firm Southern Capital.

Mr. Bailey has an MA degree in Chinese from Oxford University, an LLM in Intellectual Property Law from the University of Edinburgh, and an MBA from the Kellogg/Hong Kong University of Science & Technology joint program.
1 Introduction to the Chinese Legal Framework for Commercialization

I. Background 2
II. “Big IP”: Numbers and Analysis of the Numbers 4
III. National Policies: “Big IP” to “Strong IP” with Commercialization as a Pillar 9
IV. Recent Legislative Changes Relevant to Commercialization 16
   A. Current Intellectual Property Framework 16
   B. Building a Robust Legal System to Support Commercialization 19
      2. Fairer Licensing Treatment for Foreign Parties 22
         a. New Foreign Investment Law 25
         b. Removal of Certain TIER Provisions 27
V. Conclusion and Practical Advice 29
   A. Conclusion 29
   B. Common-Sense Advice 30
I. Background

The concept of Western-style intellectual property (IP) laws was introduced into China during the Qing Dynasty, the last imperial dynasty in China. However, the formal introduction of the Chinese Patent Law in the People’s Republic of China did not happen until the 1980s. Although from one perspective one may comment on the meteoric rise in the number of Chinese patents in only 40 years, from another perspective, the IP system in China has existed in active and dormant stages for more than 100 years. One may postulate that the government of the People’s Republic of China has long been aware of the existence of the IP system; however, it was waiting for the right moment to introduce it into legislation. In other words, the Chinese IP system has its own history and trajectory; many of the deficiencies observed from the outside are only deficiencies when judged according to criteria outside of China’s own calculation and considerations. For example, the U.S. patent system finds its original support in the U.S. Constitution: Article 1, Section 8, Clause 8 of the U.S. Constitution gives Congress the power “to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries.” The patent system in China, in contrast, has a much humbler beginning.

This is not to say that the deficiencies are not real. Commentators are right to point out that the Chinese government’s attempts to catch up with more technically advanced countries

have led to unacceptable shortcuts or plain violations of international norms regarding IP protection. The author is simply contemplating that the deficiencies are not oversights but, rather, natural consequences of a system developed to serve a different set of purposes. Some of the government agendas introduced in this chapter should show that the Chinese patent system was not established merely to protect private rights in innovative activities. The patent system in China is meant to be embedded into the social and financial systems in the society; patent policies are integrated into bigger national planning strategies.

These differences in approaches to patents did not manifest clearly in the early stages when China was simply building a patent system and growing the number of Chinese patents. However, as the foundation was built and commercialization began, the differences became clearer. This chapter points out some of the differences from a policy perspective. For example, the idea of punishing severe acts of infringement collectively by several government agencies, including such unrelated entities as the People’s Bank (in considering future loan or credit applications) or the National Railroad Company (in restricting purchases of soft seats), would seem quite odd outside of China. In China, this collective punishment system may seem natural because the patent system is embedded in the rest of the “system.” Another example is that in China, commercialization platforms or entities are often orchestrated by the government and

backed, perhaps more by pressure from the government than financial incentives, by the financial sector, including the banks and guarantor companies. The other chapters in the book will introduce the unique Chinese commercialization characteristics from other perspectives.

As the Chinese government introduces more Chinese characteristics into its patent system, commercialization in China will depart from the common commercialization models developed elsewhere, which tended to be anchored around sales and licensing of patents, supported by a robust enforcement mechanism rooted in the court system. In the Chinese commercialization context, the goals are to embed patents into the financial system, and to integrate the patents into larger national strategy plans.

The interesting question is whether the Chinese patent system will be able to foster innovation, or will it be relegated to the role of fulfilling social planning goals such as big IP, strong IP, or other future government initiatives.

II. “Big IP”: Numbers and Analysis of the Numbers

Started in the 1980s, the Chinese patent system has gone through dramatic changes over the years. Even though the concept of intellectual property protection is, in many aspects, more a response to international demand than a home-grown idea, the Chinese government has embraced the concept and is learning to use IP rights, especially patents, as tools to transform the country from a labor-driven manufacturing economy to a knowledge-based service economy. To enhance these tools, the Chinese government has used a number of incentives, such as various forms of subsidies given at different levels of governments, to incentivize Chinese companies and individuals to
innovate and to protect their intellectual property with patents. Along with the rest of the world, the Chinese society in general recognizes that intangible assets produced by skills and innovation have emerged as the most powerful class of assets, overtaking traditional capital assets such as real property, factories, and equipment.

According to the IP5 Statistics Report, since 2017 China has been currently the largest patent-issuing country in the world. The numbers alone certainly do not paint the entire picture, and a closer look at these patents can reveal some interesting facts that may undermine the value of these patents.

![Patent Applications](https://www.fiveipoffices.org/statistics/statisticsreports/statisticsreports_index)

Source: WIPO statistics database; last updated: 12/2017

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As a starter, it should be noted that applications for two out of the three types of available patents in China—utility model, design, and invention—are not examined substantively. Of the three, utility model and design applications only undergo formalities examinations, with examiners sometimes raising substantive issues under the guise of formalities. However, the lack of a substantive examination means that these two types of patents can be obtained quickly and inexpensively, and, as a result, are usually of lower innovative content. Furthermore, the 2017 Report points to other factors that may indicate the lower quality of a Chinese patent compared with patents filed in the United States. Comparing an average patent application filed in 2017, an application filed at the United States Patent and Trademark Office (USPTO) had 17.6 claims, an application filed at the European Patent Office (EPO) contained 14.7 claims, an application filed at the Japan Patent Office (JPO) contained an average of 10.4 claims, and an application filed at the CNIPA\(^4\) contained an average of 8.1 claims. A higher number of claims usually indicates higher technical contents in the application. Finally, unlike the United States where about half of the patent applicants are from outside the United States, the vast majority of the patents issued in China belong to Chinese individuals or corporations. In other words, the Chinese patent system is still, for the most part, a closed system utilized by its own citizens. Of course, it is debatable whether one could conclude with certainty that the lack of examination

\(^4\) Chinato Restructure State Intellectual Property Office, http://english.www.gov.cn/state_council/ministries/2018/03/13/content_281476076446534.ht. Formerly, the Chinese Patent Office was called the State Intellectual Property Office, or SIPO. However, the patent office and the trademark office merged in a major bureaucratic reshuffle in 2018, and the new IP agency, called the China National Intellectual Property Administration, or CNIPA, has jurisdiction over both patents and trademarks.
and the lower number of claims per application would render an average noninvention patent issued in China of lower quality than an average patent issued by the other IP5 offices.

Quality issues aside, China’s path to becoming the world’s most highly ranked country in IP rights deserves careful study. As the diagram below shows, the fact that China currently has the largest number of issued patents and trademarks in the world is not a random development; it is through gradual increases over the past decade and an outcome of careful government guidance. The Chinese governments at different levels—central, provincial, cities, and districts—have provided many types of incentives during the past years to increase patent filings in their respective jurisdictions. Government incentives come in a variety of forms, such as reimbursement for application fees, rewards for inventors and companies upon submission of an application and/or issuance of the patent, reduced tax rates for companies with core IP assets, and preferential treatment in government procurement programs for companies with core IP assets. Readers may refer to chapter 2 by Xin Tong for more detailed information on the various subsidy and incentive programs.
Because China now ranks highly in terms of IP rights holdings, the central government policy is beginning to shift. For example, a 2018 report in China’s IP Daily documented that all levels of government are reexamining their incentives programs for patents. Some governments are suspending all patent-related incentive programs, and some are selectively suspending only a portion of such programs. It remains to be seen if the reversal in government support for patents will have a significant impact on the patent surge fueled by the decade-long drive toward big numbers.

The Chinese government recognized that the results of the patent surge might not have been all positive. As early as 2013, the former director of the State Intellectual Property Office, Mr. Li-Pu Tian, openly expressed his regrets regarding the many “junk patents” issued in China. In his discussion of this issue, he warned that quantity should not be mistaken for quality, and

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6. SIPO is now renamed the China National Intellectual Property Administration; see supra note 4.
that the life of a Chinese patent was on average four to five years shorter than a patent issued elsewhere because Chinese patent owners did not bother to maintain the patents (presumably the patent owners felt these patents were not worth as much as the maintenance fees). Mr. Tian attributed the cause of the “junk patents” to the fact that the “utility model patents” and “design patents” were registered without substantive examinations, adding a large number of low-quality patents which were likely neither novel nor inventive into the system.\footnote{Id.}

High or low quality, the fact remains that China has a large stockpile of intellectual property rights; therefore, it is not surprising that the Chinese government, which has traditionally been and continues to serve as the guiding force in setting national IP directions for the country, is now turning its attention to effective management and commercialization of IP assets. All levels of government are increasingly diverting their resources from application to protection, enforcement, and commercialization. In the future, only high-quality invention patents in key technology areas with strong commercial potential will receive the government’s resources; gone will be the days when all patents are treated equally in a blind drive toward higher numbers.

\section*{III. National Policies: “Big IP” to “Strong IP” with Commercialization as a Pillar}

The Chinese government has always played coordinating and guiding roles in IP developments. The government is responsive to all parties; in the past, it has run anti-counterfeiting
campaigns to send strong messages to the domestic public, amended the IP laws to comply with international standards demanded by foreign countries, and set up new coordinating bodies to bring all relevant government agencies into a constant dialog with one another. As IP issues have steadily gained importance internationally in recent years, the Chinese government has elevated the planning of IP issues into the national economic strategic plans and government guidance and directives are also being issued with higher frequency and fanfare. For example, at the end of 2015, the State Council issued *Several Opinions on Accelerating IP Power Construction under New Conditions.* Toward the end of 2016, the State Council issued the *13th Five-Year Plan on National Intellectual Property Protection and Utilization*, and in August 2017, the State Council issued the *National Intellectual Property Protection and Utilization Priority Tasks Division Plan.*

Earlier planning documents by the Chinese government tended to focus on numbers. For example, in support of the second phase of the National Intellectual Property Strategy Outline (国家知识产权战略纲要) (2008–2020) issued by the State Council in 2008, the State Council issued an Action Plan for Deep Implementation of the National Intellectual Property Strategy (深入实施国家知识产权战略行动计划) (2014–2020) in which the goals and measure of success were expressed by numbers: 9

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Main Expectation Indicators for Implementation of Intellectual Property Strategy in 2014–2020

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<thead>
<tr>
<th>Indicators</th>
<th>2013</th>
<th>2015</th>
<th>2020</th>
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<tbody>
<tr>
<td>Number of invention patents, for every 10,000 persons</td>
<td>4</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Number of patent applications submitted through the Patent Cooperation Treaty (in 10,000s)</td>
<td>2.2</td>
<td>3.0</td>
<td>7.5</td>
</tr>
<tr>
<td>Average maintenance period (years) of domestic invention patents</td>
<td>5.8</td>
<td>6.4</td>
<td>9.0</td>
</tr>
<tr>
<td>Number of registered copyrights of works (in 10,000s)</td>
<td>84.5</td>
<td>90</td>
<td>100</td>
</tr>
<tr>
<td>Number of registered copyrights of computer software (in 10,000s)</td>
<td>16.4</td>
<td>17.2</td>
<td>20</td>
</tr>
<tr>
<td>Total transaction amount of the technology contracts registered on the national technology market (in trillion yuan)</td>
<td>0.8</td>
<td>1.0</td>
<td>2.0</td>
</tr>
<tr>
<td>Amount of IP pledge financing by year (in 100 million yuan)</td>
<td>687.5</td>
<td>750</td>
<td>1800</td>
</tr>
<tr>
<td>Export income from royalties and franchise fees for proprietary rights (in 100 million USD)</td>
<td>13.6</td>
<td>20</td>
<td>80</td>
</tr>
<tr>
<td>Average annual growth rate of the operating income of IP service industry (%)</td>
<td>18</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>

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Main Expectation Indicators for Implementation of Intellectual Property Strategy in 2014–2020  (continued)

<table>
<thead>
<tr>
<th>Indicators</th>
<th>2013</th>
<th>2015</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social satisfaction at IP protection (points)</td>
<td>65</td>
<td>70</td>
<td>80</td>
</tr>
<tr>
<td>Cycle of average substantive examination of invention patent applications (month)</td>
<td>22.3</td>
<td>21.7</td>
<td>20.2</td>
</tr>
<tr>
<td>Average examination cycle of trademark registration (month)</td>
<td>10</td>
<td>9</td>
<td>9</td>
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</table>

In contrast, in the 2019 version of the Action Plan (2019年深入实施国家知识产权战略加快建设知识产权强国推进计划), the “expect target numbers” were visibly absent, and the focus areas instead turned to structural changes to the IP management system, strengthening the protections for IP rights, completing the draft amendments to the Patent Law, and so on.\(^{10}\)

It is quite possible that the number-driven performance matrix for government officials in the early years led to intense efforts by governments of all levels to grant various forms of patent subsidies, patent-related tax incentives, and other incentive programs. Although the policy goals were achieved as a result, the central government understood it needed to switch gears and address quality and other issues.

The Several Opinions on Accelerating IP Power Construction under New Conditions (国务院关于新形势下加快知识产权\(^\text{10}\). http://www.sipo.gov.cn/gwyzscqzlssgzbjlxkybgs/gzdt_zlbgs/1139877.htm.}
Introduction to the Chinese Legal Framework for Commercialization

强国建设的若干意见) of 2015 probably marked the first clear sign of a change in direction.\textsuperscript{11} In Several Opinions, the government made it clear that China aspired to be a “Strong IP country” rather than a “Big IP country.” Although “Strong IP” was not explicitly defined, it generally referred to the optimization and elevation of IP creation, commercialization, protection, management, and services leading to competitive advantages in international competition. The document articulated clear goals toward an improved IP system that integrates power and responsibility, and divides work rationally and efficiently to enhance Chinese IP capabilities in creation, utilization, protection, and international competitiveness. Although the older themes of administrative reform, protection, and overseas IP risk management were still present, newer themes emerged on the commercialization of intellectual property rights, integrating IP into the financial system, and building an IP culture.

The numbers game still remains, but it is now more nuanced. For example, a “Five-Year Plan” is a traditional way the Chinese government announces its goals for economic development for the next five years. Currently, it is on its 13th cycle, and this is the first-time intellectual property is listed as a part of the plan. Some sample number-oriented goals to achieve by 2020 in the 13th Five-Year Plan on the National IP Protection and Usage (十三五国家知识产权保护和运用规划)\textsuperscript{12} include the following:

- Increase the number of patents for every 10,000 people from 6.3 to 12

\textsuperscript{11} SIPO’s English translation of the document is available at http://english.sipo.gov.cn/about/gazettes/2015/201702/P020170215515766228633.pdf.

\textsuperscript{12} http://www.gov.cn/zhengce/content/2017-01/13/content_5159483.htm.
• Increase by nearly three times the amount of IP mortgaged loans

• Increase public satisfaction in IP protection from 70 percent to 80 percent

The Chinese government does not stop at the articulation of abstract ideals; the agencies responsible have taken active steps toward realizing these goals. For example, to enhance protection of IP rights at a local level, CNIPA consolidated local enforcement resources by combining administrative offices overseeing patents, trademarks, and copyrights into one office in selected cities.13 As initial experiments, these three-in-one local IP offices were set up in selected locations such as Xiamen, Qingdao, Shenzhen, Changsha, Suzhou, and the Xuhui district of Shanghai. Free trade zones were also targeted as experimental grounds for testing the three-in-one concept. These reforms were intended to make enforcement of patents and other rights easier by providing a more powerful administrative route to enforcement under local IP offices in addition to the judicial route.

CNIPA also set up Speedy Enforcement Centers in selected cities known to be the centers of certain industries, for example, Nantong for textiles, Dongguan for furniture, and Zhongshan for lighting.14 The government in general encourages private dispute resolution channels such as arbitration, mediation, and self-regulation by associations. There are new measures to

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14. For example, please see discussion of such Speedy Enforcement Centers at http://www.iprdaily.cn/article_17803.html (in Chinese).
provide tighter integration between judicial enforcement and other private resolution channels, such as allowing arbitration bodies to use judicial resources to carry out preliminary protection measures which are not available very often in private arbitration.¹⁵

The most controversial of such new efforts to protect IP rights probably is the “social credit” system, under which an individual’s IP infringement activities, along with other economic and social activities, will be entered into the individual’s “social credit.”¹⁶

On the commercialization front, the Chinese government is generally experimenting with ways of integrating IP into the financial industry by allowing IP owners to secure loans, accepting IP assets as capital contributions when forming new ventures, providing a more liquid market for exchange of IP assets, and reducing IP risks for new enterprises and products when selling overseas. The government is actively encouraging and assisting platform operators to help with such tasks.

A good example of such efforts can be found in the southern city of Shenzhen, across the bay from Hong Kong. Shenzhen is the hub of high-tech companies in China, and therefore it is naturally one of the front-runners in the commercialization experiment in China. The Shenzhen government actively

¹⁵. Under the new regulations issued by the Supreme People’s Court regarding preservation measures in IP disputes, Article 3 specifies that parties under arbitration may apply for preservation measures at the People’s Court with jurisdiction over the resident address of the requestee. The new regulations entered into force on January 1, 2019.

¹⁶. See, for example, the recent article by Wired regarding China’s social credit systems, at https://www.wired.com/story/age-of-social-credit.
induces a market component into the IP system by promoting IP-based investment, licensing, insurance, and alliances. The newly approved commercialization center, the Shenzhen South IP Operation Center (南方知识产权运营中心), is an active implementation tool of such goals. This center has the formal approval of the central government. Furthermore, although the Shenzhen government was adamant that it would only provide guidance, it is nevertheless an important funder. The center focuses on the strategic emerging technologies important to Shenzhen and helps with licensing, transactions, investment, financing, and securitization of IP rights. The Shenzhen government set up an Intellectual Property Operational Fund to launch the Center and other operations. The Shenzhen government contributed 20 percent of the initial funding (2 billion RMB, or about 300 million U.S. dollars), with the remaining funds coming from the “public.” The governments still play pivotal roles of market maker and infrastructure builder.17

IV. Recent Legislative Changes Relevant to Commercialization

A. Current Intellectual Property Framework

As noted by many in the China IP space, there is no shortage of IP laws and regulations to protect the IP rights issued in China, or to regulate and increase the transmission of technologies originated from outside of China into the Chinese market. Similar to the problems of having too many IP rights in China

explained in the previous section, enforcement and regulation of IP rights in China also suffered from the problem of having too many laws and too many enforcement agencies.

China has a set of core IP laws governing each of the basic IP rights: patents, trademarks, and copyrights. Each law has a set of implementing regulations, and each administering agency may have its own examination guidelines. The enactment of the Patent Law took place in 1984, following the enactment of the Trademark Law in 1982. The Chinese Copyright Law, adopted in 1990, was the latest among the modern core IP laws in China.

China is a member country to most of the world’s international IP organizations and treaties; on the patent side, China is a member of the World Intellectual Property Organization (WIPO), and the World Trade Organization (WTO); China is also a signatory country to the Paris Convention for the Protection of Industrial Property, the Patent Cooperation Treaty (PCT), and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).

Until recently, the issuance or registration of each type of rights was administered by a separate agency. However, since 2018, patents and trademarks have been examined and issued under the same agency, but copyrights are still administered separately.\(^\text{18}\) The consolidation of the patent and trademark agencies was a part of the sweeping restructuring of China’s State Council introduced during the “Two Meetings” of the National People’s Congress and the People’s Political Consultative Conference in March 2018. After the reorganization, China’s State Intellectual Property Office (SIPO) was renamed the China

\(^{18}\) See supra note 3.
National Intellectual Property Administration (CNIPA) beginning August 28, 2018. Even though CNIPA has expanded jurisdiction to cover both patents and trademarks (including geographical indications), administratively it dropped a level and is no longer supervised by the State Council. Rather, CNIPA is now supervised by the also newly established State Administration of Market Regulation (SAMR).

