Intellectual Property Rights and the Game Industry

A thesis submitted to the University of Manchester for the degree of Doctor of Philosophy in the Faculty of Humanities

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Abstract

This thesis analyses how intellectual property (IP) laws are used in the home console game industry and in particular how these laws are used to capture the returns on investment, which may indirectly provide a stimulus to innovation. The relationship is evaluated in three selected markets: The United States (US), the European Union (EU) and People’s Republic of China (PRC). The first two of these are selected as representative of developed markets whilst the latter as an instance of an emerging market. This thesis analyses and illustrates ways in which three major types of intellectual property rights – patents, copyright and trademarks operate in this sector of industry.

This thesis evaluates this relationship via a unique approach, adopting both a legal and economic analysis. The thesis starts with a detailed market analysis of this industry to identify key factors that affect individual firms’ abilities to capture returns on investment. This is followed by section II (comprising Chapters II to IV) which goes on to examine the effects of each type of IPR on these factors in the developed markets of the US and Europe. The analysis in section III shifts the focus from these developed markets to the emerging market in the PRC. It identifies the unique attributes and problems of the Chinese market and demonstrates how contemporary local IP laws can be used to tackle these problems. It is the view of this thesis that IP laws theoretically can be used to maximise a firm’s return on investment while not distorting competition; hence, the thesis suggests that IPRs may indirectly create incentives to innovate.
Declaration

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Dedication

This thesis is dedicated to my late grandfather-in-law
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Finally, but more importantly, I would like to thank my family for their constant
support and unconditional love.
Abbreviations

AFC: Abstract-Filtration-Comparison test
AG: Advocate General
CJEU: Court of Justice of the European Union
CA: Court of Appeal
CCNIC: China Internet Network Information Centre
CCPIT: China Council for the Promotion of International Trade
DCA: Dynamic Capability Approach
EEA: European Economic Area
EPC: European Patent Convention
EPO: European Patent Office
ERBV: Extended Resource Based View
EU: European Union
EUIPO: European Union Intellectual Property Office
GAPP: the PRC General Administration of Press and Publication
GPC: The China Game Publishers Association Publication Committee
IPRs: Intellectual Property Rights
ISPs: Internet Service Providers
ITC: International Trade Committee of the United States
MOC: the PRC Ministry of Culture
MOII: the PRC Ministry of Information Industry
NCAC: The PRC National Copyright Administration
OHIM: Office for Harmonisation in the Internal Market
PCT: Patent Cooperation Treaty
PRC: People’s Republic of China (Mainland China)
RBV: Resource Based View
SOPG: Shanghai Oriental Pearl Group
SMEG: Shanghai Media and Entertainment Group
SC: Supreme Court
SCE: Sony Computer Entertainment
SCEI: Sony Computer Entertainment International
SCEA: Sony Computer Entertainment of America
SPC: The PRC Supreme People’s Court
UK: The United Kingdom
UKHC: The Court of Justice of England and Wales (England and Wales High Court)
UKIPO: Intellectual Property Office of the United Kingdom
USPTO: Patent and Trademark Office of the United States
USC: The United States Code
TPMs: Technological Protection Methods
TRIPs: Agreement on Trade-related Aspects of Intellectual Property Rights
US: United States of America
WIPO: World Intellectual Property Office
WTO: World Trade Organisation
WCT: WIPO Copyright Treaty

Legal Report Abbreviations
Bus LR: Business Law Reports
Ch: Chancery Division of Law Reports
CMLR: Common Market Law Reports
ECDR: European Copyright and Design Reports
ECR: European Court Reports
ETMR: European Trademark Reports
EWHC (Ch): England & Wales High Court (Chancery Division)
EWCA Civ: England & Wales Court of Appeal (Civil Division)
FSR: Fleet Street Reports
F 2d or F 3d: Federal Reporter of the United States (first, second, and third series)
F Supp or F Supp 2d: Federal Supplement of the United States (first and the second series)
RPC: Reports of Patent, Design and Trade Mark Cases
S Ct: Supreme Court Reporter
United States Federal Court Abbreviations

The United States Court of Appeals
1st Cir: First Circuit
2d Cir: Second Circuit
3d Cir: Third Circuit
4th Cir: Fourth Circuit
5th Cir: Fifth Circuit
6th Cir: Sixth Circuit
7th Cir: Seventh Circuit
8th Cir: Eighth Circuit
9th Cir: Ninth Circuit
10th Cir: Tenth Circuit
11th Cir: Eleventh Circuit
DC Cir: DC Circuit
Fed Cir: Federal Circuit

United States District Court
CD Cal: Central District of California
ED Cal: Eastern District of California
ND Cal: Northern District of California
SD Cal: Southern District of California
D Md: District of Maryland
D Neb: District of Nebraska
D Nev: District of Nevada
D NJ: District of New Jersey
EDNY: Eastern District of New York
NDNY: Northern District of New York
SDNY: Southern District of New York
**WDNY**: Western District of New York  
**ND Ill**: Northern District of Illinois  
**ED Wash**: Eastern District of Washington  
**WD Wash**: Western District of Washington  
**ED Va**: Eastern District of Virginia
Table of Statutes

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WIPO Copyright Treaty
WTO Trade-Related Aspects of Intellectual Property Rights (TRIPs)

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European Patent Convention

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The United Kingdom Trademark Act 1994 (TMA)

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Xunlei v Wanglong (2013) MinShenZi No 1910 (The PRC Supreme People’s Court)

Yujian CHI and others crime of copyright infringement (2014) HaiXingChu No 1633 (Beijing Hai Dian District People’s Court) (First Instance Criminal Judgment)
General Introduction

In this thesis, I set out to evaluate the hypothesis that intellectual property laws create incentives for firms to invest in developing and marketing innovative products by maximising their prospective returns on investment in a competitive market. I adopt a theoretical basis for the evaluation and my particular focus is the home/static console videogame industry.

1. Reasons for Selecting the Home Console Game Industry

It is, in practice, impossible to test this hypothesis across hundreds or even thousands of sectors. Thus, I set out to test this hypothesis in a selected industry which can be easily scrutinised and tracked in terms of its history and structure. Three types of intellectual property rights (IPRs): patent, copyright and trademark all play a role in this industry which is one of the key reasons why the home console game industry was selected for this study.

In addition, the home console game industry is a relatively young and booming industry, which means its history is well documented and can be relatively easily tracked. The structure of the industry is also more easily identified than other industries. The core operators in this industry are the console firms of which there are only three. Although there are thousands of game companies (including developers and publishers), distributors and retailers, all their activities depend on the console firms. Furthermore, all participants in the industry, wherever positioned in the stream of production, share a common purpose – to sell games and capture returns from the final customers, the so-called game players. The whole industry can thus be observed by examining console firms. Lastly, the customers of this industry also have far simpler requirements than those in other similar industries such as the personal computer (PC) industry where the uses to which the products are put are far more varied. For the customers of this industry, the main purpose of buying a

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1 Phrases ‘game company’ or ‘game companies’ will be used in this thesis to refer to both game developing companies and publishing companies. Therefore, a game company can be used to refer a console firm that develops first-party games. Game companies also include external second-party and third-party game developers and publishers.
console is to play games. All these features have significantly reduced the difficulty of testing the hypothesis in this thesis.

This industry is driven, to a large extent, by three factors: technological innovation, artistic creativity and consumer influence. Not only does it possess major characteristics that are similar to other traditional entertainment industries such as music and film industries where artistic creation and consumer preference are also two crucial driving forces, but this industry is also influenced by technological innovations particularly in the area of hardware. Technological advances have a significant impact on the ways of making artistic creations (games) to satisfy consumer demand in each console generation. This industry has thus become a suitable place to evaluate the respective and combined roles played by patents and copyright in relation to firms’ incentives to invest in developing and marketing of innovative products.

Furthermore, commercialisation translates technological innovations and artistic creations into financial returns. Brands and trademark are nowadays essential components in any firms’ attempts to commercialise new products. Hence, this industry is also a suitable field to test the relationship between trademark protection and firms’ incentive to invest in innovative products.

2. **Key Questions of this Thesis**

It is quite difficult to reach the definite conclusion that IPRs provides incentives to innovate. The major difficulty is that there is no consensus about what innovation in this context means. Commonly in IP research the terms ‘invention’ and ‘innovation’ are used interchangeably by IP lawyers. But it is clear that the term ‘invention’

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sometimes has a quite different meaning from ‘innovation’. Tirole suggests that invention is the first step of innovation; the point being that the latter requires significant additional development activities to get products or services to consumers.⁴ For Tirole and others, innovation is a complex process, involving a series of steps from idea to selling products or services to consumers. The phrase innovative activities could be used to include all activities involved in those steps, ranging from R&D to commercialisation of final products in the console game industry. Throughout this thesis I have tried to avoid referring directly to innovation in acknowledgement of the fact that it is a very hard concept to define with any clarity. I do however refer frequently to the development of new products. My research then looks to the relationships between intellectual property rights and the development of novel products. Such products may or may not incorporate inventions. Such products may incorporate other subject matter that can be protected by intellectual property rights.

Another factor that causes difficulty in reaching a comprehensive conclusion that IPRs provide incentives to innovate is that there is no good and direct measure to assess this relationship.⁵ All IP lawyers and economists at best use proxies to examine this relationship. Although it is possible to conduct statistical analyses aimed at elucidating this relationship, the accuracy and utility of such studies are highly dependent on the size and choice of the sample and the ways in which the data is processed. ⁶ Collecting and verifying a sample of data that is large enough to make an unbiased assessment of the relationship between IPRs and incentive to innovate would be impossible to achieve as part of a Ph.D. research project and all the more so given that first-hand data on the console game industry is not as publicly available as data of other industries. Hence, a theoretical analysis is applied in this

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⁵ Ibid.

thesis, starting with a commonly accepted and indeed fundamental aspect of economic theory: that innovative activities flow from market competition.  