As for protection, China has employed the dual track enforcement system of administrative enforcement and judicial enforcement; most patent right holders seek remedies through the judicial route through the court system. However, it is clear, especially under the proposed fourth amendments to the Patent Law, that CNIPA will take on a bigger share of the enforcement responsibilities currently shouldered by the judiciary.

In addition to the core laws, there are other laws and regulations in the IP system that are important to commercialization. For example, readers may refer to chapter 3 by David Ai for a discussion of relevant laws relating to technology transfers by academic institutions. China is also drafting Service Invention Regulations (SIR) to make sure the inventors, along with their employers, will profit from their innovative efforts. There are also less-frequently cited and more-inspirational types of laws, such as the Law on Scientific and Technological Progress (LSTP) and the Law on the Promotion of Transformation of Scientific and Technological Achievements (LPTSPA). There is also the Anti-Monopolies Law, which aims to curb abusive use of patents.19

B. Building a Robust Legal System to Support Commercialization


Although in commerce patents are considered much more as assets than a legal right to be enforced, it is still true that an effective enforcement mechanism is the best way to give value to a patent even in China. The Chinese courts, in general, are much more reluctant to do the actual calculation for damages; however, once infringement is proven the routine issuance of an injunction basically forces the parties to work out the damage awards through their own negotiation.

All three core laws introduced in the previous section have been amended multiple times in the past, and the Patent Law in particular has been amended most regularly. Some amendments were made to improve protections for the products or processes; some amendments were added to comply with international pressure or to enter into international treaties. For example, the first amendments of the Patent Law of 1992 expanded the scope of patent protection and extended the protection period of some patents. In 2000, the Patent Law was amended to meet the requirements of the TRIPS Agreement for China’s accession into the WTO. The third set of amendments, adopted in 2008, was comprehensive in scope and carefully scrutinized by parties inside and outside of China. The third amendments received much international attention because lack of IP enforcement in China was the hot topic of the day; SIPO sent visiting delegations to several important trade partners for their feedback before final adoption of the amendments. The author helped to organize a day-long seminar for the
SIPO delegation sent to the United States through the sponsorship of the U.S. Chamber of Commerce and the American Bar Association’s (ABA’s) Intellectual Property Law Section. Many more changes were considered than were adopted; the final amendments concentrated on the application standards and requirements and improvements to the design system. There were also some changes to patent ownership and enforcement-related provisions.

Of note is that the legislative process in China is often lengthy because it is based on consensus building among different agencies. For example, the SIPO delegation for the Third Amendments mentioned in the above paragraph comprised members from the Patent Office, the Supreme People’s Court, the State Council, and so on. Generally, the four major “pillars” for passing the intellectual property legislations include the National People’s Congress, State Council, administrative agency, and the judiciary. In the past, many amendments were taken from past judicial interpretations issued by the Supreme People’s Court. As administration and enforcement gain importance, it remains to be seen if the influence of the judiciary will decrease proportionally.

Looking at the short history of the Chinese IP legal framework, many observers note that China has in 30 years reached the level of IP protection that required Western countries more than 100 years to develop. Of course, under this accelerated schedule, China has in many instances only fulfilled the legal requirements but failed to actually enforce the laws. Furthermore, as mentioned earlier, the concept of private ownership of innovation is counterintuitive to the public accustomed to a planned economy with shared resources. However, as China successfully experiments with its socialist market economy, and as more domestic companies seek patent protection, the
Chinese government is beginning to make proactive changes and craft its own solution to IP problems.

For example, under the fourth amendments to the Patent Law which have been under discussion for several years, the proposed changes could include the following:

1. Damages—the newest proposal included the introduction of punitive damages for willful acts of infringement. Extra penalties will be granted for willful infringements and “where the situation is serious,” and the final amount may be increased up to five times the normal compensation. The proposed amendments also increased the possible amount allowed for statutory damages.

2. Open license—a patentee may inform CNIPA of its willingness to license its patents to anyone and provide relevant royalties and method of payment. CNIPA will announce the patentee’s statement. This new concept should make patent licensing much easier for individuals and smaller corporations.

3. Administrative enforcement—new amendments included provisions that will increase the amount of fines administrative authorities may collect from those for passing off a patent. Furthermore, powers of the administrative patent enforcement authorities will cover patent infringement cases, and cases with a “nationwide significance.”

Independent of the amendments to the Patent Law, the judiciary has also undertaken a major step toward better judicial enforcement by setting up a National Appellate IP Court. On December 28, 2018, the Supreme People’s Court of China made public the Regulations on Several Issues concerning
the IP Appellate Court (最高人民法院关于知识产权法庭若干问题的规定). The National IP Appellate Court became operational on January 1, 2019. According to Article 1 of the Regulations, the judgments of this IP Appellate Court are considered judgments of the Supreme People’s Court. The former IP Tribunal (Civil Division Three) of the Supreme People’s Court coexists with the IP Appellate Court. Some of the judges from the Civil Division were transferred to the newly established IP Appellate Court. Located in Beijing and far away from local influence at the provincial level, this new court should remove the effect of local protectionism and iron out inconsistent application of the laws in different provinces of China.

Efforts to enhance the patent enforcement mechanism involve quite a bit of self-interest. China is increasingly seen as a regular destination for patent fights between multinationals, a desirable development in the eyes of the government officials and the practitioners. The recent patent battle between Qualcomm and Apple is one such example. Factors such as lower costs of litigation, faster resolution of cases, and the availability of preservation measures and injunctive relief have all contributed to China’s growing popularity as a litigation destination.

2. Fairer Licensing Treatment for Foreign Parties

Although a source of constant tension before, the current trade dispute between China and the United States has moved beyond the critique of lack of IP enforcement in China. Underlying the current trade tension is a change in the relationship between the United States and China from cooperation partners to strategic competitors. Furthermore, the compliance that the United States seeks now is more than just compliance with international legal standards or eradication of IP thefts; rather,
the United States demands substantive incorporation of market economy principles into the Chinese system.\textsuperscript{20} It remains to be seen if these attitudinal changes are associated with the occupants of the White House, or whether they mark a real change in U.S.-China policy for decades to come.

The start of the current U.S.-China trade tension traces back to the USTR 301 Report\textsuperscript{21} issued in March 2018. The Report accuses the Chinese government and companies of undertaking a wide variety of actions to steal U.S. technologies, ranging from cyberattacks to government-funded or -directed overseas acquisitions, hiring of key technologists with vital trade secrets from overseas competitors, and others. More relevant to the topic of commercialization is the report’s accusation that China’s acts, policies, and practices related to technology transfer, intellectual property, and innovation are unreasonable, nonreciprocal, and discriminatory, constituting restrictions on U.S. commerce. The report points to specific regulations such as the Technology Import and Export Regulations (TIER) as ways to force foreign firms wishing to do business in China to transfer technologies to Chinese parties; the report concludes that the Chinese government is using provisions in its legal framework to force multinationals to transfer technology and IP rights on terms they would not accept under ordinary commercial circumstances.

\begin{footnotesize}

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In addition to the report, the United States also filed a WTO complaint against China regarding the same allegations.\textsuperscript{22} The WTO complaint alleges the following legal instruments individually and collectively:\textsuperscript{23}

1. Foreign Trade Law of the People’s Republic of China (adopted at the Eighth Session of the Standing Committee of the Seventh National People’s Congress on May 12, 1994, effective July 1, 1994, in Executive Order No. 22, amended by the Eighth Session of the Standing Committee of the Tenth National People’s Congress on April 6, 2004, effective July 1, 2004, in Executive Order No. 15, further amended November 7, 2016, in Executive Order No. 57)


3. Law of the People’s Republic of China on Sino-Foreign Equity Joint Ventures (adopted at the Second Session of the Fifth National People’s Congress on July 1, 1979, effective July 8, 1979, in Order No. 7 of the Chairman of the Standing Committee, amended April 4, 1990, in Executive Order No. 27, further amended March 15, 2001, in Executive Order No. 48, and September 3, 2016, in Executive Order No. 51)

\textsuperscript{22} https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds542_e.htm. The case is currently under suspension until December 2019 by U.S. request. 
\textsuperscript{23} Id.


At the time of writing, trade tension remains and seems to be escalating. However, China has responded to the allegations by adopting some legal changes, including efforts to increase IP protection, as stated in the previous section, amend relevant laws, delete certain provisions in the TIER, and introduce a new Foreign Investment Law which also deletes, among others, the Sino-Foreign Equity Joint Ventures Law.

a. New Foreign Investment Law

On March 15, 2019, China’s National People’s Congress passed the Foreign Investment Law (FIL). Even though this should turn out to be an important law, this new law passed quickly and without much fanfare. It seems to be in direct response to the WTO complaint filed by the United States against China at the beginning of the current U.S.-China trade tension, in which,
among other things, the Law on Sino-Foreign Equity Joint Ventures and its implementation regulations are cited as violating the TRIPS Agreement.

In a nutshell, the FIL codifies many broad principles, initiatives, and policies from the past, which were initiated and implemented in different regions of China and at various levels of China’s vast and complex bureaucracies, often sparingly, unevenly, and to varying degrees. FIL aims to create an equal regulatory framework for foreign investors, and a system to promote and protect foreign investments. For example, Article 22 states in full that:

**Article 22** The State shall protect the intellectual property rights of foreign investors and foreign-funded enterprises, and protect the legitimate rights and interests of holders of intellectual property rights and relevant right holders; in case of any infringement of intellectual property right, legal liability shall be investigated strictly . . . in accordance with the law.

During the process of foreign investment, the State shall encourage technology cooperation on the basis of free will and business rules. Conditions for technology cooperation shall be determined by all investment parties upon negotiation under the principle of equity. No administrative department or its staff member shall force any transfer of technology by administrative means.

This article is typical of language used in this law in that the articles tend to be rather vague and declaratory; therefore, until its implementation regulations are released, it is difficult to say much more before its effective date of January 1, 2020.

However, the FIL will replace the three primary laws regulating foreign-invested enterprises in China: the Law on Sino-Foreign
Equity Joint Ventures, the Law on Wholly Foreign-Owned Enterprises, and the Law on Sino-Foreign Cooperative Joint Ventures. The Sino-Foreign Equity Joint Ventures Law is the one targeted in the WTO complaint filed by the United States.

**b. Removal of Certain TIER Provisions**

Another response to the WTO complaint filed by the United States against China is the immediate deletion of certain provisions in TIER.

In addition to being featured in the USTR 301 Report\(^\text{24}\) of March 2018, TIER has long caught the attention of U.S. and other foreign companies doing business in China because it contains restrictions that only apply to foreign-related technology transfer contracts. The WTO complaint filed by the United States in March 2018 alleges that specific provisions are not consistent with the TRIPS Agreement:

Article 24 of the Regulations accords less favorable treatment to foreign intellectual property rights holders as compared to Chinese intellectual property rights holders. For example, Article 24 requires that licensors to imported technology contracts indemnify licensees for all liabilities for infringement resulting from the use of the transferred technology.

Article 27 of the Regulations accords less favorable treatment to foreign intellectual property rights holders as compared to Chinese intellectual property rights holders. For example, Article 27 requires that any improvements in imported technology belong to the party making the improvement.

Article 29 of the Regulations accords less favorable treatment to foreign intellectual property rights holders as compared to Chinese intellectual property rights holders. For example, Article 29(3) prohibits an imported technology license contract from restricting a Chinese party from improving the technology or from using the improved technology.

Passed in 2001 and taking effect in 2002, TIER was an administrative measure that aimed to protect Chinese parties in a cross-border technology import transaction. It was enacted during a time when the Chinese government thought the small Chinese factories needed extra protection against giant U.S. companies coming to do business in China. As licensing is the primary means by which technology is introduced into a market and as China continues to grow and gain bargaining powers, it is time to remove these antiquated provisions and allow the parties to negotiate a licensing agreement without government interference and on mutually beneficial terms.

As a result, the State Council of China on March 18, 2019, released Administrative Order No. 709 announcing the immediate removal of Article 24(3), Article 27, and Article 29 from TIER.

Some commentators have noted that the removed articles still have similar counterparts in the Contract Law or other Judicial Interpretations issued by the Supreme Court. For example, even though Art. 29 of TIER regarding ownership of improvement to transferred technology has been removed, Art. 61 and Art. 354 of PRC Contract Law still provide that “parties of a technology transfer contract can contractually

agree on how to share the ownership of the improvements; in the absence of such an agreement or if the agreement is unclear, the improvements belong to the parties making the improvement” (underlining added).

V. Conclusion and Practical Advice

A. Conclusions

China is at a crossroads. The manufacturing-based economy, which allowed China to ignore issues such as branding, distribution, and innovation, was able to make China an upper-middle-income country. However, with rising wages, an aging population, and serious environmental degradation, China realizes it needs to transform itself into a service-oriented economy built on technological innovation.

Some of the Chinese government’s attempts at catching up with more technically advanced countries have led to unacceptable shortcuts. During the past decade, China has practiced protectionism (state-led indigenous innovation policies and preferential treatment for domestic companies), provided a less-than-rigorous enforcement environment, turned a blind eye to infringing acts, allowed low-quality patents to be issued to boost its international status, or helped domestic companies to acquire foreign technologies through some regulations (TIER).

At the end of the great catch-up game, China has built a reputation for being a tough competitor and a first-rate manufacturing base for the world. At the same time, China also developed a reputation for being a high-risk IP country where IP rights can be infringed, stolen, or forcibly transferred.

It remains to be seen if the current trade tension will actually push China to become an innovative country that plays by international standards and rules. The attempts to link patents
and commercialization through improvements to the current protection framework and new laws are all positive steps in the right direction. In the new world of IP where patents are financial chips for influence, alliance, and resources and funding, China realizes that the old laws and regulations need to be amended to prepare China for the new IP reality.

As this book is being written, the author observes that the Chinese government is actively amending and adding to its legal framework to create an IP framework with Chinese characteristics that also fulfills its international obligations. Some amendments to the Patent Law show promise, as does the deletion of TIER and the passage of the FIL. However, past experiences have shown that more amendments are considered than adopted, and the final amendments were always limited in scope. FIL is still an unknown, but definitely pointing to a fairer attitude.

At the same time, China is not likely to abandon its core values of social planning, or its tendency to integrate patents as one of many tools to advance the government’s strategic goals. It remains to be seen if an IP system with Chinese characteristics can resolve complaints from its trading partners, foster innovation, and yet stay true to its core values.

**B. Common-Sense Advice**

In this transition period, what can foreign patent owners do? I suggest the following simple steps:

1. Have the necessary IP rights.

2. Deal with reputable partners when doing business in China.
3. Do not forget the role of the government. Have a full understanding of the entire legal framework from IP laws to FIL to anti-monopolies law. Keep up to date with the newest changes and be ready to capitalize on improvements.

4. Fulfill your responsibilities with regard to all administrative approval and recording requirements. Be bold to assert your rights. However, at the same time, keep in mind that licensing is seen more as a part of technology transfer to enhance the licensee’s business or technology level. Pure licensing activities based on the threat of litigation without added business value may not find much support.

5. Think ahead about possible disputes in the future. In addition to compliance, pay attention to the language and controlling laws in your contract. Think ahead whether you are heading for administrative agencies, courts, or private arbitration or mediation when troubles arise.

6. From a broader perspective, keep in mind that the Chinese patent system has considerations and objectives outside of protecting patent owners. You will be able to further your goals if you can integrate other social goals into your private objectives.

China will remain an important business partner of the United States even as it is increasingly seen as a competitor. There are still IP rewards to be reaped in China through commercialization.
2 Intellectual Property Commercialization in China in View of Patent Commercialization

I. Introduction 34

II. The Definition, Origin, and Status Quo of Intellectual Property Commercialization in China 35
   A. Definitions 35
   B. Origin 36
   C. The Status Quo (2017) 36

III. The General Policies of China in Intellectual Property Commercialization 40

IV. The Interior and Exterior Motivations of Business Entities in Intellectual Property Commercialization in China 42
   A. The Interior Motivation for Intellectual Property Commercialization 42
   B. The Exterior Motivation for Intellectual Property Commercialization 44
      1. Inspiration from Government Policies and Attitude of Society to Intellectual Property 44
I. Introduction

Intellectual property (IP) plays an increasingly vital role in development globally, and this development also brings abundant business opportunities to enterprises. Driven by this trend, more and more business entities have initiated the strategy of IP commercialization, especially to try to enter one of the largest markets, China. Meanwhile, the government of China has also recognized this engine of development and expects to provide an attractive platform to both domestic and global enterprises, in order to activate the market and stimulate China’s economy. For business entities to take hold of the potential opportunities and avoid risk in this market, knowledge of the characteristics of IP commercialization in China, such as the history of its development and legal system, is necessary.

This chapter briefly demonstrates the definitions, origin, and status quo of IP commercialization in China. It also discusses the imbalance of the development of this market. Section III lists general strategies introduced by the government of China to accelerate the growth of IP commercialization. Section IV analyzes the interior and exterior factors that prompt business entities into IP commercialization in China.
The interior factor is the business models of corporations in different stages of development. The exterior factors include benefits derived from governmental policies and reforms of the legal system. Section V concludes.

II. The Definition, Origin, and Status Quo of Intellectual Property Commercialization in China

A. Definitions

Three definitions of IP commercialization are offered here. The first is very broad: The World Intellectual Property Organization (WIPO) describes IP commercialization simply as “making money out of one’s idea.”¹ Such a definition is so abstract that it cannot give market players an explicit portrait of this type of business activity. More clearly, the general definition of IP commercialization, especially patent commercialization, is the utilization of all strategies comprehensively to realize the market power and value of a patent portfolio.² The strategies cover transfer, license, pledge, and other intermediary services for the sake of patent commercialization, such as patent evaluation, patent insurance, patent guarantee, patent litigation, and other commercial activities related to patents.³ This definition outlines a mature and comprehensive IP commercialization market. Finally, the specific definition of IP communication,

³. Id.
again in patent, is only limited to the operations of a patent portfolio in order to generate profits from it, including transfer, licensing, and so on.4

B. Origin

The growth of IP commercialization in China has been rapid but, in fact, it only has an approximately 30-year history, beginning in 1985 when the Patent Law of the People’s Republic of China was enacted.5 At that time, however, the government of China did not place a great deal of emphasis on IP commercialization. The idea of IP commercialization emerged in 1988 when the Chinese leader Deng Xiaoping announced that science and technology were the highest in productivity.6 In accordance with his statement, policies and statutes related to IP were promulgated to substantiate his idea. These laws and policies continue to promote the development of IP commercialization in China.

C. The Status Quo (2017)

Nowadays IP commercialization in China has become a comprehensive and vital industry. For patents, the data illustrate

4. Id.
that in the year 2017, the annual total amount of patents granted by the China National Intellectual Property Administration (CNIPA) was 1,836,434, including invention, utility model, and design patents. However, in 1988, the total number of patents granted was only 11,947. Patent commercialization took place more than 170,000 times in the year 2016, compared with 55,000 times in 2009. There were 27,305 lawsuits for patent infringement in the year 2017, compared with 794 in the year 2000. From these data, it can be seen that during the past 30 years IP commercialization in China increased significantly.

However, the potential for IP commercialization is enormous in China, because imbalance in its overall development still exists. The number of patent applications, which is the foundation of patent commercialization, can be one index to reflect such an imbalance, because the prosperity of IP commercialization usually derives from a boost in the number of IP applications. Therefore, in this chapter, the data on patent application are used to reveal the development of IP commercialization.

The Number of Patents Granted in China


The Number of Patent Commercializations

The imbalance can be interpreted from three dimensions. First, the development of IP commercialization in different industries is imbalanced. Certain industries, such as information and communication technology (ICT), grow faster and more soundly than others. In the year 2017, the total number of patent applications in ICT was 76,178.\(^{12}\) In contrast, in other industries, IP commercialization is still underdeveloped. For instance, in optics, the number of patent applications was only 12,895 in 2017.\(^{13}\) Second, imbalance exists among different business entities within the same industry. For example, in ICT, by the year 2017, both Huawei and Xiaomi controlled large portions of the handsets market in China.\(^{14}\) However, Huawei holds 74,307 patents,\(^{15}\) but Xiaomi only holds 6,324 patents.\(^{16}\) Finally, imbalance also exists in different regions and provinces of China. Due to the high speed of economic development in coastal regions of China, the growth of IP commercialization has also been more dramatic in these areas. For instance, the total number of patent applications in three coastal provinces was 962,108 in the year 2017.\(^{17}\) However, the total number

\(^{12}\) Supra note 8, at 166 (in Chinese).

\(^{13}\) Id at 165.


\(^{17}\) Supra note 8, at 3.
of patent applications in three northwest provinces was only 126,564. It can be argued that although these dimensions of imbalance are significant, it is merely the side effect of rapid development in China. Compared with IP commercialization in developed countries, which has been built up over more than 100 years, it is unfair to regard the imbalance of IP commercialization in China as an unreasonable consequence. However, this imbalance is still a problem. Elimination of the imbalance, however, usually brings potential business opportunities to both domestic and foreign corporations. The next section describes the macro-policies of the government of China to show its expectation of overcoming such imbalances.

III. The General Policies of China in Intellectual Property Commercialization

The Chinese government has designed multiple national strategies to support the development of IP commercialization and resolve the imbalances identified in the previous section.

After Deng Xiaoping called for the development of innovation, the Chinese government made this one of the top national strategies. In 1994, China became one of the contracting states of the Patent Cooperation Treaty (PCT) and the China Patent Administration was given the authority to accept international patent applications. In 2001, China joined the World Trade Organization (WTO) and accepted the requirements of the Agreement on Trade-Related Aspects of

18. Id. at 3–4.
Intellectual Property (TRIPS). In 2005, the National People’s Congress announced the strategy of building an innovative country. This strategy clarified that innovation and creation had become a core impetus for the development of China. In 2006, the State Council of the People’s Government published “The National Medium- and Long-Term Program for Science and Technology Development (2006–2020),” which provides more detailed instructions on the development of innovation.


The current IP commercialization market in China reflects that these policies have successfully inspired the market’s

23. Zhou, supra note 2, at 15.
24. Id.
development. However, the imbalance, as discussed in the previous section, remains. To address this, it is necessary to analyze the incentives for business entities to engage in IP commercialization.

IV. The Interior and Exterior Motivations of Business Entities in Intellectual Property Commercialization in China

For business entities, the core purpose of conducting IP commercialization is profit or even survival—a purpose that is supported by both interior and exterior incentives. In this section, the interior and exterior motivations for development are outlined. Section A discusses the needs of business entities that drive them into IP commercialization. Section B reveals the outside factors that support business entities to carry out IP commercialization, including “carrot” policies and “stick” measures from the government of China. Again, all the arguments focus on the ICT industry and patent commercialization.

A. The Interior Motivation for Intellectual Property Commercialization

It was inevitable for Chinese enterprises to devote themselves to IP commercialization in the past 30 years because of the adjustment of their business models in response to intense competition. In the ICT industry, in the era of 2G (second-generation wireless telephone technology), Chinese companies possessed only a few patents. At that time, Chinese companies were only concerned with the applications of these patents and tried to target the appropriate approach of participation in international standard setting organizations. IP commercialization, then, was not a major factor in their business models. However, in the
era of 3G, Huawei and ZTE invented more technologies and converted them into patents, including also standard essential patents (SEPs). At this stage, Chinese companies faced litigation for patent infringements because they had begun to play a more important role in the industry. Also, they were requested to license their SEPs to other players of the industry under Fair, Reasonable, and Non-Discriminatory (FRAND) commitments, because their patents were valuable in the standards setting organizations, so other companies required Chinese companies to license their patents.

Later, in the era of 4G, IP commercialization became indispensable for Chinese ICT companies. A few of them held a large number of SEPs and patents in other crucial technologies. In 2017, Huawei applied for 4,024 patents and ranked first in the industry for number of patent applications. ZTE ranked second. They applied for many more patents compared with other corporations, such as Intel and Qualcomm. During this period, they needed to fully engage in IP commercialization in order to monetarize their technologies into profits and maintain their dominant positions in the industry. They attempted to cross-license with other corporations, transfer their patent portfolios, establish or take part in patent pools, and deal with both domestic and international litigation for patent infringement. From the time line described above, the internal incentive for Chinese companies in IP commercialization was to thrive in step with their development in the industry.


26. Id.
B. The Exterior Motivation for Intellectual Property Commercialization

1. Inspiration from Government Policies and Attitude of Society to Intellectual Property

To promote the development of innovation and creation, the government of China has promulgated a series of specific IP policies. Most of the policies are “carrot” rather than “stick,” which means that business entities can obtain extra benefits if they follow the directions of the government.\(^{27}\) The goal of these governmental policies is to implement more effective promotion of reform schemes to maximize the incentives for innovation and creation. In general, there are four main approaches to encouraging innovation and creation.

First, the central government of China repeatedly emphasizes the importance of creation and innovation in their official announcements. For instance, in 1995, the government of China declared its stance of encouraging innovations and inventions in “the Decision made by the Central Committee of the Communist Party of China and the State Council of China about Expediting the Progress of Scientific Technologies.”\(^{28}\) The declaration clarified the direction of development. Policies and regulations drafted by other administrative institutions in China follow this direction. It also gave enterprises within China’s market a hint

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of overall arrangements in their future business operations. For instance, in 2015, the State Council of the People’s Government published “The Brief of National Strategy of Intellectual Property” and established a schedule that the government of China expected to achieve the capacities for strong creation, application, protection, and administration of IP by the year 2020. The government also presented “Several Opinions toward Developments of Intellectual Property in a New Era” and claimed again that “it is important for the implementation of a National Strategy of Intellectual Property.” Other relevant national declarations of the government also demonstrated similar views. All these governmental documents showed that the enhancement of IP was a strong priority in the future development of China.

Second, business entities can be rewarded subsidies by government if they submit patent applications. Provinces and municipalities have formulated their own policies to increase the number of patent applications, in order to meet the requirement of Section 2.1 of the “National Strategy of Intellectual Property.” Some local governments pay corporations 1,500 RMB and individuals 1,000 RMB if they are successfully granted a patent. Some have set up a foundation for intellectual property creation and innovation to reward patent applications. By the establishment of these financial incentives, governments hope business entities become willing to spend more on research and development (R&D).

30. Id.
31. Id.
Third, the government of China offers taxation benefits to encourage IP applications. Specifically, business entities can be granted tax deductions by local governments if they are certified as a “High Technology Enterprise.” The number of patents held by such business entities is one of the thresholds for granting certificates of High Technology Enterprise. The preferential policies toward High Technology Enterprise is considerable for business entities, because they can get double tax deductions. The first tier of tax deduction is a national tax allowance, which stipulates that the corporate income tax rate will be reduced 15 percent. Expenses for R&D can also be employed as tax payment. The second tier is local tax deductions offered by the local governments. For instance, in one city, High Technology Enterprises can be rewarded 100,000 RMB. This policy not only stimulates the corporations to innovate, but also directly supports IP commercialization, because many companies that have no capacity to create technologies have to acquire patent portfolios from other companies.


However, subsidies based on number of patent applications may lead the market in the wrong direction because business entities may apply for a large number of worthless patents in order to meet the threshold.\(^{37}\) Therefore, after August 2018, the government of China adjusted its policy on subsidies. The CNIPA released the “Notification of Investigation on Governmental Policies of Intellectual Property Application,” which advised that the subsidies for patent applications would be granted under stricter supervision.\(^{38}\) Under this policy, many local governments suspended their subsidies for patent applications.\(^{39}\) Although it is still uncertain whether this policy can either enhance or damage the innovation of business entities in the Chinese market, multinational corporations that continue to work on inventions and high technologies, such as Huawei and ZTE, can benefit from this policy because they will pursue more valuable patent portfolios in the future.

Finally, IP can promote the branding of business entities, because society regards such companies as high-tech companies. They are predicted to be more advanced and vigorous, and their products may be regarded as more convenient. Therefore, business entities find it advantageous to obtain a large number of IP patents, whether acquired from others or from their own inventions, and disclose these, to display their respect for innovation. They expect to gain more profits from this strategy.

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Indeed, the list of approaches discussed above is not exhaustive. There are other detailed and tailored schemes. For instance, one scheme is to allow researchers and other officers of public institutions to obtain shares in their institutions in the form of “technologies plus cash,” to promote innovation.40 Another scheme is to develop financial services aimed at supporting innovation and invention. Financial institutions in China will create financial products to support innovative science and technology business entities, for example, by lowering the business risk and providing insurance against IP infringement.41 These schemes can supplement the main approaches effectively to stimulate business entities’ incentive to be creative and innovative.

2. Enhancement of the Chinese Legislative, Judicial, and Executive Systems for Patent Protection

Another source of exterior motivation for IP commercialization is the legal system in China. Beginning in 1985, the government established and strengthened legal systems to support the development of the IP market. This source of motivation can be regarded as a “stick,” because it punished illegal behaviors.42 However, with regard to patents, until 2010, there were still two main shortcomings of China’s legal system. First, the damages for patent infringement were quite low compared with

41. Id.
42. De Geest & Dari-Mattiacci, supra note 27.
the cost of litigation and profits from infringements, resulting in a failure of the legal system to protect patent holders from infringement. Second, evidence to prove patent infringement was hard to collect. The heavy burden of proof borne by the plaintiff increased the cost of litigation. These shortcomings deterred patent holders from seeking relief from China’s legal system and protection against illegal behavior. This explains why, although the number of patents granted in China is large and transactions of purchasing and licensing patents occur frequently, both the average and total values of patent portfolios in China are still lower than in the United States.  

Also, foreign patentees are reluctant to bring lawsuits in China against patent infringers. These issues reflect the need for the Chinese legal system to be reformed further to satisfy the needs of IP markets.

To overcome these shortcomings, the government of China has enacted measures in legislative, judicial, and executive branches to cope with the growth of the IP market in China. These measures are briefly summarized in the following sections.

a. The Legislative Branch

The government identified shortcomings in the climate for IP commercialization, and began exploring ways to enhance the legal system that could accelerate the development of IP commercialization in a more effective way. Basically, both

substantive law and procedural law have been reformed in recent years.

i. The Development of Substantive Law

In the field of patent law, the legislature keeps codifying and reforming the patent statutes. The Patent Law of the People’s Republic of China, the main substantive patent statute, was enacted in 1984. Since then, to ensure that the laws keep pace with the gradually increasing need for innovation, the legislature has introduced three amendments to the Patent Law, enacted in 1992, 2000, and 2008, respectively.

The fourth amendment is in process. In December 2018, the State Council delivered the new amendment initiative to the legislative body of China, the Standing Committee of the National People’s Congress of the People’s Republic of China. There are three major movements in this initiative. First, this new amendment will strengthen the sanctions against IP infringement by increasing the cost of illegal behaviors, for example, by significant increases in the damages awarded for intentional patent infringement and passing-off patents. Second, the proposal clarifies that patent infringers have the obligation to submit documents necessary for the litigation. Third, considering many infringements are committed through the Internet, the proposal deems network service providers jointly liable for patent infringement if they failed to discontinue the

45. Id.
infringement in a timely manner. Finally, the proposal reforms the system of patent certification and clarifies the mechanism of awards to inventors and designers for innovation.\footnote{National Intellectual Property Administration, PRC, \textit{supra} note 40.}

ii. The Development of Procedural Law

At the same time, procedural law, which can establish clear and specific civil procedures to ensure IP litigation is more formal, professional, and fair, is also being improved. There are two significant procedural mechanisms established in China. First, the government introduced three Intellectual Property Courts.\footnote{The Supreme People’s Court of The People’s Republic of China, \textit{The Report of The Court: Works Related to Intellectual Property}, http://www.court.gov.cn/zixun-xiangqing-58142.html (in Chinese).} These courts are located in the centers of innovation and finance in China. Thus, a large number of patent disputes takes place in these courts. The legislature took note that the Intermediate People’s Courts of these three cities were unable to take on the increasing volume of IP litigation because many of the judges lacked scientific knowledge, experience, and time. Therefore, the jurisdiction of IP disputes was transferred to these Intellectual Property Courts. The benefit of such an arrangement is that the judges employed in these courts are more experienced in IP matters. For instance, Ms. Shulan Li, the current vice president of the Shanghai Intellectual Property Court, heard many copyright protection cases before she was appointed judge in this court.\footnote{Judicial Protection for Intellectual Property, Comments and Judgments, \textit{the Expertise of Judges of Shanghai Intellectual Property Court} (2015), http://www.chinaiprlaw.cn/index.php?id=459 (in Chinese, accessed on December 23, 2018).}
The second significant reform of procedural law of China is that the Supreme People’s Court of the People’s Republic of China has sole jurisdiction over the patent cases on appeal.49 If certain parties appeal after trial, they must bring the lawsuit to the Intellectual Property Tribunal of the Supreme People’s Court of the People’s Republic of China.50 The purposes of this change include inspiring innovation and creation, building a sound commercial environment, and unifying the standards of judgment in patent matters.51 The last two purposes are more directly related to patent commercialization. On one hand, a sound commercial environment can provide a steady platform for IP commercialization. On the other hand, clear and unified judgment standards can lower the legal risk of IP commercialization. Therefore, this measure will drive the development of IP commercialization in China.

The judges in the Intellectual Property Tribunal must be strictly qualified in order to meet the large number of patent cases. In December 2018, the Supreme People’s Court of the People’s Republic of China recruited new judges for the tribunal. The candidates needed to have eight years or more working experience in intellectual property.52 Such measures ensure that the opinions delivered by these judges are more professional

50. Id.
51. Id.
and just in patent disputes. Moreover, the measure reflects the determination of the Chinese government to pay more attention to the establishment of an effective and sound legal environment for IP commercialization.

b. The Judicial Branch

Not only the legislature, but also the judicial system provides strong support for the development of IP commercialization by delivering fair and reasonable judgments in the litigation of IP protection. Although these judgments are not binding because China is a civil law country, they are still influential in the Chinese market and put significant weight on standardizing the business behaviors of corporations. In the ICT industry, business entities treat those judgments as key references for their daily business.

Three cases are worth noting. The first is Huawei v. Samsung, which was tried in 2016 in the Shenzhen Intermediate Court. In this case, one of the key issues is that Huawei claimed Samsung broke the FRAND commitments during their licensing negotiation. Both parties submitted evidence to reconstruct the process of negotiation. After determining the facts, the court delivered the opinion of the judges that affirmed a breach of the FRAND commitments.

The second case is Qualcomm v. Apple. Qualcomm brought a patent infringement case against Apple in Fuzhou Intermediate Court.

Court in 2018 and succeeded at getting an injunction granted by the court against Apple.\textsuperscript{54} This decision is regarded as a significant step forward for adjudication in China, because it demonstrates the determination of China’s judicial body to play a more important role in patent disputes.

The third case is \textit{Iwncomm v. Sony}, in which the first SEP injunction was granted and three times the licensing fee was awarded as damages.\textsuperscript{55} In this case, the SEP involved was included in a Chinese national standard for wireless connections. The Beijing High People’s Court held that SEP infringement cases should be handled differently from regular patent infringement cases, because SEP holders are obliged to license them under FRAND terms. Based on this view, the court held that Iwncomm had complied with its obligation in negotiating with Sony for six years on FRAND terms regarding the licensing of the SEP at issue, and that Sony was “at obvious fault” for “intentionally delaying.”\textsuperscript{56} The result of this case corresponded with Article 24 of the Supreme Court’s 2016 Judicial Interpretation, which allows injunction in SEP litigation.\textsuperscript{57}


\textsuperscript{57} David Shen, \textit{supra} note 55.
Also, reasonable royalty is a base for damages that can be applied in patent infringement cases in China, albeit rarely.\footnote{Id.}

Again, these cases are not case law. However, they are still worth analyzing by corporations to determine the opinions of the judicial branch. Without these decisions, IP commercialization would still linger in markets with more uncertainty and less principles.

c. The Executive Branch

The executive body, including the State Council of the People’s Government and local governments, also took a series of administrative measures to reform IP commercialization in China. The aim of these measures is to effectively protect IP and prevent infringement. For instance, the Ministry of Finance of the People’s Republic of China has asked all local governments to establish a system of IP commercialization. The first mission is to launch a series of specific actions to protect IP, including reinforcing measures against counterfeiting, habitual IP infringement, malicious IP infringement, joint IP infringement, and so on.\footnote{Sina, The Notification Continuing the Establishment of the System of Intellectual Property Commercialization Service in 2018, https://news.sina.cn/2018-06-04/detail-ihcmurvh2418413.d.html (in Chinese).} Following this direction, local governments codified executive regulations and measures to protect IP commercialization through administrative enforcement.\footnote{Eastday, Tianjin Promulgated 21 Key Measures to Enhance the Protection of Intellectual Property, http://news.eastday.com/eastday/13news/auto/news/china/20180107/u7ai7322612.html (in Chinese).} Some provinces have also
formed patent special squads for administrative enforcement to specialize in patent disputes. These governmental measures are designed in accordance with their regional situations, in order to provide suitable executive remedies to each case.

3. The Effect of Changes in China

The improvements in the legislative, judicial, and executive branches described above have effectively stimulated the IP market in China. Not only domestic enterprises, but also more and more foreign business entities are attempting patent commercialization in China. Besides the case of Qualcomm v. Apple discussed above, many non-practicing entities have received assistance from overseas financial institutions to acquire patents granted in China. After such acquisitions, non-practicing entities can expand their patent portfolios and claim patent infringement against ICT corporations in the Chinese market, for the sake of profits from patent licensing, as in the lawsuit brought by iPEL, Inc. against AsusTek. Moreover, many foreign patentees directly claim against Chinese entities for patent infringement, for instance Fractus v. OPPO. These cases


V. Conclusion

This chapter has depicted the overall status of IP commercialization in China, especially patent commercialization. It emphasized the rapid growth in IP commercialization and imbalances in the market in China. Undoubtedly, IP commercialization in China has flourished in the past 30 years. However, the growth trend did not smooth out imbalances in the development of IP commercialization. Such imbalances can be observed among different industries, different business entities within one industry, and in different regions and provinces of China. Section III described general governmental policies related to IP and the efforts of the government of China to establish a modern and sophisticated market for IP commercialization in order to enhance the economy. Section IV presented both interior and exterior motivations for business entities to engage in IP commercialization in China. Interior motivation includes the business model of survival and growth of enterprises. Exterior motivations include both “carrot” and “stick” measures introduced by the government of China. For example, business enterprises can obtain subsidies and tax deductions by promoting IP development. These activities can also improve the value of their brands. The government of China has also continuously updated the legal system, including the legislative, judicial, and
executive branches. The updates include a series of amendments and changes in both substantive and procedural statutes. Also, Chinese courts have delivered key decisions regarding IP that has had a strong influence on the ICT industry. Finally, the executive body has also approved administrative mechanisms for regulation of IP. All of these measures effectively enhance the development of IP commercialization in China.