In general, competitive markets create incentives to invest in innovation. But in such an environment firms or individuals may not be able to capture enough returns on their investment so as to cover their costs of innovation precisely because of the competition they face. In such circumstances, firms will be discouraged from making investments in innovative products. Such returns are prospective. As such, they may not innovate unless they believe they can capture enough returns on investments they made in innovation. The main intellectual property theory, asserts that IP laws including patent and copyright law are created to consolidate this belief in order to encourage innovation. Patent and copyright laws give sufficient incentives, normally in the form of exclusivity or a monopoly for a certain period to an individual so that they are more likely to invest in innovations.

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8 Ibid.
11 See, e.g., Jeanne Fromer, ‘Expressive Incentives in Intellectual Property’ (2012) 98 Virginia Law Review 1746-1824, p. 1750 (The latter approach includes labor-desert approach and personhood approach that are discussed separately by other researchers.); William Fisher, ‘Theories of Intellectual Property’ <http://www.law.harvard.edu/faculty/tfisher/iptheory.html> accessed 15 March 2017 (The author divided theories into four categories. In addition to utilitarianism, labour-desert and personhood, the author listed ‘fostering the achievement of a just and attractive culture’. However, the author also admitted that this approach is less well established and recognised than the other threes.).
12 Anne Flanagan and Maria Lilff Montagnani (eds), Intellectual Property Law: economic and social justice Perspectives (Edward Elger Publishing 2010), p. 49. See also, William Landes and Richard
principle applies to trademark law as it generates incentives for businesses to produce consistently high-quality goods and services by granting right holders exclusive rights to exploit the economic values of their marks and marked goods and services.\textsuperscript{13} Commercialisation of innovation is a key stage in determining the amount of returns the innovator can capture. Given the important position of trademarks in commercialisation, they thus may indirectly affect the incentive to innovate.

For all that, it is important to emphasise that incentives to invest in innovation will be suppressed without competition.\textsuperscript{13} To the extent that intellectual property laws stifle competition, they too can be seen as reducing the incentive to innovate. Certainly, it is important that firms capture returns on investments directed towards innovation, but the exercise of IPRs can become harmful to the extent that they allow firms to dominate markets free from competitive pressures.

Therefore, the hypothesis that will be tested in this industry can be rephrased into one question, namely:

‘How do the three IPRs affect right holders’ prospective returns from investments made in innovation while at the same time not distorting competition in the industry?’

Although console components in this industry are supplied by firms from the semiconductor industry,\textsuperscript{14} console firms are the only parties in this industry that invest in hardware design, production and marketing. They also invest in the development and marketing of first-party games. In addition to console firms, game companies invest in second-party and third-party game development. In other words, both of these types of firms are the only parties introducing core innovative products (i.e., game consoles and games) into this industry. Therefore, the original question can be rephrased as:

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\textsuperscript{13} Landes and Posner (2003), pp. 166-209.
\textsuperscript{14} For detailed analysis, see chapter I below.
‘How do the three IPRs affect the prospective returns from investments made in innovation by console firms and game companies while at the same time not distorting competition in this industry?’

As will be illustrated in detail in Section I, returns from investments captured by an individual or a firm are not merely determined by the outcome of competition with direct competitors. They are also affected by non-competitors and the total revenues that the whole industry can generate. For instance, in this industry, a console firm has to deal with upstream suppliers, game companies and downstream distributors and retailers to produce products and distribute them to game players. Although these parties do not compete with the console firm directly for a market share, they do share the total incomes of the value chain with the firm. Therefore, leverage, or so-called bargaining power, is also of significant importance because it affects the proportion a firm can extract from the total income of a value chain.15

Leverage forms part of the relationship between one firm and the other parties in a stream. Such relationships include but are not limited to two parties that form direct business relationships with each other and can even exist between two parties that are divided by other intermediate parties. As long as the stream of production is disintegrated, bargaining power is important in a firm’s ability to capture returns. In addition, the total revenues that an industry can capture also affect an investor’s returns. As will be shown in Section I, the total revenues that an industry can capture are affected by its supply industry (suppliers), competitive industries and illegal copies of products (substitutes), and buyers’ arbitrage (buyers).16 The first factor in the home console game industry is the semiconductor industry as firms in this industry supply almost all the hardware parts of console platforms. With regard to


16 For details, see the analysis of the industry in the Chapter I.
the second factor, the analysis in Section I will show that illegal copies of games as substitutes for authentic copies, divert substantial revenues away from the whole industry. The third factor concerns parallel importing of games (the so-called grey market) and second-hand game trading. These two issues reduce revenues gained by both console firms and game companies.