From the discussion in the chapter, it can be seen that IP commercialization in China continues to improve. The government of China has recognized the drawbacks of the IP market. It has implemented systematic governmental measures to both solve the problems and accelerate the development of IP commercialization. It can be expected that the Chinese market will generate more opportunities for IP commercialization and play a more important role in global development of innovation and creation in the future. Therefore, business entities should pay more attention to the changes in governmental policy in China and consider the appropriate and legal approaches to achieve more leverage for their business operations. Such approaches may generate significant benefits to their local and global operational strategies.
Technology Transfer among Academic Institutions in China

I. Background of China’s University System  60
   A. Competitive Environment: Universities and Various Rankings in China  60
   B. Rapid Expansion of Higher Education  63
   C. Returnees Contribute to Academic and Industry Research Power  65
   D. Unique Factors in China’s Higher Education System  65

II. Technology Transfer among China’s Academic Institutions  69
   A. Legislative and Other Government Efforts  70
   B. Early Indicators of Success  71
   C. Remaining Challenges  72
      1. Lack of Policy and Structure at the Institutional Level  73
      2. Lack of Incentives to Inventors  73
      3. Ineffective Intermediary Services  74
      4. Other Impediments: Financial and Human Resources  75
I. Background of China’s University System

Academic achievements have a special meaning in China, which stems from its unique civil examination system, running almost uninterrupted from the Sui Dynasty in 587 A.D., through which intellectuals are recruited into official positions in government. In its current form, all college-bound students must compete, once a year, in the joint entrance examination (Gao Kao 高考). In a way, China may have started the world’s first university ranking system, not by a third-party assessment organization, but by the parents and examination takers each year.

A. Competitive Environment: Universities and Various Rankings in China

In the past two decades, China has strived to strengthen its higher education system, with several significant projects to note.
PROJECT 985 was initiated in May 1985 (hence its “98.5” name) by the Education Ministry. The purpose was to offer differential financial support for selected universities to become world-class institutions. The first nine best universities (later named C-9 institutions, styled after the Ivy League) thus selected were Peking University, Tsinghua University, Zhejiang University, Nanjing University, Fudan University, Shanghai Jiaotong University, Xi’an Jiaotong University, University of Science and Technology of China, and Harbin Institute of Technology. All nine institutions were public universities—which is still the general rule in China today, that the best universities are all public ones. After two more rounds of expansion, by 2011 there were 39 institutions listed under Project 985. This is the most exclusive list so far, so even though Project 985 was officially suspended after 2016, the listed universities continue to brand themselves as “985 institutions.”

Project 211 is a more inclusive list of more than 100 public universities, which includes all the 985 Project institutions. The Chinese government embarked on Project 211 in the mid-1990s (so there was a long period of overlap with Project 985) to restructure and strengthen many of them. In some cases this led to merging several institutions into one large comprehensive university, and in other cases institutions were moved under the control of the Ministry of Education, which had more resources than their original parent institution, such as a provincial or municipal government.

In 2016, when the “Double-First Class” Initiative was launched, both Project 985 and Project 211 were merged into the new initiative. This ambitious initiative aims to ultimately build a number of world class universities and world class disciplines by 2050 (thus the name “Double World Class”). The first published list in 2017 included 42 universities as well
as 140 disciplines from 140 universities. These selected institutions and disciplines would receive preferential funding support, in an effort to advance their world-class standing. Also significant, their selection will be based on periodic reviews, to ensure a healthy competition even for the institutions that already made it to the list initially.

Judging from the government-sponsored rankings of universities over the years, universities in China face intense competition. More significantly, such rankings are directly linked to the level of financing support from the government, so the pressure to perform in such rankings is quite noticeable.

China’s institutions compete favorably against its international peers as well. According to QS (Quacquarelli Symonds) Ranking of top universities and other similar rankings, China has nurtured some of the world’s most competitive and outstanding universities. Among the QS top 100 of the world, Tsinghua University is ranked 17 worldwide for 2019 on QS, and Peking University is 30, followed by Fundan University at 44, Shanghai Jiao Tong University at 59, Zhejiang University at 68, and University of Science and Technology of China at 98.1 To illustrate the amazing advancement of this group of elite universities in China, consider that universities in Japan did not score as well, with Tokyo University (23), Kyoto University (35), Tokyo Institute of Technology (58), Osaka University (67), and Tohoku University (77) among the top 100. The strong performance has led the World Intellectual Property Organization (WIPO) to rank China’s quality of higher education

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at number five in the world, based on the QS rank of the top three institutions.²

B. Rapid Expansion of Higher Education

During the past two decades, China has experienced a rapid growth in higher education. In 1999, the Chinese government decided to greatly expand university capacity, and the number of students admitted grew dramatically. In 1998, there were 1.08 million students admitted into universities, which grew to 5.04 million in 2005.³ In 2018, universities in China graduated more than 8.0 million students. The spectacular growth led to 12.4 percent of the population being university graduates in 2015, with the number of university graduates in the population rising from merely 4.4 million in 1982 to 171 million in 2015.⁴ In contrast, in 2016 there were about 98 million people with college degrees (including 9.8 million from community colleges) in the United States,⁵ so in terms of ratio, the United States still has more than one-third of the adult population in the United States holding a bachelor’s degree or higher.

Within the areas of high growth, the rapid growth in number of graduates with science or engineering degrees is noteworthy. Students and their parents in China have a strong preference for areas of study that pay well. In 2013, for example, 40 percent of Chinese graduates completed their studies in a STEM (science, technology, engineering and math) subject—at a level more than twice the share of STEM graduates in the United States. At this rate, based on more than eight million new graduates in 2018, China is producing more than three million university graduates in STEM subjects each year.

C. Returnees Contribute to Academic and Industry Research Power

Since the opening up in the 1980s, China has been sending increasingly large numbers of students, mostly at the graduate student level, to leading institutions in the United States, Europe, and Japan. As the domestic economy begins to create more career opportunities for this group of elite students, “returnees” are becoming the norm as opposed to the exception they were in the early years.

In 2017 alone, more than 600,000 Chinese went abroad for academic advancement (including exchange scholars). In the same year, more than 480,000 chose to return to China, including 227,400 with master’s or PhD degrees from overseas. Cumulatively, more than three million overseas students and scholars have returned to China, from 1978 to 2017, representing more than 83 percent of all outbound students and scholars. Such a robust flow of highly trained experts has certainly enhanced China’s capacity of research and development of technology.

D. Unique Factors in China’s Higher Education System

Several unique factors make China’s universities very different from the ones in the West, and they also help us understand the developmental path of the unique technology transfer system among such universities.

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University-industry collaboration has always been a strong emphasis in China’s higher education system. Under a planned economy system guided by the communist party, there is a utilitarian slant where activities are to serve the country’s advancement. A pure ivory tower mentality is frowned upon. Rather, the idea is to turn the higher education system into efficient factories that produce well-trained workers to produce industrial outputs. From this ideology standpoint, China’s universities never maintain a strong academic existence that is separate from the nation’s industrial development.

Speaking of ideology, China does not believe in the “invisible hand” theory nudging its economy forward. Rather, an active, centralized, and top-down guidance has always been the theme of Chinese government under the supervision of the Chinese Communist Party. It is then not surprising that the “triple helix model” of an academic-industry-government ecosystem for academic technology transfer has become popular in China ever since Henry Etzkowitz and Loet Leydesdorff introduced it in 1995.8 Indeed, the early call for universities to establish technology transfer centers came from the central government. In a 2003 document, “Notice Regarding Setting Up National Technology Transfer Centers,” the central government specifically pushed the first batch of universities to take steps to do so. By 2011, at least seven National Technology Transfer Centers had been established, at Tsinghua, Shanghai Jiao Tong University, Xi’an Jiao Tong University, East China University of Science and Technology, Huazhong University of Science and Technology, Sichuan University, and Dalian

University of Technology; there were 134 entities designated as National Tech Transfer Demonstration Sites as well.\(^9\)

Another factor is fiscal considerations. Nowadays, elite universities in China are well funded. Consider the case of Tsinghua University, with its science and technology funding to exceed US$2 billion in 2019, followed by Zhejiang University, which will receive close to US$2 billion.\(^10\) But this has not always been the case. In the early years of opening up, during the 1980s and early 1990s, China’s education budget was less than 3 percent of GDP, reaching a low of 2.5 percent in 1995–1996.\(^11\) Facing such a fiscal reality, very early on, universities in China started diversifying their sources of funding, including contract research, sponsored research, and university-managed enterprises.

China’s university-managed enterprises are nothing like university spin-offs in the United States. In the early years, China did not have a legal system for private enterprises (the first Corporate Law was only enacted in 1993), let alone a vibrant venture capital investment community (the first Partnership Law was enacted in 1997; the Private Equity Fund Management Rules were published in 2014). In fact, even after a Bayh–Dole Act–inspired legislative reform took place in 2016 and 2017, currently there are still lingering debates on whether a

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public university should take on the risk of “converting state-owned assets” as it performs routine technology transfer tasks of pricing and negotiation.12 The fundamental difficulty is that the recent legislature gave universities the power to dispose of its IP, but did not transfer the ownership of IP itself, exposing university staff to grave risk if there is a loss of value of such state assets. The most common question asked by academic technology transfer professionals is, “How do we prove that we have achieved the correct market valuation?” These external factors have limited the classical arms-length technology licensing model popular in academic institutions of other developed economies, where the technology owner negotiates to transfer its IP to an unrelated third party in the industry.

In the era of rapid economic growth of the 1980s and 1990s, given the legal ambiguities for private enterprises, and the lack of external venture capital funding, universities in China took the logical step of nursing their own startups in-house, and continued doing so even after they undertook initial public offerings (IPOs) and became thriving enterprises. Thus, many conglomerates today in China can trace their origin directly to leading universities—and in fact, most of them are still directly or indirectly controlled by such universities. Tsinghua University is the best-known example, for the successful incubation of Tsinghua TongFang 清华同方, Tsinghua UniGroup 清华紫光, and TUS Holdings 清华启迪 (which has been restructured to report to a Tsinghua Holdings Co. Ltd. 清华控股), all of which are now public companies. Tsinghua University’s successful experience is discussed in detail in a following section.

There are two significant takeaways from such a unique model of technology transfer. First, if one examines the traditional “pure” technology transfer statistics of licensing deals signed with arms-length third-party licensees, it is likely that China’s universities may seem to be underperforming. However, most valuable IP assets are converted through a more direct investment and incubation process that is not reported as technology licensing results.

The second takeaway is that the strong academic-industry connection also underscores the reality of weak research and development capabilities among industry players in China, such that the industry is often not able to take early-stage technology developed at university research laboratories in a straight licensing arrangement. Frequently, the university would have to develop the technology—sometimes all the way to the production stage—before they can collect any payment. Another side note is that such an academic-industry interdependency also explains the high conversion rate of IP commercialization among universities: because many projects were funded as sponsored or contract research projects, they are predetermined to become commercialized.

II. Technology Transfer among China’s Academic Institutions

As China’s growth slows, from double digits each year during the past two decades to a level below 7 percent, the government sees innovation and technology transfer as the future growth engine.

Because there are no systematic surveys on academic technology transfer activities in China, only anecdotal evidence is available to show an increasingly active technology transfer scene there.

A. Legislative and Other Government Efforts

Legislative efforts have resulted in a seminal revision of the Law of the People’s Republic of China on Promoting the Transformation of Scientific and Technological Achievements in 2015 (中华人民共和国促进科技成果转化法), which is largely seen as China’s answer to the Bayh–Dole Act of 1980 in the United States. Many local governments and ministries have also followed up with more detailed implementation rules. Aimed at encouraging universities to commercialize outcomes from government-sponsored research, it allows universities to dispose of such intellectual property in the form of licensing or startup enterprises. In the State Council’s implementation regulation (2016) it further stipulates “no less than 50% of commercialization income is to be shared by the inventors and contributing members.”14 Several local governments and universities, determined to jumpstart technology transfer, have set up the most aggressive incentives—allowing inventors to jointly own the IP (beyond just sharing commercialization revenues (at Southwest Jiaotong University, inventors own 70 percent of their inventions). In several cases, universities offered a whopping 90 percent of income going to inventors in another case.15

B. Early Indicators of Success

In the first annual report since the new legislature changes in 2015–2016, three units under the Ministry of Science and Technology jointly held a press conference on February 28, 2019, releasing some highlights from the forthcoming 2018 Annual Report on China’s Technology Transfer. The report is a compilation of 2,766 publicly financed research and development (R&D) entities (of which 1,776 were research institutes, and 990, or about one-third, were universities).

This report counts all forms of technology transfer in reaching the conclusion that China’s technology transfer (one way only—from research entities to industry entities) agreements in 2017 were valued at 12.1 billion RMB (about US$1.7 billion). Although the data seem credible, given the fact that they were submitted to the Ministry of Finance by the institutions surveyed, some forms of technology transfer, such as transfers to a closely held private company or the value assessed on a startup’s stock shares, make it hard to compare such deals with hard-cash transactions. In comparison, for the year 2017, AUTM (Association of University Technology Managers) reported a total of $3.14 billion in gross licensing revenues from 193 respondent institutions in the United States (out of 312 institutions invited to participate, at a


17. RMB, or renminbi, is the official Chinese currency, which is also commonly denoted as yuan. In this chapter, an exchange rate of 7 RMB to 1 USD is used.
62 percent response rate), based on cash value of licensing transactions alone.\(^{18}\)

This 2019 report data also suggest a widespread advancement in technology transfer work among the R&D entities in China. For example, 31 R&D entities reported achieving more than 100 million RMB (about US$14 million) in technology transfer revenue. Due to the newly established cash and stock incentives to encourage inventors to participate in technology transfer, there were more than 62,000 inventors (including the ones with multiple inventions being counted) that received such incentives, with an average incentive reaching 76,000 RMB (about US$10,857) per person on each invention.

### C. Remaining Challenges

Still, technology transfer is never an easy task in any context. A 2019 report by the Ministry of Science and Technology\(^ {19}\) pointed out that the top two problems were (1) the lack of a clear and complete policy governing technology transfer at the institution level, and (2) insufficient professional technology transfer personnel and related services. In a government survey of 2018, SIPO (State Intellectual Property Office, China’s equivalent of the U.S. Patent and Trademark Office) listed the following challenges that 266 survey respondents were facing.\(^ {20}\)

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19. Supra note 16.
1. Lack of Policy and Structure at the Institutional Level

The good news is that a high percentage of institutions had related services (84.47 percent offered patent application assistance; 77.02 percent helped with finding industry partners/licensees; and 73.29 percent provided legal services). The bad news is that 70.19 percent did not have an institutional system for managing patent commercialization work—and 75.16 percent of respondents indicated their institution had no internal office dedicated to commercialization.

Given the lack of a dedicated IP commercialization office, such work is typically shared between a research services office (which takes care of grant applications and compliance), and/or a state assets management office (which keeps track of, and maintains the value of, government assets like buildings, equipment, etc.). As can be imagined, without a professional office that understands the unique value and issues around IP assets, the hope of smooth and effective technology transfer is quite difficult to achieve.

2. Lack of Incentives to Inventors

Despite the government’s call for improved incentives for inventors, some institutions lag behind the new law’s requirements, as 13.66 percent of the respondents revealed their “work unit” (meaning the institution, or the laboratory or department) still took away all commercialization revenues—no sharing with individual inventors at all, as stipulated by the new law.

Influenced by the widespread news of those aggressive local governments and universities, 93.17 percent of the respondents believed 50 percent to 80 percent of economic benefits
from patent commercialization should go to the inventors. A small group (6.83 percent) thought inventors should receive 90 percent of the income—perhaps a clear indication that they followed the news closely!

Although incentives matter a great deal to inventors, it is unclear there is a straight-line correlation between the percentage of ownership or income sharing with their inventive outputs. In the United States there are some universities offering as much as 60 percent income sharing to inventors. In Canada, perhaps as much as a third of all universities allow inventors, not their institutions, to own their inventions outright. In either situation, there has been no study claiming a dramatically higher invention disclosure or commercialization rate due to such higher levels of incentives. In China, the situation could be different. When China’s GDP per capita was US$8,827 (2017),21 those inventors that received an average incentive of 76,000 RMB (about US$10,857)22 on their invention would certainly feel the impact of such financial incentives. Therefore, this is an old issue that may not remain a challenge in the future.

3. Ineffective Intermediary Services

Many local governments in China have done two things, in the hope of jumpstarting IP transactions: setting up a technology transfer center to offer intermediary services, and a public IP or patent database where technology seekers and providers

22. Supra note 16.
can find each other.\textsuperscript{23} Unfortunately, these efforts have not been effective. The SIPO survey found 66.46 percent of respondents judged such intermediary agencies as ineffective, with efforts in scattered and not unified services, and lacking high professional standards.\textsuperscript{24}

With regard to databases, mainly patent listing services, many local governments in China mistakenly (or unconsciously) classified IP assets much like commodities, where an eBay-like listing service would dramatically enhance the trades. Fueled by commercial IT services who lobbied the use of government grants to build such trading platforms, many governments have pursued larger and larger patent databases. As a reference point, in the United States, similar databases (such as Kaufman Foundation’s effort in the 2000–2010 decade, and the still-growing AUTM database) are thought to be helpful but not a panacea in technology transfer.

4. Other Impediments: Financial and Human Resources

Among the respondents, 81.37 percent cited a lack of financial resources to properly put together a patent commercialization strategy. It was not just the patent budget issue; the inability to attract further capital infusion, such as venture capital money, was also cited.

Human capital shortage in technology transfer is another challenge shared by all practitioners worldwide. It requires


\textsuperscript{24} \textit{Supra} note 19, at 2–3.
expertise—both in theory and in practice—in diverse areas of technology, business operations, entrepreneurship and venture financing, and IP law. China has tried to fill the gap with many higher education institutions offering formal degrees in technology transfer; at last count, as many as 76 undergraduate degree programs in knowledge transfer have been approved by the Ministry of Education.\textsuperscript{25} The next step is to elevate training beyond the basic undergraduate level, and to supplement it with real-world professional experience.

Another tough issue is the rigid human resources system within China’s academic institutions. Most university staff members are recruited early in their career, right after graduation. Few are recruited from industry because the pay scales and operating style are so different that it could be challenging for someone with industry experience to fit into the academic system. As China’s overall employment market continues to grow and diversify, it is expected that mobility between academic and industry jobs will also improve, reducing the shortage of university technology transfer personnel with industry experience.

\section*{III. Tsinghua University: The Most Successful Case}

Tsinghua University is the most unique innovation ecosystem in China. It is the best-known technology institution—often compared with the Massachusetts Institute of Technology (MIT)—yet it is far more complex than MIT in terms of its relationship

with the government and with industry. Just as important, it has taken a leadership role in fashioning its technology transfer model after successful leaders such as Stanford University, and will be a leading example for other Chinese institutions as well.

A. History and Status

Tsinghua University was established in 1911. Since China opened up to the world in 1978, Tsinghua University in Beijing has developed at a breathtaking pace as a comprehensive research university. At present, the university has 20 schools and 58 departments, with faculties in science, engineering, humanities, law, medicine, history, philosophy, economics, management, education, and art. The university has an enrollment of 47,762 (15,619 undergraduates; 19,062 master’s students; 13,081 PhD students) and 3,461 faculty members.26

In terms of funding, Tsinghua is the envy of all its peers in China. Research funding grew dramatically, from 3.6 billion RMB in 2010 to 5.1 billion RMB (about US$728 million) in 2017.27 In a 2019 study on leading universities, Tsinghua received the most science and technology funding, with RMB 15.4 billion (about US$2.2 billion), followed by Zhejiang University, which received RMB 13.1 billion (about US$1.9 billion).28


In terms of reputation and prestige, Tsinghua has always been viewed as the best technology leader among all the universities in China. In recent years, it has also made great strides in other areas such as law, medicine, and the humanities, shaking its traditional “nerdy” label. In the QS 2019 worldwide ranking, Tsinghua took 17th place, entering the top 20 list for the first time. Its neighbor, Peking University, in comparison, was ranked 30. On another widely referenced ranking, Times Higher Education (THE) ranked Tsinghua 22 worldwide in 2019, and Peking University 31. For the second year in a row (2018 and 2019),

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U.S. News and World Report ranked Tsinghua as the best university for engineering and computer science, worldwide.\textsuperscript{31}

China’s ZhongGuanCun (ZGC) in Beijing is China’s Silicon Valley, and Tsinghua University’s role in ZGC’s rise is often compared to Stanford University’s pivotal role in Silicon Valley’s development. In 1994, Tsinghua University established its first Tsinghua University Science Park (TUS Park). In 1999, TUS Park was included under ZGC’s official plans, and its hundreds of high-tech startups became the growth engine in China’s technology industry. On its 20th anniversary, TUS Park reported having incubated more than 600 startups, including 14 that successfully went through IPO, with a total valuation near 100 billion RMB (about US$14 billion).\textsuperscript{32}

Tsinghua’s prestige is reflected in its alumni network and societal impact. Among the best universities in China, Tsinghua’s alumni network is regarded as the strongest, with 51 alumni clubs covering 13 countries. About 20,000 alumni are overseas, and about 10,000 of them reside in Silicon Valley\textsuperscript{33}—not a surprising concentration, given Tsinghua’s strength in technology. In a 2017 survey by the official People’s Daily, Tsinghua University was ranked number one in its influencing

\begin{flushright}
\textsuperscript{33} Tsinghua University Welcomes Centennial, China’s Daily (Apr. 24, 2011).
\end{flushright}
power in China and topped the list in categories like media impact and influencing power in technology research.\textsuperscript{34}

**B. An Evolving Network: Shenzhen Research Institute—A Leading Example**

In terms of technology transfer, Tsinghua University evolved into a very unique ecosystem. Its experiment in the southern city of Shenzhen is a prime example. In 1996, Tsinghua University and Shenzhen City jointly established the Research Institute of Tsinghua University in Shenzhen (RITS), as a 50–50 joint venture nonprofit entity. Shenzhen City, being a young city of less than 20 years at the time, urgently needed to enhance its R&D capacity, and RITS is a very successful first step.

The success of RITS, as an institute dedicated to converting research into industrial products (as opposed to teaching and academic research), is due to a unique philosophy of “Four Unlikes”: RITS is unlike a pure university, or a research institute, or a business, or a pure nonprofit organization. It is a blend of all four forms, yet it is not limited to playing a role completely like any of these four entities.\textsuperscript{35} The subtext beneath this proud philosophy of RITS is the inherent flexibility and freedom for exploration.


And what an exploration it took on! Over the ensuing years, RITS has incubated more than 1,600 startups, invested in more than 300 of them, and pushed 20 of them through IPO. It has also started 11 investment venture capital funds, with a total of 4 billion RMB (US$571 million) under management. As an applied research entity, RITS also gathered more than 300 professors, postdocs, and overseas returnee experts, and trained more than 80 postdoctorate researchers.

RITS developed such a successful collaborative relationship with the Shenzhen government that it was invited to replicate the model with many other local governments in China. So far, it has set up similar innovation centers at Dongguan, Zhuhai, Foshan (all in Guangdong Province), as well as in Jiangsu Province (near Shanghai). To tap into technology developments worldwide, RITS has also established overseas offices in the United States (in northern California and Boston), Oxford, Moscow, Cologne, and Tel Aviv.

C. Regional Innovation Centers: The Triple Helix Model

While Tsinghua University set up a series of regional innovation centers and institutes in different locations, it almost always did so in collaboration with a local government, and jointly sponsored by a large industry player. In doing so, Tsinghua University has truly implemented the triple helix model of innovation—combining the resources of the academy, industry, and government. Such a scheme guarantees the research conducted will be directly applicable to real-world industrial issues, and “technology transfer” is inherently integrated into the R&D process, as opposed to an afterthought following some ivory tower academic pursuit.
There are six university-level Joint Regional Research Institutes:\(^{36}\)

- Shenzhen Institute (Research Institute of Tsinghua University in Shenzhen, or RITS)
- Beijing Institute
- Hebei Institute
- Zhejiang Yangtze Delta Institute
- Xiamen Cross-Strait Institute
- Guangdong Pearl Delta Institute

In addition, there are nine school and department-based joint research institutes:

- Suzhou institute, Jiangsu
- Wuxi Institute, Jiangsu
- Hefei Institute, Anhui
- Tianjin Equipment Institute
- Tianjin Electronic Information Institute
- Shanxi Institute
- Sichuan Institute
- Suzhou Environmental Institute
- Qingdao Art Institute

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Note that other “normal collaborative research centers” (without a local government’s significant sponsorship) are still the mainstream; according to Tsinghua’s official website, there are 112 such collaborative research institutes.37

D. Integrated Research Centers in Basic Sciences, Focused on Real-World Applications

Tsinghua University’s strength is to leverage its world-class research foundation to tackle targeted applications. In a way, it is guiding the bottom-up innovation process to meet the top-down directed breakthrough target. Since the mid-2010s, Tsinghua has extended its reach to set out several ambitious paths, each targeting real-world problems and setting some ambitious and audacious goals, as illustrated by the following three examples.

- Global Health Drug Discovery Institute (GHDDI, http://www.ghddi.org/). In 2016, the Bill & Melinda Gates Foundation, Tsinghua University, and Beijing Municipal People’s Government initiated a nonprofit institution for global public health improvement and medical innovation. This first of its kind public-private partnership drives research to find solutions for the most pressing disease crises that affect the world’s poorest populations, such as tuberculosis, malaria, and other parasitic diseases. GHDDI will also benefit from another Bill & Melinda

Gates Foundation–sponsored entity, the California Institute for Biomedical Research (Calibr), which has built a large (12,000) chemical compound library for international collaborators in public health solutions.

- Beijing Advanced Innovation Center for Structural Biology (ICSB). ICSB includes the Tsinghua Protein Research Technology Center, with the world’s largest cryogenic electron microscope, as a pillar for a National Protein Science Research Facility. Tsinghua aims high with this platform: to bring together the world’s top structural biologists, leading the world in research and development support and creating new models for drug discovery.

- National Supercomputing Center in Wuxi (NSCC, http://www.nsccwx.cn/). Established by Jiangsu Province, the city of Wuxi, and Tsinghua University, NSCC features the Sunway TaihuLight Supercomputer, which, at a peak performance of more than 125 petaflops, boasts world-leading computing capacities. In 2016, this system topped the performance of the world’s most powerful supercomputers, until Oakridge Laboratory’s Summit system surpassed it in June 2018. Used by Tsinghua’s protein

science researchers, the system is expected to reduce the average time to analyze a protein’s three-dimensional structure to less than 60 minutes, as opposed to weeks of computation on other fast computing systems.

E. Tsinghua Holdings: A Family of Conglomerates

In 1994, Tsinghua Science and Technology Parks Development Center was established, ushering in a new era of university-owned conglomerates.\(^{42}\) Twenty-five years later, the current commercial world of the “Tsinghua System”—under the Tsinghua Holdings umbrella—controls three huge conglomerates, among other smaller companies: Tsinghua QiDi (TUS Holdings 清华启迪), Tsinghua Tongfang (清华同方), and Tsinghua Unigroup (清华紫光). Each of these big three publicly held conglomerates has amassed assets more than 50 billion RMB (US$7 billion), and they have made significant contributions to China’s high-tech development.

Measured by its financial success, Tsinghua Holdings is the most successful—and the least understood—technology transfer powerhouse in the world. In 2016, Tsinghua Holdings reported a total of 95.6 billion RMB (US$13.6 billion) in revenue and total assets worth 353 billion RMB (US$50 billion), and it contributed 1.5 billion RMB (US$214 million) of its profits that year to its parent, Tsinghua University. For comparison, New York University produced $209 million in licensing revenue in 2015, which topped the chart among all

U.S. universities that year,43 followed by Memorial Sloan Kettering Cancer Center’s $202 million, and Columbia University’s $195 million. All nine campuses of the University of California, including Berkeley, UC Los Angeles, UC San Francisco, and UC San Diego, reported $175 million in licensing revenue that year.

Notably, Tsinghua Holdings has taken on a national mission to upgrade China’s R&D competitive platform. In Tsinghua Holding’s 2016 annual report, it outlines five-year goals to “invest 50 billion RMB (US$7.1 billion) in R&D; set up IP commercialization funds with 10 billion RMB (US$1.4 billion); operate ‘hard technology’ commercialization industrial parks occupying 500,000 square meters (more than five million square feet); and nurture more than 500 new enterprises with assets of more than 100 million RMB (US$14 million) each.”44 These goals may seem lofty to casual observers, but they are quite credible, given the track record of Tsinghua Holdings in the following key areas:

- In the category of capital investments, Tsinghua Holdings has invested 6 billion RMB (more than US$857 million) in venture capital funds over the years, creating a 10x leverage of more than 60 billion RMB (US$8.6 billion) in total investments in 116 venture capital funds, which have invested in 1,132 startup companies.

- In the category of human capital, Tsinghua Holdings has attracted close to 1,000 startup industry leaders, including

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43. AUTM annual surveys (https://autm.net/surveys-and-tools/surveys/licensing-survey/archived-licensing-surveys) are available for a fee (last accessed Feb. 24, 2019).

venture capital investors, professors, and inventors and other technology experts, experienced executives, and IP experts to work for its subsidiaries.

- In the category of industrial parks and incubators and accelerators, Tsinghua Holdings has established more than 200 such locations throughout the world, in Israel Korea, Russia, Spain, the United Kingdom, and the United States, as well as a huge network of managed technology work spaces in China.

Tsinghua Holdings has a vision of integrating all essential elements in technology innovation, to offer a world-class ecosystem to nurture innovation and entrepreneurship, with the best combination of financial capital, human resources, and physical work space management. The three large conglomerates under its umbrella each developed its own unique strengths to support this overall vision.

Tsinghua QiDi (TUS Holdings 清华启迪), formerly known as Tsinghua University Science Park (TusPark) Development Center, was founded in August of 1994. Nowadays, TusHoldings is an investment holdings group controlling 882 subsidiary companies, while managing more than 300 incubators and industrial parks in more than 80 cities in Australia, Brazil, China, Egypt, Hong Kong, Italy, Macau, the Netherlands, Russia, South Korea, Sweden, Switzerland, Thailand, the United Kingdom, and the United States (see http://en.tusholdings.com). TUS Holdings reported 25.7 billion RMB (US$3.7 billion) in revenue, and 3 billion RMB net profit in 2017.45

TusPark is now the largest single university science park in the world, with a total area of 770,000 square meters (about 7.7 million square feet) under management, hosting 1,500 enterprises in the parks. During the past 25 years, it has successfully “graduated” more than 600 startup companies, including 14 that have gone public, which are valued at nearly 100 billion RMB (US$14 billion). TusPark has also diversified its business model to offer a complete “Technology, Industry, and Capital” platform with services in incubation as well as entrepreneurship training and angel/venture capital direct investments.

Tsinghua Tongfang (清华同方) was the largest conglomerate under Tsinghua Holdings, as its annual sales reached 10 billion RMB milestone (US$1.4 billion) as early as 2007. Tsinghua Tongfang was originally a major computer manufacturer in China. In recent years, it expanded its footprint significantly, and now has two main lines of business: information technology and energy, and the environment. In 2017, its revenue was 26 billion RMB (US$3.7 billion).

One shining star within Tsinghua Tongfang is Nuctech Company Ltd., which has grown since its founding in 1997 to quickly become the world’s number-one supplier in large-container and cargo-inspection equipment. Its x-ray scanners

are also widely deployed at major airports and transportation hubs in more than 130 countries worldwide.

Another bright spot within Tsinghua Tongfang’s brand is CNKI (National Knowledge Infrastructure, commonly known as “China Knowledge Web”—中国知网). Relying on its main product, China Academic Journal Full-Text Database, CNKI has become the largest academic publication database, and practically a monopoly for all kinds of searchable reference materials for academic researchers and students alike. CNKI now boasts more than 50 million registered users and 27,000 institutions as subscribers, and with a collection reaching 280 million articles in its database—the largest digital library of its kind in the world.49

Tsinghua Unigroup (清华紫光) is a conglomerate dedicated to manufacturing integrated circuits, or computer chips. Since its founding in 1988, Unigroup has grown quickly, and became the largest Tsinghua conglomerate in 2015, with 75.1 billion RMB (US$10.7 billion) in assets.50 In 2017, Unigroup reported 39 billion RMB (US$5.6 billion) in revenue.

Unigroup has taken on the national agenda of producing China-made computer chips. Because computer chips had become the number one product imported into China (at US$200 billion a year in 2016, this quantity representing 54 percent of the world’s computer chips supply), China urgently needed to advance its chips-related technologies. Unigroup rose to the challenge, completing three major international transactions between 2013 and 2015, and acquiring

49. See https://cnki.net/gycnki/gycnki.htm (last accessed Feb. 24, 2019).
Spreadtrum (a Nasdaq-listed company) for US$1.8 billion, and RDA Microelectronics (a Shanghai company also listed on Nasdaq) with US$907 million. After these two acquisitions, Unigroup became the world’s third-largest supplier of computer chips used in mobile phones. Its third major transaction is a series of factories being built in Wuhan, Nanjing, and Chengdu to make computer storage chips and storage devices, where Unigroup pledged to invest up to US$100 billion in the next 10 years.51

In the Internet/cloud computing area, Unigroup made its largest investment in 2016, spending US$2.5 billion to reorganize a Hewlett-Packard subsidiary into H3C; Unigroup owns 51 percent of this largest IT service in Internet and cloud products in China. This strategic move completed Unigroup’s vision in combining cloud computing, Internet, big data, and cybersecurity all under one roof, and it also complemented Unigroup’s traditional strength in the computer chips hardware business.

1. Technology Transfer—Chinese Style

By now the reader should have a clear understanding that China has been quite strong in its own technology transfer from academia to industry, although it has not followed the Western style of technology licensing to unrelated companies or to inventor-initiated startups, typically in an arms-length licensing transaction. Tsinghua University’s example clearly demonstrates an equally effective style: it keeps its best technologies in house, nurturing them into successful startups with supporting

elements in training, space, and capital, until they become solid market leaders. If an observer tries to look for licensing revenue numbers in China’s academic technology transfer sector, he or she would arrive at a mistaken conclusion.

2. How Unique Is Tsinghua Holdings, and Can Its Success Be Replicated?

The answers would be yes and maybe—yes, Tsinghua’s experience is truly unique, but given the right systematic approach it can be replicated, to some extent.

Just like Stanford University started Silicon Valley with Stanford Industrial Park, Tsinghua University seeded the Chinese Silicon Valley—ZhongGuanCun (ZGC)—with Tsinghua Science and Technology Parks. The first wave of successful entrepreneurs then encouraged future generations of entrepreneurs to follow in their footsteps. The timing was also perfect. Tsinghua captured the opportunity immediately after the opening of China in the late 1970s, and grew with the amazing rise of Chinese entrepreneurship through the next 40 years, witnessing China’s entry into the WTO and becoming the factory of the world. Tsinghua is a tough act to follow, but other universities with similar ambitions can follow Tsinghua University in setting up an effective technology licensing organization to build their own success stories, as outlined in the next section.

F. Tsinghua University Office of Technology Licensing: A Leading Example

If the office sounds familiar, it is because Tsinghua took a page out of Stanford University’s playbook and strived to be
just as effective as Stanford’s Office of Technology Licensing (OTL). During the past 10 years, the representatives from the two offices have visited each other multiple times, and meet at various international conferences and stay connected through emails and texting exchanges.

Organizationally, Tsinghua OTL (http://www.otl.tsinghua.edu.cn) managed to establish a brand-new IP Management Policy through the University Council, in March 2017. In May 2017, a new Copyright Management Policy was also set up. These steps took several years of hard work, and they clarified the roles, responsibilities, and procedures of Tsinghua’s entities. Importantly, its OTL is now occupying a central position, reporting to a University IP Management Leadership Taskforce, while managing all the patent and software cases in Tsinghua University. Just like Stanford OTL, Tsinghua OTL manages the entire life cycle of each IP case, from the initial disclosure to licensing or other commercial contract negotiation and portfolio management. This is a major improvement over many other universities in China, where patent applications are still handled by an IP office that does not manage the commercialization process.

On the patent management side, Tsinghua is very focused on obtaining high quality patents, both domestically and internationally. In the last report in 2017, the National Academy of Inventors (NAI) ranked Tsinghua at number five, immediately following Stanford, among the top 100 universities receiving U.S. patents from the USPTO.\(^{52}\) It has held the number five

position for the last three years in a row, and it is also the top
U.S. patent producing university outside the United States, the
top three in 2017 being the University of California, MIT, and
the University of Texas.

Tsinghua has also been actively filing in popular jurisdic-
tions such as the European Union, Germany, and Japan
as well.

Once the technology transfer system was set up properly,
Tsinghua’s talents were unleashed. The number of commer-
cialized patents (patents that have been commercially applied
to products) grew from 45 in 2013 to 79 in 2017, and their mon-
etary value shot up from US$5.9 million in 2013 to more than
$68 million in 2017.

![Tsinghua University's Foreign Filings and Patents Granted 2012–2016](source: www.tsinghua.edu.cn/publish/newthu/newthu_cnt/research/research-4-2.html)

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$68 million in 2017.
Taking another cue from Katharine Ku of Stanford OTL, who just retired in 2018 after leading the office for 27 years, Tsinghua OTL and its leader Ms. Wang Yan have been very actively engaged in community building around the country, showing other sister institutions what Tsinghua has learned from its experience. At this point, there is little doubt that Tsinghua OTL will be favorably compared to Stanford OTL in the development of the technology transfer community in China and the United States, respectively.

### IV. Conclusion

In this chapter, we have described the overall background of China’s university system, from the highly competitive rankings, to the fast expansion of undergraduate education, to the
phenomenon of Chinese students going abroad and becoming “returnees” upon graduation. We then described the unique ecosystem and the dynamics between the university system and industry. Being restricted by the fear of mishandling state assets if inventions were licensed to external entities, universities found an alternative model of internal incubation plus investment and created some of the world’s largest university-owned conglomerates.

In the second section, we outlined the Chinese government’s legislative efforts to encourage and smooth the way for technology transfer activities. Some of the recent data seem to demonstrate clear success on some measurements, but more work is still needed to address some long-term structural issues.

Tsinghua University’s amazing success is then documented in the next section, from its background, to its network of institutions spread throughout China, and the triple helix model of the academy, industry, and the government joining hands to nurture high-tech industries. In a substantial subsection, we chronicle the rise of three large conglomerates under the Tsinghua Holdings umbrella, and show the commercial as well as technological success of this one-of-a-kind university.

In the last section, we described how Tsinghua University has reorganized both the structure and policy of its technology licensing operations and has achieved impressive results different from the “classic” technology transfer results (not the incubation plus investment model of Tsinghua Holdings). Although Tsinghua’s model is hard to replicate by other universities outside of its unique historical context, its strong efforts and a solid foundation can be a great reference model for other institutions in China.
Deal Dynamics for Intellectual Property Exploitation: Licensing, Joint Ventures, and Wholly Foreign-Owned Entities

I. Introduction 98
II. Technology Licensing 106
   A. Licensing by Multinational Companies 109
   B. Challenges with Licensing 110
III. Joint Ventures 114
   A. Forced Technology Transfer 116
   B. China Joint Venture 2.0 121
   C. Words of Caution 125
   D. Key Deal Dynamics in Joint Ventures 128
   E. Equity Contribution—Intellectual Property or Cash? 128
I. Introduction

This chapter examines the various structures that allow foreign technology owners to conduct technology transactions in China and discusses some of the deal-making dynamics involved. These structures are as follows:

1. Licensing to a Chinese entity

2. Establishment of a joint venture with a Chinese party where intellectual property is licensed or assigned to the entity

3. Establishment of an offshore holding company with the Chinese party which may then license in rights to a domestic entity (therefore a non-Chinese entity)

4. Establishing a wholly foreign-owned enterprise (“WFOE” customarily pronounced “woof-ee”).

As will be illustrated below, these are not mutually exclusive options and a hybrid of these is common.