This industry is characterised by the two-sided nature of its market. The market is divided by the console firms into two halves, with the customers on one side and the game companies on the other. Both sides have a network effect, which means that the value of buying one platform or product increases when the number of users of this platform or product increases. For example, a consumer will normally choose a platform with a larger installed base when all other factors are equal because it suggests that he/she could play a game with more people. This is called the ‘same-side network effect’. Game companies will use the size of the installed or customer base of a console platform to decide whether or not to develop and publish a game for that platform. The larger the customer base that a console platform has, the more games are likely to be produced for that platform. The same principle applies when customers use a number of supporting games when they select consoles. This is called the ‘cross-side network effect’. This brief analysis implies that console firms are at the centre of this industry. In other words, like other two-sided markets, which are generally orientated by platform providers, this industry is orientated by

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19 Phrases ‘installed base’ or ‘customer base’ mean number of users of a particular platform, the console in this thesis.
console firms. Console firms are the only connection between hardware suppliers in the semiconductor industry and other participants in the home console game industry. Thus, without investment by console firms in hardware, the whole industry would disappear. On the other hand, the prosperity of this industry also relies on the contribution of game companies. The resources and capacities of console firms in game development are limited. They have to rely on external game companies. It follows that intellectual property rights, to be effective, must have impacts on both the console industry and the game industry. The original question can, therefore, be rephrased and divided into the following four separate questions:

(1) How do IPRs affect market competition (hardware market and software market)?

(2) How do IPRs affect a firm’s capabilities to compete with competitors (competitive capabilities or competitiveness)?

(3) How do IPRs affect a firm’s capability to bargain for a larger proportion of total revenues with other non-competitive parties in a stream (leverage);

(4) How do IP laws regulate game piracy parallel importation of games and second-hand game trading to maximize total revenues that the whole industry can capture?

In Section I, I will examine the industry and identify these factors in detail.

3. Relevant Literature and Contribution

Although the home console industry emerged more than twenty years ago, since 2005 it has attracted more attention from academics in the area of business studies.

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21 Competition is defined narrowly in this thesis to not include suppliers and distributors that might become potential competitors with a focal firm. See, Porter (2008) (In this article, competition is understood to include not only direct competitors.).

22 The concept of ‘game piracy’ refers to all acts that contribute to manufacturing and distribution of illegal and unlawful copies of copyright work. Such acts include, but are not limited to making and traffic in illegal copies. It also includes acts such as helping others circumvent copyright protection measures through providing such services or disseminating circumventing tools. As regards conception of ‘traffic in’, see Chapter III below.
Their research has contributed to the understanding of this industry from different perspectives. Some research has recorded the history of this industry while other research has tried to determine its key features in terms of competition by analysing its historical records, and further observations have been made to identify key success factors in terms of competition. Research has also focused on ways of using strategies and tactics to secure these factors, and tried to explain and test the features of this industry through theoretical or empirical approaches. The network effects in the industry is a feature that has been most heavily studied with some researchers exploring how to improve strategies and others examining the dynamics between game sales and the market performance of consoles. Despite this research, there has been a lack of research into the value chain through the lens of organisation economics, and particularly ones that adopt an interdisciplinary perspective. Although various types of economic theories have been developed to

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23 See, e.g., Steven Kent, The Ultimate History of Video Games: From Pong to Pokémon and Beyond: the Story Behind the Craze that Touched Our Lives and Changed the World (Prime Pub 2001); Tristan Donovan, Replay: the history of video games (Yellow Ant 2010); Sam Pettus, David Munoz and Kevin Williams, Service Games: The Rise and Fall of SEGA: Enhanced Edition (CreateSpace Independent Pub 2013); Black Harris, Console Wars: Sega vs Nintendo and the Battle that Defined a Generation (Atlantic Books 2014).


27 See above n 18 and 19.

28 Binken and Stremersch (2009).

29 This concerns associations between strategies, organisation structures, organisational performance and competitive advantages of a firm. See, e.g., Sytse Douma and Hein Schreuder, Economic Approaches to Organisations (3rd eds, Prentice Hall 2002) (This study can be used to explain the form of firms.); Jay B Barney and William S Hersterly, Strategic Management and Competitive Advantage (Global Edition, Pearson 2015) (Organisational Structure is treated as types of strategies to gain competitive advantages.).
understand the benefits and costs of vertical integration, they have rarely been adopted in order to further understanding of this industry. Even though the issue of the value chain has recently been examined in some studies, the authors have either only mentioned the organisational structure of firms in this industry briefly or else left the impact of organisational structure on a firm’s performance in this industry unaddressed. As indicated by previous studies, the organisational structure of a firm serves as a competitive strategy that effects the market environment and alters the results from market competition. Most recently, Ricard and Frederic explored the relationship between vertical integration and market performance of game companies by adopting an empirical approach. These two researchers examined the association between the success factors of competition and organisational structure. If nothing else, this article implies that organisation economics can be used to offer a more comprehensive understanding of this particular industry.

Previous literature concerning the relationship between IPRs and the home console game industry has normally focused on examining IP protection of software. In such studies, patents and copyrights have been the focus of the analysis. Modern patent law, however, has its origins in the Victorian period, long before the emergence of computers and software Patent-related studies on this industry are generally concerned with the roles of patents in relation to software, with a focus on questions such as whether factors embodied in games could or should be protected

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32 Williams (2004).

33 Gil and Warzynski (2014).

34 Ibid.

under contemporary patent law. Rarely have researchers conducted a detailed analysis of the relationship between hardware innovation and patents in this industry. Whatever its impact on software development, one would expect patent law to influence developments in hardware. In this thesis, the effects of patents on competition in the hardware market will be examined in detail and demonstrated in order to fill this gap.