However, this chapter is not intended to provide detailed legal guidance. Rather it draws on the experience of the author and his firm’s 20 years of practice in IP transactions in China, and other published materials, to provide an analysis of the commercial benefits and risks of different modes of technology commercialization.
It is important first to acknowledge that, at the time of writing, the United States and China are embroiled in a protracted trade dispute, which is ostensibly triggered by U.S. allegations of “intellectual property theft” by China. However, the broader issue is U.S. angst about loss of technological superiority over China in a range of domains, caused by a combination of China’s assertive industrial policies, unequal treatment of foreign firms, and ambitious investments domestically and overseas in developing and acquiring technology. Many commentators have noted that at the heart of the trade dispute is an inevitable clash of economic and political systems that could last decades. Although geopolitics is not the subject of this chapter, it is important for businesses to understand the rhetoric and reality of the “intellectual property trade war.”

As might be expected, the news media and the current U.S. administration have oversimplified and exaggerated the China “intellectual property theft” story roughly along the following lines:

1. China has little or no intellectual property protection.

2. It forces foreign technology companies into joint ventures that inevitably lead to expropriation of intellectual property.

The most comprehensive and obviously politicized version of the “technology theft” story is contained in the investigation by the US Trade Representative (USTR), which issued its report in March 2018.¹ This covered a wide range of allegations,

1. Office of the United States Trade Representative Executive Office of the President, *Findings of the Investigation into China’s Acts, Policies, and
ranging from cyber-espionage to overseas acquisitions, R&D incentives, conditions imposed on foreign companies, and a host of other mechanisms used by the Chinese government to overtake the United States’ technological lead. Some of the claims are accurate, and those of state-sponsored cyber-espionage are highly concerning, but overall the report draws on some case examples that are secondhand, isolated, or outdated, and extrapolates them into general and systemic issues with China today, which they are not. As James Andrew Lewis at the Center for Strategic and International Studies put it, “IP theft is yesterday’s issue,” and Nicholas Lardy of the Peterson Institute for International Economics takes a similar view.

The story of forced technology transfer and joint ventures has probably created the greatest degree of misunderstanding. Although there are still some industry sectors where foreign investors must form joint ventures with domestic parties, the list is rapidly shrinking and affects only a small minority of industries. The assumption that joint ventures automatically require, or eventually result in, technology transfer is also misleading. The evidence from numerous studies show that China’s past policy of mandatory joint ventures was, in fact, not very


effective in transferring technology to the Chinese counterparty overall. That does not mean that the problem did not exist, and there are some notable instances that have been well documented where Chinese companies and state agencies were able to apply implicit “leverage.” However, this was never the norm for most businesses in China as media commentators seem to suggest it was. In an attempt to dispel any remaining concerns, China’s recently issued Foreign Investment Law explicitly forbids state authorities from compelling technology transfer. Because the issue of forced technology transfer is so closely associated with joint ventures, and because there are so many misconceptions about it, I cover this subject in more detail in Section III.

The story around the trade dispute also carries an implication that China does not provide adequate protection for intellectual property and thus its firms may copy with impunity. Although this chapter does not attempt to cover the substantial topic of enforcement in China, it is based on the understanding that China’s courts and other law enforcement bodies provide a workably effective regime for protection of IP rights and contracts. This understanding is absolutely crucial for IP owners to have any confidence in a deal in China at all. As a brief illustration of this, I refer to CIELA, a privately run database that provides searchable statistics on more than 50,000 published court decisions concerning IP rights in China since 2006. A search of this database shows that win rates for foreign plaintiffs for invention patent infringement cases was 86 percent versus 82 percent for domestic plaintiffs.4 Ironically, among IP litigation specialists, China is being touted, alongside Germany, as a more favorable jurisdiction than the United States for a patent infringement lawsuit, especially in the context of

weaker enforcement regime for patents in the United States. This should dispel any impression that the Chinese IP courts either do not function effectively, or are systematically biased against foreign patent owners. Indeed, China has made a further breakthrough in judicial protection of IP through the establishment of specialist appellate IP courts, similar to the Federal Circuit, which aim to further improve the quality and consistency of IP decisions. Rather than undermining IP, China has fully bought into the international system and is charging ahead to be a leader in its creation and exploitation. In fact, as Ian Harvey, a renowned advisor on intellectual property to the U.K. government has warned, Western economies are in danger of being beaten by China at the “IP game which they invented.”

His point is that complacency, and the mistaken impression that China does not have effective protection for IP may put overseas businesses at a disadvantage: the basics of IP are probably now better understood by the public in China than in many developed countries. Indeed, Harvey points out that there are even Chinese elementary school textbooks on the subject. The developments in China’s IP protection regime have been numerous and rapid, and for those looking to keep up to date, there is no better single resource than the China IPR blog by Mark Cohen, Director and Distinguished Senior Fellow at Berkeley. For those looking for an up-to-date reference on China’s IP regime and its practical effects on innovation, I recommend Prud’homme and Zhang’s *Intellectual Property Regime for Innovation*.5

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In my comments above, I do not wish to downplay the very significant challenges that foreign (and indeed domestic) companies have faced in the previous decades in protecting their IP in China. Many companies of all sizes have had to devote substantial resources to fighting IP infringement, some of it originating from within the organization, that is, committed by their employees or partners, as well as by external actors. In some cases, these became critical for the firm concerned and threatened the existence of their entire business in China. Having handled such challenges firsthand during the past 20 years, I am very familiar with the strengths and weaknesses of China’s IP enforcement regime. However, the fact that IP infringement was commonplace and committed on a large scale is not the same as saying that China had no enforcement mechanisms at all, simply that at times these mechanisms were not sufficiently powerful to stem the tide. Many of the economic drivers of IP infringement, and China’s response to it during the past two decades, have evolved to bring about a significant reduction in the problem. The phenomenon of China as a hotbed of piracy was a phase in China’s rapid industrialization and globalization that is largely over. Foreign companies in China must still have robust processes in place, set aside budgets for IP protection, and seek experienced counsel. However, surveys of foreign companies operating in China show a notable improvement in IP enforcement during the past five years.8

Thus, the IP theft story has the potential to disadvantage U.S. companies by coloring the decision making of executives with assumptions that China’s IP regime is stacked against them, or that they will be forced to enter into joint ventures. This could lead them to miss lucrative opportunities and cede the world’s second largest economy to better informed and equipped domestic or international competitors.

Aside from the misleading aspects of the IP theft narrative, however, are legitimate grievances about unfair treatment of foreign business, many instances of which are clear violations of World Trade Organization (WTO) commitments. Many may lament the blunt use of tariffs, but it is fair to say that the dispute has also brought about some favorable results for U.S. companies in this respect. The dispute included a WTO complaint by the United States (which was followed by a very similar one from the European Union) to which China has responded by repealing the items of legislation that were the primary target. One of these was the notorious Technology Import and Export Regulations or TIER, an outdated piece of legislation governing cross-border technology agreements that contained certain clauses that disadvantaged foreign parties. Although the practical effects of TIER in drafting license agreements was limited, the continued existence of the regulations was unjustified, and its repeal was a cost-free concession for China to make. Those regulations are now a matter of history, and need no further discussion here.

As well as responding specifically to the WTO complaint, China has, in short order, issued a number of other legislative changes designed to improve its IP protection regime. These include, in particular, in April 2019, amendments to two important laws.
1. Significant amendments to the Trade Mark Law, raising the levels of civil compensation and tackling China’s particular plague of trade mark “squatting”

2. Amendments to the Anti-Unfair Competition Law in respect of trade secrets, which broaden protections and increase penalties

Various IP law firms in China have published commentaries on these amendments.9

Another positive result was the swift passage of a new Foreign Investment Law (FIL) in March 2019 to take effect on January 1, 2020. The FIL will supersede the previous laws governing joint ventures and WFOEs, thereafter making all corporate entities in China subject to China’s Company Law. In general, this is a welcome development, as it removes the need for foreign investment to be confined to special corporate forms and somewhat normalizes their treatment. As noted above, the FIL also expressly forbids government agencies from compelling transfer of technology.

On the other hand, as many observers have noted, the FIL is very brief and vague, more like a policy document than a law. No doubt this is due to its having been hastily passed as another concession in settling the trade dispute. A vaguely worded piece of legislation is never a good thing, and leaves much of the detail to be fleshed out in implementing regulations. It also

means that China has plenty of wiggle room to incorporate other rules that might tip the scales against foreign investors if it chooses to do so. However, the overall trajectory toward liberalization that it represents is positive.

For the purposes of this chapter, the new FIL means there are several areas of uncertainty as to how foreign parties will form companies under China’s laws. On the other hand, the changes under the FIL should not be overstated. The change in legal arrangements will affect the details but not the big picture of practical and commercial dynamics in technology transactions. It is these fundamental dynamics that this chapter addresses.

II. Technology Licensing

Technology licensing exists in all manner of forms and can include licensing of patents, know-how, copyright in software, and very often combinations of all of these.

In some cases, technology licenses are from a foreign parent to their own joint venture in China. This is often an important component in the technology package that the foreign party provides to the joint venture and will be covered in more detail in Section III.

My focus in this section is on arms-length licensing, where the licensor and licensee are separate entities and the license is on commercial terms. I exclude licensing of standard essential patents (SEPs), which is an activity in a special category of its own and involves a minority of (usually) large companies. SEP licenses are not, per se, providing access to new technology, but are simply giving the licensee freedom to operate certain standards, usually in the ICT sector. SEP licenses and their interaction with anti-monopoly law is an ever-evolving subject, which I leave for other experts to cover. Instead, I will focus on
licensing for commercialization of technology, that is, the situation where the licensor is providing access to a new technology that has value to the licensee beyond simply avoiding litigation.

Given the intended audience for this book, our main purpose is to look at scenarios where a U.S. company is the IP owner commercializing its technology into China. However, I should acknowledge the traditional role of China as a technology recipient is becoming outdated as its technology deficit shrinks. In many industries, China is now able to bring more of its own contribution to a technology solution or becoming a global leader. The story of Huawei as a significant player in 5G standards is a high-profile but by no means isolated example. As this trend develops in the future, global cross-licensing will rebalance the allocation of risk and reward between China and U.S. parties and will shift the focus of deal making to a more global setting.

Finally, this chapter focuses mainly on licensing between commercial entities. Chapter 3 looks at examples of commercialization from universities.

Most of my observations are necessarily anecdotal, as there is little published data on licensing in China. The only public source of general data comes from the China National Intellectual Property Administration (CNIPA), which only tells us that, in 2018 for example, China’s payments of IP royalties to foreign licensors in 2018 increased 22 percent to RMB 235 billion (US$34 billion).10 Nicholas Lardy of the Peterson Institute for International Economics suggests that this makes China the

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world’s largest net payor of intellectual property royalties. Although these figures tell us that China is transferring a great deal of cash in return for technology, they tell us nothing about what happens at the level of individual license transactions.

A few academic empirical studies have used CNIPA source data to explore the effects of in-licensing on the licensee. These have shown that the Chinese licensee realizes a benefit in increased innovation capacity, using patent citations as a proxy, compared with firms that do not in-license. There are no studies or surveys I am aware of that empirically assess the economic benefits or risks to the licensor, in particular, whether licensors achieve a similar royalty rate, overall economic returns, or payment compliance in China compared to other countries. From anecdotal accounts from foreign companies engaged in licensing into China, however, licenses to Chinese companies are frequently said to receive a lower royalty rate per unit and have a lower rate of compliance (in other words, more frequent disputes over underpayment) meaning that marginal returns from licensing in China overall may be lower.

Most technology licenses are private and do not result in public disclosures in any detail. Those that are disclosed are by definition the ones that have resulted in an agreement. What cannot be measured are the many license negotiations that have failed to reach agreement, and resulted either in an abandoned deal, or in the technology owner taking a different route to

commercialization. My analysis here is therefore necessarily confined to personal experience and cases shared with me by others on condition of anonymity.

A. Licensing by Multinational Companies

The most visible successes are those of a few multinational companies (MNCs). For example, Philips Electronics has been described as a champion of patent licensing in China, having licensed 9,916 patents to Chinese licensees during the 10-year period 2002–2012.\(^\text{13}\) However, the factors that make these MNCs successful might be hard for many others to replicate. These factors include

1. **High quality assets.** Many MNCs have large and high-quality patent portfolios in China. By contrast many smaller companies have only recently started regularly filing patents in China and may have little or no coverage.

2. **In-house expertise.** MNCs often have a well-resourced local team of lawyers and licensing staff in China, giving them on-the-ground resources to effectively negotiate and manage the licensing relationship, and providing local technical resources to implement the technology.

3. **Enforcement capability.** MNCs also have the scale and resources to pursue legal action for breach of contracts or patent infringement, meaning that licenses are more likely to be actually effective in controlling the relationship and realizing revenue for the licensor.

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Many other technology-owners without the in-country resources of a seasoned MNC like Philips Electronics should not expect to emulate its success in China. A study by the Organisation for Economic Co-operation and Development\textsuperscript{14} found an inverted bell curve of patent licensing behavior relative to firm size: technology licensing is more frequent with larger firms, which have the resources to commercialize their IP assets in a programmatic manner and probably have large portfolios of unused IP, and very small firms, where IP licensing may be a key first source of revenue, but the license value may be small. For mid-sized firms, licensing technology for revenue may create more risks than retaining their IP internally to defend their growth.

B. Challenges with Licensing

Our own experience and anecdotal examples from others who have been involved in negotiating technology licenses in China suggest that cross-border technology licensing into China is indeed challenging for all but the best-resourced companies. These challenges have been variously catalogued in a number of academic papers that identify the risks of technology transfer\textsuperscript{15}. These challenges are closely interlinked.

1. Technology risk. A Chinese licensee is often concerned that the licensed technology is not fully developed or that the licensee lacks the capability to develop and deploy


the technology. It tends to be harder to license technology that is still at early stages compared with technology at later stages, where a working prototype or early market validation has been achieved.

2. **Commercial value and time horizon.** Closely related to the above, a Chinese licensee may be uncertain as to how much value it can realize from the technology and how quickly. Chinese companies are accustomed to competing in commodity markets with low margins and tough competition. Product innovation usually means incremental improvements that can be deployed cheaply and quickly. They may have little experience in launching new technology programs that require more technical and marketing expertise and find it hard to properly price such long-term value. Concerns about speed to market, pricing and margins, and, indeed, intellectual property infringement by third parties, can lead a Chinese licensor to discount the value that a technology can bring (or to play on such concerns as a bargaining tactic). Conversely, foreign licensors applying developed-world models may overestimate the realizable value of the technology in China. China is not a homogeneous market and its size and fragmented nature mean it requires huge resources to capture a significant market share.

3. **Timing of license fees and royalties.** Following on from the above, foreign licensors tend to come with a built-in skepticism that they will receive royalties long term. This is usually either because they do not trust the enforceability of contracts, or the good faith of their licensee. There may also be awareness that the value of the technology might be eroded by infringement and substitution in the mid- to long
term. These concerns drive the foreign party to demand as much as they can in up-front license fees and “technical services.” The Chinese licensee’s position is often diametrically opposed to this. Based on the concerns above, the licensee will prefer the approach of “you make money when I make money,” deferring any substantial payments until the technology is contributing to revenue. In my experience, this is a genuine concern on the part of the Chinese party, not a disguised attempt to acquire the technology without paying for it. This fear and value gap can be difficult to close, which is often why the parties end up looking at a joint venture as an alternative way to tie down the risks—more of that below.

4. Confidence, commitment, and communication. Closely related to technology risk is the difficulty of building confidence that the licensor is committed to the deal and overcoming communication gaps. Very few technology transfers of value can be achieved simply by handing over a set of instructions and conducting training. Most require a process of commercial and technical integration relying on the licensor’s know-how adapted to local conditions. Chinese licensees are particularly wary of a “fly-in” licensor, who is perceived as not committing time and resources to see the commercialization process through the inevitable hurdles. Indeed, many smaller foreign technology owners, even with the best intentions, are hard pressed to commit management and technical resources to China, especially given the additional difficulties of language and culture. On the other hand, companies that have relocated their key personnel to China for long periods seem to have produced a better outcome.

Hence the technology licensing deals that tend to have repeatable success in China are those involving a proven
off-the-shelf technology package, especially software, where the technology risk is low, the benefit fairly immediate, and, often, license fees are comparatively low. Such deals are usually not about commercialization of frontier technology, and therefore easier.

Of all of the factors above, cross-border licensing deals in China most often fall through at an early stage because of different price expectations, with the foreign technology owner insistent on the price it thinks it can command (with a large component up front) and the Chinese licensee anxious to reduce risk of poor performance or execution of the technology.

The perception that licensing is a suboptimal form of technology commercialization for the Chinese licensor has some support in academic studies. One paper found that licensing, compared with joint ventures and acquisitions, is less effective in promoting technology absorption.16 Another paper, an industry-specific analysis of the rapid growth of wind turbine technology in China, also concluded that licensing of turbine designs contributed less to the technological catch-up of domestic players compared with joint R&D ventures and foreign acquisitions.17

The challenges in concluding licensing deals set out above explain why the option of forming a joint venture is nearly always brought up in negotiations as the right formula for balancing interests: for the Chinese party, ensuring that the foreign

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party has a long-term commitment to deploying the technology, and for the foreign party, as an additional form of compensation over the long term (dividends and equity growth) instead of relying solely on a cash royalty stream.

Can the risk of nonpayment of license fees and royalties actually be quantified? This is a question that is routinely asked. As noted above, there are anecdotes from licensors and their advisors in the field, but little hard data, as the issue of royalty default rarely surfaces. First, as those with experience in IP licensing know, the safest tactic for a dishonest or cash-strapped licensee is to underpay, rather than to stop paying royalties altogether. The licensor should have audit rights, but these carry a cost and may not uncover the underpayment. The licensor may therefore suspect, but not act on, the underpayment, and just accept the payments it does receive. Second, license contract disputes that do occur are often settled privately or through arbitration and may not surface in published court filings.

I can only say that the perceived risk of nonpayment plays into licensing negotiations, whether or not the actual risk is genuine. Hence, these asymmetrical fears around cross-border licensing often lead the parties into consideration of a joint venture in China, or, alternatively, a proposal that the Chinese partner invests in the foreign IP owner, as a way of ensuring that the Chinese partner has a stake in the success of its foreign partner globally, and not simply its self-interest in China. Both of these scenarios are covered further below.

III. Joint Ventures

As many advisors to foreign businesses in China attest, there is something of a return of joint ventures in China. This is supported by statistics showing a recent change in the composition
of foreign direct investment in China, which for the past 10 years has been dominated by WFOEs.\textsuperscript{18} This is covered in more detail below.

For much of the period from China’s entry into the WTO in 2001 until recently, joint ventures had a poor reputation among foreign investment advisors. My own experience from that period was that when technology owners came to us for advice, we would generally warn them off joint ventures and encourage them to consider a WFOE. The joint venture was seen at worst as a cumbersome structure, which in past years was mandatory for foreign investors in several key sectors. These early joint ventures had a reputation for being a tool to extract technology and management know-how from the foreign partner while at the same time giving it only a semblance of control and, in many cases, returning much less profit than promised. Many of them were bought out or dissolved in the mid-2000s. Essentially, they were seen as unhappy marriages of convenience with high rates of divorce.