Game software, as a type of creative expression, has been extensively examined in studies relating to copyright law. Previous relevant studies have focused in large part on mod-chips and technical protection methods (TPMs). Other relevant literature has also discussed the ownership of user-created works in games. Video games also often feature as illustrative examples in critiques of copyright protection for

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software in general.\textsuperscript{39} The common essential question in all of these previous studies is whether or not copyright law encourages creativity in the home console game industry. What the authors of these studies typically miss is that this question can only be answered by considering the broad range of copyright law’s effects rather than focusing on one particular aspect of copyright law. For example, it is manifestly necessary to consider the impact on game piracy in any reflection on the scope of allowable reverse engineering. Similarly, the extent to which the law should place restrictions on users circumventing so-called technological protection measures (TPMs) needs to be considered in light of the fact that the primary purpose of these acts is to play illegal copies of games.\textsuperscript{40} Therefore, such a question should be answered by taking both legal and economic realities into account. In the home console game industry, only three parties are involved in game creation: console firms, which are responsible for developing and publishing first-party games; developers, which develop games independently; and publishers, which may also develop games if they own studios. It is the view put forward in this thesis that copyright law broadly operates to increase the likelihood of these three parties capturing returns from investments made in novel games that they have developed. In understanding the role of copyright here, it is important to appreciate that returns are not only affected by competitors who develop similar works but also by other parties in streams that use copyright as leverage in their relations with other game companies to extract a bigger proportion of the income. For instance, if copyright gives a console firm a right to compel all game companies to apply for a license from it before developing games, the bargaining power of console firms with game companies may become incredibly strong and innovation in game development may be impeded as a result. In addition, game piracy and second-hand game reselling also act to divert a percentage of the total revenues that console firms and game companies can gain. These factors that affect the returns of game companies will be

\textsuperscript{39} See, e.g., Ulla-Maija Mylly, ‘An Evolutionary Economics Perspective on Computer Program Interoperability and Copyright’ (2010) 41 (3) International Review of Intellectual Property and Competition Law 284-315 (In this article, author uses Sega case to illustrate how the US court use economics on complementary assets in their decision regarding application of fair use doctrine.).

\textsuperscript{40} This is the very situation before the government removed console ban in China.
identified and examined in this thesis in order to find out how copyright law affects them.

Although the term ‘trademark’ is a legal phrase, in business literature, the term appears sometimes to be used by authors as a synonym and alternative to the term ‘brand’. As will be shown in detail in Chapter IV, it is difficult to find a precise and clear boundary between these two concepts. As such, unless the context requires otherwise, for ease of exposition this thesis will assume that a trademark signifies one product and, refers to a specific brand. A brand will contain a registered trademark plus other elements that cannot be registered as trademarks. Even though the general economic functions of trademarks or brands have been extensively studied by IP researchers, rarely have these researchers conducted a detailed analysis which connects these two concepts; and certainly not in this particular industry. My thesis will connect these two concepts in order to test how and the extent to which trademark law affects the ability of firms operating within the industry to capture returns on their investment in novel products.

In addition to filling the abovementioned gaps in existing IP research, the primary contribution of this thesis will be to bridge economic studies and legal studies on intellectual property with a view to considering whether or not IPRs provide an effective means by which proprietors can maximise the returns on their investment while not distorting competition in this particular industry, and in this way stimulate innovation. As far as can be ascertained, this has not been done in any existing studies before. Given that the home console game business is a global business, the hypothesis will be tested both in developed markets, represented by the EU and US, and a developing market, specifically the People’s Republic of China (PRC). Another reason for choosing China as a case study is that it is the first emerging market in this industry. Because of the size of the potential customer base, China may become the largest console gaming market, which is important to the potential growth of this

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41 David Aaker, Managing Brand Equity: capitalizing on the value of a brand name (The Free Press, 1991); Kevin Lane Keller, Strategic Brand Management: building, measuring, and managing brand equity (3rd edn, Upper Saddle River NJ 2008).
42 See, e.g., Dale North, ‘PlayStation 4 in China: why Sony is willing to put up with piracy, the gray market and communist red tape’ (Venturebeat, 22 January 2015) <http://venturebeat.com/2015/01/22/playstation-4-in-china-why-sony-is-willing-to-put-up-with-
industry since the developed markets are already saturated. How intellectual property rights function in developed markets potentially provide important lessons for China, accepting that the market conditions there are significantly different in some important respects. Because it is emerging, there has been little if any serious scholarly analysis of the Chinese video-game market and industry. In this regard, my thesis will also contribute to existing literature by analysing the impact of IPRs on the Chinese home console game industry from both legal and economic perspectives.

4. **The Structure of this Thesis**

As indicated in the original question above, two aspects have to be considered in order to test the hypothesis. First, this thesis has to evaluate the impact of each type of IPR on competition as a whole. Second, it must consider the effects of each type of IPR on the ability of firms to capture returns on their investment in a competitive environment. Bearing these two tasks in mind, this thesis is broken down into three sections as outlined below.

**Section I**

Finding answers to the original question requires an understanding of the home console game industry. That is the objective of this section. This section only has one chapter – Chapter I. It provides an introduction to the structure of this particular industry to enable an understanding of how individual participants conduct business within it. In order to achieve this goal, many complementary economic theories are introduced, compared and synthesised so as to analyse both the internal and external factors exerting influences on firms operating within this industry. This section serves two purposes. First, by clarifying the relationships between individual participants, organisational structure and competition in this industry, factors that affect the ability of console firms and game companies to capture returns can be identified and better understood. The second purpose of the section is to lay the

piracy-the-gray-market-and-communist-red-tape/> accessed 15 March 20176 (There were over 10 million illegal copies of *Grant Theft Auto V* being downloaded from ‘ali123.net’ despite the fact that this game was forbidden in China. It is also worth mentioning that 33 million copies were sold worldwide at the same period.). See also, ‘Survey on Behaviour of Online Gaming Players 2013’ (CNNIC, 2013) <https://www.cnnic.net.cn/hlwzyj/hlxzbg/201409/P020140901332967921309.pdf> accessed 15 March 2017 (There were 345 million game players in China before the government removed the console ban.).
foundation for further analysis in Section II by outlining the ways in which the relationship between IPRs, investment and returns can be tested.

Section II

This section is constituted of three chapters, each of which analyses in turn the impact of patents, copyrights, and trademarks in relation to their effects of maximising the proprietors’ returns on investment in the competitive market that characterises the home console game industry.

Chapter II focuses on analysing both the effects of patents in providing incentives to invest in the development of novel products and the impact of patents on competition in the videogame industry. The initial focus of analysis in this chapter is the console hardware market. It will show that most parts of console hardware are in fact supplied by firms from the semiconductor industry. This suggests that it is hardware suppliers who bear the main burden of carrying out hardware developments which are then incorporated into novel products by the console manufacturers to the benefit of final customers. The greater the breadth and extent of product development in the semiconductor industry, so the higher the likelihood that the home console game industry derive a corresponding benefit in terms of developing its own new products. Hence, the focus in this chapter will shift to the semiconductor industry. This chapter will illustrate how patents incentivise suppliers in the semiconductor industry to invest in research and development by intensifying competition while giving right holders temporary exclusivity in exploiting the resulting patented technologies. Both the legal and information functions of patents will be examined to demonstrate the ways in which patents facilitate vertical disintegration in the semiconductor industry and thus lower the entry barrier of this industry.\[43\] At the same time, this chapter will address the inherited problems of the patent system that can act to stifle competition and so reduce incentives to innovate. The analysis will show how the internal mechanism of the patent system and courts can work simultaneously to reduce these problems. This chapter also explores ways

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\[43\] For disintegration of the semiconductor industry, see e.g., Ludovic Dibiaggio, ‘Design Complexity, Vertical Disintegration and Knowledge Organisation in Semiconductor Industry’ (2007) 16 (2) Industrial and Corporate Change 239-267, p. 251.
by which patents affect a firm’s ability to capture returns on investment in the home console hardware market. Analysis in this chapter will show how the patent system allows console firms to gain competitive advantages while also allowing the smaller innovative firms that supply the market to recover their investment costs.

Chapter III will examine the relationship between copyright and innovation in this industry. The focus will shift from the hardware market to the software market. This chapter aims to examine the ways that copyright affects competition between firms operating in this industry. The impact of copyright on the relationship between game companies and the relationship between game companies and console firms will be examined. The chapter will show that copyright de facto confers on a game company a relatively weak right to prevent competitors from imitating or cloning its games. It also aims to reveal that copyright does not provide console firms, as platform providers, market power in the software market. Furthermore, it will highlight that copyright is a necessary yet inadequate means by which a game company or console firm can gain competitive advantages. In addition, this chapter also underscores the effectiveness of copyright in protecting copyright works against game piracy by analysing ways in which it can be used by right-holders to restrain the diffusion of illegal copies and circumventing tools.

Besides developing and producing new products, both game companies and console firms have to successfully commercialise these so as to effectively compete in the market and thus capture returns on their investment. This last step of the innovation cycle requires account be taken of the demand-side of the market and in particular then the consuming behaviour of game players. It is the trademark that connects upstream parties with game players. Chapter IV relates brand equity and trademarks from the perspective of testing the effects of trademarks both on competition as a whole and on the ability of firms to capture returns in the face of competition. With regard to competition in this industry, this chapter will show why trademarks cannot be used by console firms to control game companies beyond controlling the quality of marked products. At the same time, the analysis will also demonstrate how trademarks can be used to contribute to the ability of firms, game companies in
particular to capture returns by strengthening their competitiveness and increasing their bargaining power with other parties.

Finally, both Chapter III and Chapter IV will briefly consider how copyright law and trademark law regulate the parallel importation of games and second-hand game reselling. The analysis in these chapters will compare the EU and the US in terms of the regulations of IP laws on these two issues. By identifying the differences, the analysis will also attempt to reveal the reasons behind such differences. Additionally, the analysis in these two chapters will show that neither copyright nor trademark is a reliable means for a console firm or a game company to prevent the reselling of second-hand games. Accordingly, this thesis will suggest digital distribution as a better solution than IP protection with respect to solving these problems and reducing the losses that these two problems cause to console firms and game companies.