Many of the examples of forced intellectual property transfer that are cited today, particularly in high-speed rail, date from the late 1990s to the early 2000s. These joint ventures were often in strategic industries such as infrastructure, transport, or energy and the partners were usually large state-owned enterprises that were essentially tools of the state. In those early days of China’s economic opening up we know of examples where the Chinese partner’s other group companies would expect to “share” in the technology and know-how gained from the joint venture. Personnel would often be rotated from the joint venture

\textsuperscript{18} See chart in Lardy, \textit{supra} note 3.
to these other group companies, further facilitating knowledge transfer throughout the Chinese party’s organization.

Thus the mantra among advisors to foreign companies entering China for much of the past 10 years was that control was paramount—control over intellectual property, human resources, and finances—and that a WFOE was the only way to go if you were in a sector that did not require a joint venture.

But was the story of the joint venture really as stark as that? Were joint ventures actually successful in extracting technology from their foreign partners? And what has changed for them to be making a comeback?

A. Forced Technology Transfer

Since the notorious issue of forced technology transfer is mostly associated with joint ventures, and caused so much misunderstanding around technology transactions, I address it in detail in this section.

As noted in the introduction, since the start of the U.S.-China trade war, the media and commentators have treated forced technology transfer and mandatory joint ventures as if this is part of the normal landscape of doing business in China. That is not to say it does not exist at all: three recent surveys of both U.S. and European firms operating in China found that between 17 percent and 19 percent of companies had been asked to transfer technology to a Chinese entity, or were sharing more technology with their partners than they did in other countries (although this particular survey did not ascertain if such sharing was voluntary or forced).19

The U.S. survey also showed, however, that the majority of those respondents were able to mitigate or avoid the request altogether. This data puts some perspective on the extent of the issue.

A further complicating factor is that there have never been explicit laws or regulations that technology must be transferred in a joint venture. The phenomenon has been implicit in rules and policies for state-owned enterprises (SOEs) in certain industrial sectors, and through various other forcing mechanisms that the Chinese party can apply. This has allowed the Chinese side to deny the existence of forced technology transfer whenever there have been efforts by diplomatic and trade representatives to address the issue.

The most detailed and cogent analysis of forced technology transfer is found in a study by Prud’homme et al. This study identifies some of the main mechanisms of forced technology transfer and uses empirical data and surveys of large European firms operating in China to assess their effects. The focus of the study is China’s strategic and emerging industries (SEIs), a major Chinese policy program to develop an independent and leading capability in several broad technology sectors. SEIs are most likely to be technology domains where the state, and state-owned companies, are aiming to acquire interests. Prud’homme et al.’s paper categorizes the different types of forced technology transfer tools in a manner that is useful and worth briefly summarizing here.


1. “Lose the market.” These are policy tools such as restrictions in ownership, requirements to form joint ventures, local content requirements, and business license approval requirements that are a necessary prerequisite for establishing a local entity. These are the tools that receive the most attention, although with the market liberalization of recent years, they are of diminishing importance.

2. “No choice.” This primarily means legal rulings, such as patent infringement or validity suits, that weaken protections for foreign IP rights. Although there is evidence of unjustified rulings against foreign firms operating in SEIs, the paper notes that these tools have the most potential to discourage foreign investment, and therefore we have not seen them prominently used. As noted in the introduction, the data prove that foreign IP owners tend to fare well in China’s courts.

3. “Violate the law.” This refers to laws and regulations that have direct or indirect effects on technology and IP exploitation. Although these may be partly circumvented or mitigated, they create some sense of a gray area and risk of enforcement. These include the now-scrapped TIER regulations referred to earlier, rules on standards setting, cyber-security, IP, and antitrust regulation. These tools are the least explicit, but in aggregate, create an uneven playing field for foreign technology owners and create leverage for domestic players.

As this shows, there are multiple mechanisms for forced technology transfer, of which mandatory joint ventures are no longer the most significant. The conclusion of Prud’homme et al.’s paper is that certain of these tools have proven more
effective than others, but that overall, they were only effective where there were specific combinations of tools acting on specific types of technology; otherwise, they had either little effect or even negative effect (that is, discouraging foreign investment).

Several other studies\(^{21}\) have pointed out that a requirement to form joint ventures as a condition of market entry has limited or suboptimal results depending on a range of variables, including the level of IP protection, maturity of the industry, the complexity of the technology, and the absorptive capacity of the domestic party. In many cases, the foreign partner to the joint venture provided technical plans of mature (or even outdated) technologies, supplying core IP from offshore. In some cases, it appears this gave the Chinese partner only the opportunity to acquire skills to manufacture and assemble, but not to design and develop, and created a dependency rather than a true leapfrogging capability.

The most notable example is the automotive industry, where numerous papers, most recently Howell,\(^{22}\) demonstrate that after nearly 30 years of operating joint ventures with the major automotive players, the Chinese car manufacturers who

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have benefited from these partnerships still only occupy less than 40 percent of the Chinese market and have virtually no market presence overseas. That is not to say that the foreign auto companies did not experience forms of IP theft—the issue of copying has been commonplace, not only clones of exterior designs (which have often caught international media attention), but also interior designs, blueprints of major subassemblies, and other intellectual property have been freely taken and passed to their own manufacturing and supply companies to replicate. So I do not wish to downplay the frustration and cost that IP rights abuse has caused to foreign car makers in China, but in terms of economic effect, such behavior has not led to a lasting advantage for the domestic industry as a whole.

In a more recent example, Chinese efforts to develop a domestic civilian aircraft industry have, to date, mainly involved foreign technology owners setting up joint ventures with COMAC, the main state-owned aerospace company at the heart of the industry, to assemble components and build local supply chains. However, much of the core technology, in particular relating to engines, remains offshore, and to date, there have been very few airlines, even Chinese state-owned airlines, placing orders for the first production models. China remains a very minor player in global aviation technology.

The poster-child of forced technology transfer, and probably the most successful example (from China’s perspective), is high-speed rail. Commentators have attributed this success to the fact that, first, the Chinese state was ultimately the sole builder, buyer, and operator of the technology (unlike cars, where Chinese customers voted with their wallets for the

23. Chen et al., supra note 15.
better-made foreign brands). A second key factor is that all the major foreign manufacturers, including Kawasaki of Japan and Bombardier of Canada, saw China’s high-speed rail project as a race to establish a lead position. Anecdotes from those who were involved suggest the foreign players were, to a great extent, willing participants in transferring know-how wholesale to their Chinese partners as the ticket to entry.24

In summary then, the “forced technology transfer” scenario was always less commonplace and more nuanced than the current rhetoric implies, involving subtle forms of leverage by the Chinese party and, often, a degree of compliance by the foreign party. In the context of the U.S. trade dispute and the new Foreign Investment Law, I believe it will become a chapter in history. While foreign technology owners should conduct robust due diligence to understand potential regulatory and commercial risks, I believe it is no longer the case that technology transfer in China involves a significant risk of state appropriation.

B. China Joint Venture 2.0

What has changed since then and why are joint ventures returning? I see a number of key differences between the joint ventures of the past and what I term “China Joint Venture 2.0.”

1. More respect for IP rights. As noted in the introduction, China has become an IP rights-owning economy on a massive scale. Although there is plenty to criticize about

China’s “force feeding” of the patent system through generous subsidies that have emphasized quantity over quality, there is also genuine innovation capability emerging. Many Chinese companies understand how difficult and costly it is to develop and protect intellectual property, appreciate the value of others’ IP and, as a matter of pride, do not wish to be painted as copycats.

2. A more mature business environment. Generally, Chinese companies are becoming more understanding of the need for sustainable relationships with international partners, and see the value of a reputation for good governance. This includes state-owned companies, many of which are publicly listed and have an increasingly professionalized management and advisors. It is not unusual now to be negotiating with representatives of SOEs who have studied at top-ranked universities overseas or have spent time in international companies.

3. Changing competitive drivers for Chinese companies. In the vintage “China Joint Venture 1.0,” the Chinese partner may not have been cash-rich but provided cheap labor and other inputs, as well as the only feasible gateway to market (at least, as it seemed to many foreign players at the time). Chinese partners’ focus was on building a basic and independent capability in their industry sector and their mindset was more on replacing the foreign technology with a domestic capability, achieving clear political and economic goals. In today’s environment, the Chinese party is often the one risking more cash, and its focus is on both domestic and international competitiveness against its rivals. China has long ceased to be a market for selling outdated technology for a domestic economy
looking to catch up technologically. Chinese companies now are, generally speaking, looking for frontier technologies that will put them ahead not only domestically but globally. Although the cost of the technology input is of course important, speed of deployment to realize that commercial edge is far more important than taking the risk of trying to replicate the technology themselves.

4. Changing political environment. As already noted above, as a result of the trade dispute with the United States, China has made a number of moves to counter the accusations of forced technology transfer, including in the new FIL, expressly prohibiting government and the private sector from requiring transfer of technology. Thus, I believe that the egregious examples of the past cannot be repeated in the future. Indeed, in two recent joint venture negotiations with SOEs the Chinese have been keen to stress that the foreign party does not have to assign technology into the joint venture as part of the deal, suggesting that, among Chinese SOEs at least, it may be politically toxic to be seen to be demanding transfer of technology. In my view, this is not simply a superficial and short-term response to the trade dispute but represents a shift that was already starting but which the trade dispute has accelerated.

5. Changing legal regime. Finally, the “China Joint Venture” as a distinct entity will soon no longer exist. As mentioned earlier, China’s new FIL coming into force on January 1, 2020, repeals the existing joint venture and WFOE laws, leaving corporate entities governed solely by China’s Company law—either limited liability or partnerships. Although many of the detailed implementing rules are yet to be
clarified, there is now more flexibility, for example, in allocation and transfer of share capital, equity contribution, and governing law, making this an interesting and exciting time for foreign investors contemplating setting up a new entity in 2020. There is ample commentary from legal commentators on differences between the new and old rules.\textsuperscript{25} The effect of the FIL, however, should not be overstated. The old joint venture regime was becoming more liberalized, and although it imposed some rules Western companies found awkward, it was not a legal straightjacket. Foreign technology owners will still want to form companies jointly with Chinese partners, and the fundamental dynamics that affect how well foreign and Chinese shareholders, directors, and managers work together will still be in place.

6. \textit{Changing calculus for foreign companies}. The above factors are acting to change the approach of Chinese companies toward negotiations. The appetite to acquire frontier technologies means that the nature of the foreign technology owners entering into joint ventures is also changing. Whereas Joint Venture 1.0 in its earliest years was a game played by large corporations building the “big pipes” of infrastructure, energy, transport, and communications using tried and tested technologies (sometimes outdated), the opportunities now for niche technologies that build on top of this layer are more apparent, and this means more

small- and medium-sized enterprises (SMEs) making an entrance. To take some recent examples I have encountered, technologies for improving ultrasound diagnostics, for making the burn in gas furnaces more efficient, or for more efficient cooling of data centers can only have value in a market where the base level of infrastructure, and the competitive drivers for greater efficiency or lower environmental impact, are already established. For many of these SMEs, the risks of venturing into China are outweighed by the availability of capital and a partner willing to accelerate them into a huge market. In most cases these SMEs would struggle to make headway in the market their own, as I discuss below in Section V. The alluring logic of a joint venture that marries the technology from a foreign SME with cash and go-to-market resources from a larger Chinese party is propelling many of the “Joint Venture 2.0” negotiations we see today.

My points here are aimed at dispelling impressions that forced technology transfer is in any way a normal feature of technology transactions in China, or that a joint venture with a Chinese partner automatically involves compromising core IP assets.

C. Words of Caution

However, my previous comments do not mean that a joint venture in China can be undertaken without caution. Many seasoned China advisors still say that joint ventures should be avoided if it is not legally required (and there are very few remaining sectors where this is the case). This is primarily because of the inherent challenges in achieving alignment with your partner.
Furthermore, despite my assessment that the forced technology transfer tools of the past will not be a feature of future deals, I do not play down in any way the Chinese leadership’s current “techno-nationalism” and how this will continue to drive Chinese companies to use any leverage to acquire technologies. China has an explicit aim of becoming independent of foreign dominance in certain key technology domains in the domestic market and, ideally, to assume a position of global leader in those domains as well. IP owners should be aware of how these strategic issues may touch on the everyday work of structuring technology deals, especially with SOEs. Although SOEs are more commercially driven than in the past, the level of political control on a management level by the Chinese Communist Party has actually increased in recent years under President Xi’s tenure.26 One of my colleagues with direct experience of central government policy making summarized the new approach as, “China has become better at liberalizing most of the areas of the economy which it does not need to actively control, while more effectively tightening up control of some key areas that it really cares about.”27 In other words, in the midst of a general easing of doing business in China, she sees an uptick of laws, regulations, and policies that provide more effective control over strategic IP, in particular data. It would be impossible within the scope of this chapter to give an effective overview of new rules and


27. Personal communication to author by Jin Ling, Principal, Lusheng Law Firm, Shanghai, 2018.
policies relevant to all sectors and it must be left to IP owners to seek qualified advice. I would be remiss, however, not to mention two major areas of policy and legislation that have drawn particular concern from foreign businesses and governments and demonstrate China’s continuing assertive industrial policy.

1. *Made in China 2025 (MIC2025).* Launched in 2015, the MIC2025 program is a comprehensive and long-term industrial mega-policy aiming to bring China into a globally leading position in 10 specific technology domains. It specifically sets global and domestic market share targets for Chinese industries; provides funding for R&D, sales subsidies, and overseas acquisitions; and preferential policies for domestic industry development, which inevitably puts foreign participants at a disadvantage not only within China but in export markets. MIC2025 has been a focus of concern by U.S. and European governments, and although top Chinese leadership have recently stopped referring to the policy in public, it is optimistic to expect that the plan has been shelved. A report by the European Chamber of Commerce in China, which sets out the concerns of European business regarding MIC2025, provides an excellent overview and numerous case studies on the impact of this program on foreign businesses.28

2. *The Cyber-Security Law.* Introduced in 2017, this law is the basis for a raft of legislation that tightens up Chinese government control over Internet service providers,

encryption services, operators of networks that are deemed “critical,” and cross-border data flows. This legal regime has been widely criticized, especially by foreign investors, for shutting out international players in China’s Internet services and Internet-Of-Things infrastructure and for requiring an unnecessary duplication and localization of data processing. The implication for technology vendors is that they may be forced to partner with local companies, which may compromise valuable data and IP around data processing, as well as the potential for the government to force “back door” disclosures of sensitive data.

D. Key Deal Dynamics in Joint Ventures

With this context in mind, what are the main parameters for negotiating a joint venture deal in China where commercialization of technology is the main objective? There are in essence only two, closely related issues: (1) What is the amount and form of equity contribution between the parties? (2) How will the joint venture be governed and managed, and how does the foreign IP owner maintain control of its IP in the joint venture?

E. Equity Contribution—Intellectual Property or Cash?

Regardless of the demise of the previous joint venture legal regime and the application of the Company Law, the parties will still need to put cash or other assets of value into the joint venture as their equity contribution. The “classic” scenario was that the foreign party contributes intangibles in the form of IP and the Chinese party contributes cash, plant, equipment, and so on. However, leaving aside instances where the foreign party
felt “压ur-esed” to do so, there is no legal requirement that the foreign party’s contribution is in the form of IP—it would be equally acceptable to use cash. This of course is often the problem for an SME technology owner: without sufficient cash to put into the joint venture, their only contribution is their IP.

This IP contribution for equity, by long-standing practice of the commercial authorities that license businesses, has only been recognized if the IP was assigned (that is, the ownership transferred) to the joint venture. A license was ineligible because it was deemed nonpermanent (that is, it could be terminated, thus negating its value as a capital contribution). The law is not clear whether a license can be counted as an intangible equity contribution, and the new FIL will not change this situation. It is very likely that under the new FIL, foreign and Chinese parties are completely free to determine between them whether an IP license can count as an equity contribution, although the lack of clarity in the law could pose problems in the event of a dispute.

The situation may be different if the partner is an SOE. As custodians of state assets, SOEs are tightly supervised and audited. Any situation where state assets or cash are to be invested will require a qualified appraisal agency to also conduct a valuation of the IP to be transferred into the joint venture, to ensure that the deal represents fair market value. It is less likely that an SOE can receive approval to form a joint venture where it puts in cash valued against an IP license. This

29. Previously, the State Administration of Industry and Commerce (SAIC), since August 2018 now merged into the State Administration for Market Regulation (SAMR). Joint venture registrations are made with the Ministry of Commerce (MOFCOM) although there is no longer any active “approval” process.
is an area where the IP owner will need to test how far the SOE partner is simply using negotiation tactics, and where it may be genuinely unable to consummate a deal based on a license owing to internal policies. The terms of the license, and the valuation ascribed to it, will also be factors here: an exclusive license of long duration that is not easily terminated at will by the licensor has a better chance of being recognized as a secure asset. Ultimately, bargaining power is paramount. In situations where the Chinese party has a pressing need for a technology solution that the foreign party provides, the foreign party may have more bargaining power and internal policies may turn out to be more flexible.

A work-around is that the foreign party will make its contribution to the joint venture in the form of cash and the IP is provided to the joint venture as a license, not capitalized as an asset. There is enough flexibility in the rules that the foreign party can receive the license fee out of the joint venture (provided the Chinese party injects cash into the joint venture) and then “round trip” the license fee cash back as its equity contribution into the joint venture. Thus, the foreign IP owner has purchased its equity in the joint venture with cash and IP ownership has remained in the foreign owner’s hands. There are, however, tax losses, and of course the arithmetic only works if the license fee paid by the joint venture to the IP owner is significant compared to the cash contribution the IP owner has to make to the joint venture.

Keeping core IP outside of the joint venture and simply licensing-in is both possible and increasingly common. Given that the foreign IP owner, especially an SME, does not realistically expect to have effective management control over the China joint venture (as I discuss below), they see the IP license as a potential “kill switch” on the joint venture that rebalances
the parties’ relative bargaining power. The Chinese party of course will be alive to that possibility too and will try to mitigate the risk of license termination by raising the threshold on termination conditions.

Much of the forced technology transfer issues of the past were less about operation of law *per se*, and more about the relative bargaining power between the parties in relation to technology ownership and control. With the political attention on forced technology transfer, its prohibition under the new FIL, and more liberalized incorporation rules, I believe that technology deals will be on a more level playing field, although the commercial realities of differing levels of bargaining power will of course remain.

**F. Control of Information—Trade Secrets**

Once the joint venture is formed, it would be naïve to suggest, however, that transfer of valuable know-how does not take place, regardless of the formal licensing arrangements. A joint venture, by its very nature, involves comingling of technical and operational knowledge into an entity that is separately owned and governed. The level of control over IP in a joint venture is determined not only by management control of the joint venture, but also the nature of the IP itself: how much is embodied in patents or other structured forms of IP, such as formulas, manuals, and blueprints, which can be ringfenced, and how much involves tacit know-how where the transfer is irreversible. Much of the value of new technology lies in the latter.

Where the IP value is encapsulated in confidential information, protection is undoubtedly a harder task. Protection of confidential information (trade secrets) is traditionally an area of weakness in China’s IP protection regime. As noted above,
April 2019 saw a revision of the Anti-Unfair Competition Law, the law that, among other things, protects trade secrets. The amendment widens the definition of protected trade secrets, increases civil awards, and most important, provides for a reversal of the burden of proof onto a defendant who is apparently making use of the protected secret to prove that it was derived from a lawful source. Given how new these amendments are, it remains to be seen if they will remedy the weaknesses in the current protection. In particular, the amended legislation does not change the availability of criminal remedies, which remain very rare.