Section III

This section has only one chapter – Chapter V. This chapter extends the preceding analysis of the relationship between IPRs, investment, market returns and product development from developed markets formed in market economies to an emerging market in a transitional economy. The roles of patents, copyright and trademarks in the Chinese home console game industry will be examined in order to demonstrate how IP laws can be tailored to this unique market environment to give both foreign investors and local parties incentives to invest in developing new products for this market. Starting with an introduction to the industry in the PRC, the factors that are unique to this industry will then be identified. This industry will be shown to be characterised by the following three aspects: (1) it is under-developed, with no local console industry and local game companies that are only just starting to emerge; (2) it is highly regulated by the government which imposes a compulsory joint-venture requirement on foreign investors and a strict content censorship policy on imported games; and (3) it suffers from both game piracy and grey market problems that are far more serious than those in any other developed market in the world. It will then be argued that the priority for both foreign and local investors is to establish an official market in which they can compete. To maximise the revenues that this
industry can capture from the Chinese market, it is first necessary to resolve the problems of game piracy and the existence of the grey market. This chapter will analyse IP laws in China and compare them with their counterparts in the developed markets in order to demonstrate ways of tailoring contemporary Chinese IP laws to solve these problems. In addition, this chapter will underscore the importance of trademark and copyright both for foreign investors who wish to capture more returns by attracting local customers, and for local developers who want to enter the market. The analysis will show that trademarks and copyright are indispensable for a firm in gaining returns on investment even though such effects have been weakened by the government regulations on this market.

The last chapter offers some concluding thoughts on the limitations of the research and proposes several avenues for future study.
Section I

Chapter I: Understanding the Home Console Game Industry

1. Introduction

In this chapter, the home console game industry will be examined using economic theories in order to form an understanding of the structure of this industry and how operators compete within it. Given their crucial role in coordinating the operation of the whole industry, the following analysis focuses initially on console firms. The second part will then go on to give an overview of the structure of this industry to form a general understanding of the major participants in this industry. In the third part, organisation economics is introduced and compared in order to carry out a synthesised framework, which will be used to examine this industry in the fourth part. The fourth part analyses both the external environment and internal factors that influence the position and sale of operators within the industry. Factors necessary for console firms and game companies to succeed in competition will be identified; this will be followed by the ways to gain competitive advantages. A conclusion will be given in order to connect the contents of this chapter with the chapters that follow it.

2. The Home Console Game Industry

This industry can coarsely be divided into two sub-industries – hardware and software. The three major parties involved in the hardware production chain are: (1) console firms (platform providers); (2) hardware suppliers, who supply and/or manufacture semi-custom semiconductor components; and (3) hardware manufacturers, who are responsible for assembling consoles. The software production chain is constituted mainly of three parties – independent developers, independent publishers and console firms. With regard to the stream of distribution of game software, console firms, independent publishers and traditional retailers are the participants.

2.1 Hardware and Game Software Production
Three console firms control about 97% of the hardware market – Nintendo, Sony and Microsoft.¹ They orchestrate hardware production as well as software production. With regard to hardware production, all three mainstream firms design console platforms in-house while forming partnerships with hardware suppliers that supply custom semiconductor components (e.g., CPU, GPU and RAM, etc). Hardware suppliers (semiconductor suppliers) customise components both on the basis of their own technologies and the clients’ requirements. At the same time, hardware suppliers either give console firms authorisation to arrange manufacture of custom components, manufacture components for console firms themselves, or allow both.²

Console firms then outsource console assembly to third-party manufacturers who normally have plants in developing countries like China or Brazil where labour costs are significantly lower than in developed countries.³ Efforts at product development in the console market are normally focussed on the user interface, with the objective of bringing a new game experience to final customers.⁴ For the latest generation, for example, all three mainstream firms have developed remote controllers to transform the way in which video games are played.⁵ Recently, they have been trying to combine virtual reality (VR) and console games. A VR device is a headset that creates a virtual environment for the user.⁶ Sony plans to release its PlayStation VR (a headset) on PlayStation 4 (PS4) at the end of 2016 after three years of in-house

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² ‘AMD 2014 Annual Report on Form 10-K’ (AMD, 19 February 2015) (The present business model is AMD designs custom System-on-chips (SoCs) for all console firms. these SoCs are manufactured in AMD’s contracting foundry-GLOBALFOUDRIES Inc.).
⁴ ‘Microsoft 2015 Annual Report’ (Microsoft, 31 July 2015), p. 12 (Microsoft believed that user interface is one of sources of competitive advantages.).
development. Microsoft has partnered with Oculus, a VR company owned by Facebook, and will bring Oculus Rift VR on Xbox One this year.