Stories of Chinese joint venture partners whose affiliated companies access confidential information from the joint venture, or key individuals and teams who leave with sensitive information and set up rival operations, were commonplace in the previous two decades, and were a strong contributor to the overall aversion to joint ventures. Issues of loss of confidential information via employees’ bad faith were not confined to joint ventures, and have equally afflicted WFOEs (as mentioned below). However, clearly in a joint venture the issue is exacerbated if the other partner is a co-conspirator.

For trade secrets, prevention remains the best medicine, meaning robust procedures for identifying and isolating confidential information through physical and access protocols, regular training, and contractual controls over employees, including restrictive covenants, which are enforceable. This is true of course regardless of the corporate form. In the context of a joint venture, such measures can be agreed between the parents in the shareholders agreement and implemented when

30. See again, Yang & Wang, supra note 9.
the joint venture is set up. Expert local counsel with specific experience in trade secret management should be sought out to assist with this, but ultimately, a culture of compliance within the firm will be the most effective long term.

**G. Management and Governance**

The ongoing control of IP in a joint venture is determined not only by how the firm is structured at the outset, but of course also how the joint venture is governed, managed, and operated. The repeal of the Joint Venture Law and replacement by the Company Law should provide more flexibility for the parties to determine this.

However, aside from the changed legal framework, the reality for most will be that a joint venture is still a Chinese company, operated according to Chinese standards. This is even more likely in a joint venture with an SOE, where the SOE is likely to want a voting majority and, operationally, will impose its own management practices on the entity. After all, the rationale for forming the joint venture is likely to be the local market knowledge and access that the Chinese party brings. Given that, it is unlikely that a Chinese shareholder, even if a minority shareholder, would invest capital and resources into an operation that is not well adapted to the local market. Unless the foreign IP owner has a very capable localized team to manage the joint venture, it is probably more realistic to proceed on the understanding that the foreign party will not have the leading role in management of the company.

Hence, given that a joint venture formed around a technology invariably involves at least some permanent transfer of know-how (even if the core IP is licensed-in) and that the Chinese partner will likely have a strong role in management,
does that mean the foreign partner will inevitably find its IP advantage eroded by the joint venture? This is a difficult question to answer with certainty as, unfortunately, there is little empirical data available specifically on “loss” of IP within joint ventures in China. To gather such data, it would be important to look at many contextual factors, such as the period in which the joint venture was established, whether the Chinese party was a powerful SOE, whether the IP was transferred into the joint venture intentionally by the foreign party, whether there was more IP transferred than intended, and, indeed, whether the joint venture itself survived, was acquired by either party, or terminated acrimoniously. As noted above, the episodes of IP expropriation of the past are not likely to be a helpful guide to Joint Venture 2.0 of the present and future. Where a joint venture fails, it is difficult to know if IP was the culprit or victim. There is no shortage of studies, however, of success and failure of joint ventures in China, and it is hardly a revelation to say that many of these studies show that trust between the parties, manifested and measured through various behaviors, has been a predictor of joint venture longevity and commercial success in China.31 With apologies for stating the obvious: finding the right partner at the outset, going through a process of building mutual trust, and reinforcing this through legal agreements that are honored is most likely to fulfill the commercial expectations on which the joint venture was formed.

IV. Taking It Offshore—Co-Investing Overseas

An alternative to the domestic joint venture in China is for the Chinese and foreign parties to create a new, jointly owned entity outside of China. This then operates onshore in China in either of the following ways:

- The offshore entity sets up in China as a WFOE (legally considered foreign-owned, with the Chinese party’s stake now in the guise of foreign investment).

- The offshore entity licenses to a domestic entity, which may also be an entity of the Chinese partner and whose interests and behavior are tied to the offshore entity by means of its equity holding and a well-crafted shareholder agreement.

The second option is also called a variable interest entity (VIE), which has received some notoriety as the legal gray area in which China’s giant e-commerce companies, such as Alibaba, operate. Because the VIE is a rather special situation that is only used as a work-around in a few restricted industries, and because I would advise steering clear of this corporate form, I will not cover it in more detail here. For those interested in this contentious area of Chinese corporate law, two of the best China law commentators, Mark Schaub and Steve Dickinson, offer competing viewpoints.32 For now, I confine my comments

to the first option, which is an offshore jointly held entity that operates in China in a fully legal manner as a WFOE.

The essence of this “offshore joint venture” concept is simply that the parties still form a jointly owned entity, but avoid the requirement to form a joint venture under Chinese law, and instead incorporate in a jurisdiction that has more flexible corporate rules and, ideally, low taxes. A favorite venue for such offshore joint ventures is Hong Kong, given its proximity and familiarity for the Chinese partner combined with its Western common law system and independent judiciary. Low tax jurisdictions such as the Cayman Islands are also becoming more common. With the introduction of the FIL, and particularly if the law permits foreign law shareholder agreements, the rationale for forming an offshore joint venture outside of China’s borders may be less compelling. In any event, Chinese companies, especially SOEs, may be less willing to incorporate in an unfamiliar jurisdiction and may insist (again, citing “internal policies”) that they can only invest in entities in China subject to Chinese law.

Quite apart from foreign jurisdiction issues are also currency exchange restrictions. China’s currency is not freely tradable and foreign exchange is subject to restrictions. Since its peak in 2016, Chinese outbound investment in the United States has plummeted more than 80 percent.33 There are many reasons for this, in particular, the Chinese government’s crackdown on irrational and overpriced investments, while on the

U.S. side, the increasing scrutiny on Chinese investments by the committee on Foreign Investment in the United States has had a chilling effect. The result has been that any investment offshore is subject to case-by-case approval and, in the context of a cross-border deal, can never be assumed. On the other hand, where the proposed investment is not huge and the rational business case can be made, and especially where the partner is an SOE with a close relationship with a state-owned bank, the parties should be able, at an early stage of fleshing out a deal, to test whether an offshore investment is possible.

Finally, a deal may also include investment directly into the foreign IP owning company, instead of a separate special-purpose vehicle. This is usually in combination with a license and/or China joint venture. The rationale is that it demonstrates that the Chinese partner has a stake in the foreign company’s success globally and is not purely motivated by its self-interest in China. This is an attractive idea in theory and sometimes ends up as part of the deal, although it is not always feasible. Apart from the difficulties of foreign exchange approval, as mentioned above, the Chinese party may not be best suited to a role as strategic investor with a seat at the board of the partner company. For the Chinese party to buy a token equity stake in the foreign parent does not provide the hedging function that the foreign party might intend, while Chinese companies may also be wary of a minority stake with no board representation. Indeed, the Chinese party may even insist on a majority stake, which it sees as the only way to protect its interest. We have

34. The Committee on Foreign Investment in the United States, a department of the Treasury, see https://home.treasury.gov/policy-issues/international/the-committee-on-foreign-investment-in-the-united-states-cfius.
seen this with SOEs that operate under rules that if they invest overseas, they must have a controlling stake. Of course, the option to invest in the technology owner may not be open at all if the company is not seeking new capital. Hence, an investment into the foreign IP owner, while potentially providing a neat balancing of interests in a joint venture or license situation, is often more difficult to achieve in practice.

V. Going It Alone—the Wholly Foreign-Owned Enterprise

If there are challenges with licensing and joint ventures, the obvious answer is to go it alone and commercialize technology through a wholly owned subsidiary. I am still surprised how many executives I meet who are misled by the “China Joint Venture” story and still unaware that 100 percent ownership is possible in the majority of sectors in China. Indeed, the WFOE has long been the norm in China, comprising 80 percent of foreign investment between 2008 and 2014.35 Control over IP was often the driver for this: one study on modes of technology transfer has demonstrated that a WFOE is preferred where either trust in IP enforceability is low (and therefore keeping IP in house is the safest option) or where other transaction costs are high, such as the complexity of the technology and difficulty of effectively transferring learning.36

As noted earlier, for many years, due to the perceived risks of joint ventures, it was gospel among China experts that a

35. See again, chart in Lardy, supra note 2.
WFOE was always preferred as a means to maintain full control over the company’s operations. Even with the emergence of Joint Venture 2.0, the challenges of governance and trust between the Chinese and foreign party remain significant, as I have discussed above. However, what the return of joint ventures in recent years reflects, particularly for smaller foreign companies, is that the disadvantages of WFOEs are also becoming recognized, namely, that “going it alone” with your own entity, hiring personnel, installing equipment, and winning contracts carries significant costs and execution risks. What many of the advisors, myself included, overlooked when preferring a WFOE to a joint venture was the trade-off between greater control versus a potentially longer and costlier road to profitability compared with partnering with a local player.

In some respects, the new FIL mentioned in the introduction, which has abolished the joint venture and the WFOE as defined corporate forms, may remove the distinction between the two options. There will be more flexibility, at least in theory, in the choices between whether the foreign or Chinese party largely owns or controls the entity, so that a foreign technology owner can benefit both from the support of a Chinese shareholder and from a sense of greater control of the Chinese subsidiary. Arguably, that flexibility was always there in the increasingly liberalized joint venture regime of recent years, but abandoning the corporate form altogether will constitute a step-change in normalizing corporate governance and change perceptions and behaviors for both foreign and Chinese partners.

Although a WFOE appears to eliminate the IP risks inherent in a joint venture, it would be very misleading to assume that IP risk for WFOEs is low. All companies, whether foreign or domestic, have faced significant threats to their IP, as I noted in the introduction to this chapter, and for some companies,
these issues became a major drain on resources and resulted in significant loss of commercial advantage. Some of these threats came from rampant piracy of products by third parties, sometimes in collusion with the victim’s own suppliers or distributors. Stories of a trusted key employee with total control over a company’s China operations going rogue, taking the know-how and setting up a rival operation, used to be commonplace, although less so today. As noted in the introduction, I believe the high tide of rampant IP theft and piracy has passed, and foreign companies are finding improvement in protection of IP, as evidenced by surveys of European Union and U.S. businesses. However, a high degree of precaution is still advisable to control both external and internal risks. Although the WFOE provides the potential for full control of IP internally within the organization, that control must be realized through strong measures such as restrictions over access to information, regular training on management of confidential information, and robust provisions in employment contracts. There are numerous useful and free reference resources on protection of IP, as well as lists of leading IP advisors, and companies entering the market have no reason not to be fully prepared.

VI. Conclusion

In respect of IP, the current U.S.-China trade dispute is largely a distraction, based on issues that were already of diminishing importance, and masking what is in fact a growing volume and velocity of cross-border technology transactions. Although the trade dispute has proved useful in accelerating some reforms,

37. See, again, supra note 8.
the direction of travel toward a more reliable and robust system for IP owners was already clear. U.S. companies, armed with the right information and local advisors, will find China increasingly favorable for commercialization of technology. In sectors such as new energy vehicles, manufacturing automation, healthcare, and clean technologies, the scale of the opportunity, availability of funding, ambitious partners, and speed to market make China one of the most compelling destinations.

Above and beyond IP, the trade war is clearly a geopolitical test: on the one hand, of the United States’ ability to accommodate a rising economic power that does not share its political values, and, on the other hand, China’s understanding that its nationalistic and protectionist approach is inconsistent with its desire to participate in global trading rules. The current atmosphere of a “cold war” for technological supremacy will likely remain a source of tensions until a balance of interests is rediscovered. The stakes are high for achieving this balance—as the McKinsey Global Institute finds in its study, there are still large gaps in China’s economic linkage with the rest of the world, with potentially US$22 trillion to $37 trillion by 2040 to be gained from greater engagement in several key areas.38 Much of this engagement between China and the world must be led by governments, but it will also be determined through the individual decisions of businesses large and small. I hope this chapter will help in a small way to guide those decisions.

Index

A
academia. See university system, Chinese
Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), 17, 27–29, 40–41, 104
American Bar Association (ABA), 20
Anti-Monopolies Law, 18
Anti-Unfair Competition Law, 132
Apple, 53–54
AsusTek, 56–57

B
Beijing Advanced Innovation Center for Structural Biology (ICSB), 84
Big IP
analysis of, 4–9
move toward Strong IP from, 9–16
Brief of National Strategy of Intellectual Property, 45
business entities, Chinese exterior motivation for IP commercialization in, 44–57
interior motivation for IP commercialization in, 42–43
joint ventures (See joint ventures)
China National Intellectual Property Administration (CNIPA), 6, 14–15, 17–18, 21, 37

technology licensing and, 107–108

CNKI (National Knowledge Infrastructure), 89

co-investing, overseas, 135–138

commercialization, IP
conclusions on, 57–58
definitions of, 35–36
effect of changes to, 56–57
executive branch and, 55–56
exterior motivation for, 44–57
general policies of China in, 40–42
inspiration from government policies and attitude of society to, 44–48
interior motivation for, 42–43
in joint ventures (See joint ventures)
judicial branch and, 53–55
legislative branch and, 49–53

origin of, 36
as pillar of IP policy, 9–16
recent legislative changes relevant to, 16–18
robust legal system in support of, 19–29
status quo, 2017, in, 36–40
structures for deal-making in (See deal-making dynamics)
Copyright Law, 17
Cyber-Security Law, 127–128

deal-making dynamics
conclusions on, 140–141
introduction to, 98–106
joint ventures, 114–134
technology licensing, 106–114
“Double-First Class” Initiative, 61–62

effective branch and IP commercialization, 55–56
exterior motivation for IP commercialization, 44–57
F
Fair, Reasonable, and Non-Discriminatory (FRAND) commitments, 43
forced technology transfer, 116–121
Foreign Investment Law (FIL), 25–27, 105–106, 121, 129, 131
Fourth Amendments to Patent Law, 19–22
Fractus v. OPPO, 56–57

G
Global Health Drug Discovery Institute (GHDDI), 83–84

H
higher education. See university system, Chinese
High Technology Enterprise certification, 46
Huawei, 39, 43, 47
Huawei v. Samsung, 53

I
intellectual property (IP) laws
background on, 2–4
commercialization and (See commercialization, IP)
conclusions and practical advice on, 29–31
current framework of, 16–18
fairer licensing treatment for foreign parties under, 22–29
Foreign Investment Law (FIL) and, 25–27
legal system in support of, 19–29
National Appellate IP Court, 21–22
national policies with commercialization as a pillar of, 9–16
numbers and analysis of the numbers in, 4–9
structure for transactions under (See deal-making dynamics)
interior motivation for IP commercialization, 42–43
iPEL, 56–57
Iwncomm v. Sony, 54
J
Japan Patent Office (JPO), 6
joint ventures, 114–116
China Joint Venture 2.0
changes in, 121–125
equity contribution in,
128–131
forced technology transfer in, 116–121
key deal dynamics in, 128
management of governance of, 133–134
overseas co-investing by,
135–138
trade secrets and, 131–133
wholly foreign-owned enterprises (WFOEs)
and, 138–140
words of caution for, 125–128
judicial branch and IP commercialization,
53–55

K
Ku, Katharine, 94

L
Lardy, Nicholas, 107–108
Law on Scientific and Technological Progress (LSTP), 18
Law on the Promotion of Transformation of Scientific and Technological Achievements (LPTSPA), 18
legislative branch and IP commercialization, 49–53
licensing, technology challenges with, 110–114
deal-making dynamics in, 106–114
fairer treatment for foreign parties and, 22–29
by multinational companies, 109–110
Li, Shulan, 51

M
Made in China 2025 (MIC2025), 127
management and governance of joint ventures, 133–134
multinational companies, licensing by, 109–110

N
National Appellate IP Court, 21–22
National Intellectual Property Protection and Utilization Priority Tasks Division Plan, 10
National Intellectual Property Strategy Outline, 10
National Medium- and Long-Term Program for Science and Technology Development (2006–2020), 41
National Railroad Company, 3
National Strategy of Intellectual Property, 41, 45
National Supercomputing Center in Wuxi (NSCC), 84–85
nonpayment of licensing fees and royalties, 114
Notification of Investigation on Governmental Policies of Intellectual Property Application, 47
Nuctech Company Ltd., 88–89

P
Paris Convention for the Protection of Industrial Property, 17
Patent Cooperation Treaty (PCT), 17, 40
Patent Law, 2–3, 17, 36
development of procedural law and, 51–53
development of substantive law and, 50–51
Fourth Amendments to, 19–22
numbers and analysis of the numbers under, 4–9

People’s Daily, 79
Philips Electronics, 110
procedural law, 51–53
Project 211, 61
PROJECT 985, 61

Q
Qing Dynasty, 2
Qualcomm v. Apple, 53–54, 56–57

R
Research Institute of Tsinghua University in Shenzhen (RITS), 80–81

O
offshore entities, 135–138
overseas co-investing, 135–138
S
Samsung, 53
Service Invention Regulations (SIR), 18
Several Opinions on Accelerating IP Power Construction under New Conditions, 10, 12–13
Several Opinions toward Developments of Intellectual Property in a New Era, 45
Shenzhen Research Institute, 80–81
Silicon Valley, 91
Sino-Foreign Equity Joint Ventures Law, 25, 26–27
small- and medium-sized enterprises (SMEs), 125, 129, 130–131
social credit system, 15
Speedy Enforcement Centers, 14–15
Stanford University, 91–92
State Intellectual Property Office (SIPO), 8–9, 17–18, 20, 72, 75
state-owned enterprises (SOEs), 129–130
Strong IP definition of, 13
move from Big IP, 9–16
substantive law, 50–51
T
Technology Import and Export Regulations (TIER), 23
technology transfer among Chinese academic institutions, 69–76
early indicators of success in, 71–72
financial and human resources and, 75–76
ineffective intermediary services in, 74–75
lack of incentives to inventors for, 73–74
lack of policy and structure at institutional level and, 73
legislative and other government efforts in, 70
remaining challenges for, 72–76
Tsinghua University and (See Tsinghua University)
Index

technology transfers
among Chinese universities
(See technology transfer among Chinese academic institutions)
forced, in joint ventures,
116–121
U.S.-China disputes over,
99–106
13th Five-Year Plan on National Intellectual Property Protection and Utilization,
10, 13–14
Tian, Li-Pu, 8–9
TIER provisions, removal of,
27–29
time horizon and licensing, 111
timing of license fees and royalties, 111–112
Trademark Law, 17
trade secrets, 131–133
triple helix model, 81–83
Tsinghua Holdings,
85–90, 91
Tsinghua QiDi, 87
Tsinghua Tongfang, 88–89
Tsinghua Unigroup, 89–90
Tsinghua University,
76–77
history and status of,
77–80
integrated research centers in basic sciences, focused on real-world applications at, 83–85
Office of Technology Licensing at, 91–94
as part of Tsinghua Holdings, 85–90, 91
ranking of, 78–79
Shenzhen Research Institute and, 80–81
technology transfer and, 90–91
Triple Helix Model and, 81–83
TusPark, 87–88
U
United States Patent and Trademark Office (USPTO), 6
university system, Chinese
background on, 60
competitive environment of, 60–63
conclusions on, 94–95
industry collaboration with, 66–69
private investment and, 67–68
ranking of institutions in, 62–63, 78–79
rapid expansion of, 63–64
university system, 
Chinese (Continued) 
remaining challenges for, 72–76 
student returnee 
contributions to, 65 
technology transfer among 
institutions of, 69–76 
Tsinghua University in 
(See Tsinghua University) 
unique factors in, 65–69 
U.S. Chamber of 
Commerce, 20 
U.S.-China trade agreements, 22–29 
technology transfer 
disputes and, 99–106 

W 
wholly foreign-owned 
enterprises (WFOEs), 138–140 
See also joint ventures 

World Intellectual Property 
Organization (WIPO), 17, 35–36 
World Trade Organization 
(WTO), 17, 19, 24–25, 40, 104, 115 
Agreement on Trade-
Related Aspects of 
Intellectual Property 
Rights (TRIPS), 17, 27–29, 40–41, 104 

X 
Xiaomi, 39 
Xiaoping, Deng, 36, 40 

Z 
ZhongGuanCun (ZGC), 91 
ZTE, 43, 47
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