Games can be divided into three categories based on whether the developers are independent, or owned by independent publishers or by console firms. First-party games are developed and published by studios owned by console firms. These games are exclusive to one particular console platform. Third-party games are those which are developed by external studios. Such studios are either independent or owned by independent publishers. These games are published by independent publishers or console firms. Independent developers and independent publishers (‘game companies’) have the power to choose the platforms on which their games are released. Second-party games are exclusive to a platform. Nonetheless, they are developed by external developers and the majority of them are published by console firms. Due to the extremely high production costs and marketing expenses, publishers are normally responsible for providing all the financial support for independent studios. Furthermore, when a game is developed by independent developers, publishers will also pay the developer royalties based on a percentage of net revenues after games are sold to final customers. In exchange, publishers will typically demand exclusive rights in exploiting a game developed by an independent developer.


Publishers represent game developers in negotiations over licenses with console firms which charge publishers a licensing fee and royalties. A game must meet all the strict quality standards and guidelines set by console firms before being marketed to final customers.

2.2 Hardware and Software Distribution and Retailing

Hardware distribution is conducted by console firms. Consoles are sold through both third-party retailers (e.g. high street stores, online stores and supermarkets) and stores owned by console firms.\(^\text{11}\)

Independent publishers and console firms are responsible for distributing games. In the past, games were mainly sold in retail stores. Publishers and console firms had to compete for limited shelf space. As a result, retailers and distributors possessed considerable leverage over publishers and console firms. Research shows that a decade ago they could capture roughly 30% of total revenues.\(^\text{12}\) However, online distribution changed this balance. After a decade of development and operation, the three mainstream console firms are now able to distribute games, downloadable contents (DLCs) and add-ons using their own online distribution platforms. This method has already exceeded physical distribution, becoming the major way of distributing digital contents.\(^\text{13}\) In addition to profiting from game sales, console firms also charge final customers subscription fees if they want to play games with other users via the internet.\(^\text{14}\)

In order to reach more consumers, publishers and console firms spend huge amounts of money on marketing. The marketing costs of a game sometimes equal or double the costs of making it.\(^\text{15}\) Small or even medium-sized professional studios

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cannot afford to bear the costs associated with marketing, let alone individuals. Publishers and console firms will devote great efforts to marketing console games. Given that publishers have to pay both development and marketing costs as well as royalties to developers if the developers are not owned by them, publishers are thus the ones who bear all the risks of failure in the market. This has led to a high level of acquisitions and mergers in the game market\(^\text{16}\) as, if an independent studio is acquired by a publisher, then that publisher does not need to pay royalties to the studio. It also increases publishers’ leverage with console firms if its studios possess important and profitable titles.

Individual or small developers that develop games for console platforms may not be able to afford development and marketing costs if their works are not attractive enough to independent publishers. In the past, they could choose to develop games for a platform without obtaining licenses from the console firm. Nowadays though, both Sony and Microsoft are running programs specifically in favour of individual or small developers. If their applications are approved\(^\text{17}\) then Microsoft and Sony will assist them to publish and distribute games via their distribution platform to final customers.\(^\text{18}\)

The preceding paragraphs have provided an overview of the roles played by different parties in this industry. The following will examine the ways that they compete with each other.

3. **Economic Approaches to Organisations**

The study of organisation economics (OE) covers various areas of business organisations, ranging from studies on boundaries of firms to strategic management

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\(^{16}\) See, e.g., Aphra Kerr, ‘The UK and Irish Game Industries’ in Peter Zackariasson and Timothy Wilson (eds), *The Video Game Industry Formation, Present State, and Future* (Routledge 2012) 116-133 (The majority of independent developers in the UK and Irish were bought by foreign-owned companies).

\(^{17}\) See, e.g., ‘Welcome to ID @XBOX’ [http://www.xbox.com/en-GB/Developers/id] accessed 15 March 2017 (Small developers or individuals can get free development kits and even start funds.).

in competition. OE gives some insights into competition in a particular industry through the lens of organisation structures. All questions answered by OE come down to a fundamental question – why do transactions shift between markets and organisations?

Economists relate the division of labour to specialization. They explain that exchange takes place in society because nobody can produce all the products they need. When exchange takes place, it is referred to as an economic transaction. Transactions on the market are coordinated by a price system although, as indicated by Coase, organisations sometimes replace a price system as the means of coordinating transactions. Economists follow two major approaches to explain the shift between markets and organisations – the Transaction Cost Economic approach (TCE) and the Capability approach. Both approaches emphasise asymmetry of information as the source of various costs in transactions in a free market.

3.1 Theories of Firms

TCE emerged from Coase’s *The Nature of the Firm*. Williamson later introduced the concepts of opportunism and contractual completeness into this approach. TCE roughly divides the cost of using a price system into three categories: first, there is the cost of finding out the price of products or services; second, there are the costs of drawing up a contract that specifies all conditions and anticipates all future contingencies; and third, there is the difficulty that both parties sometimes experience in reaching agreement on certain conditions.

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19 See, e.g., Douma and Schreuder (2002) (The authors related the basic economic approach to their economic contribution to the field of strategic management.).
21 Coase (1937).
23 Coase (1937).
25 Ibid.
Hart provided the first formal model of TCE, which he called Property Rights Theory (PRT), by making precise assumptions about restraints of contracting. Under PRT, the incompleteness of a contract might lead to a ‘hold-up’ problem after one party makes a transaction-specific investment, also called a ‘sunk cost’. A transaction-specific investment would be devaluated without the transaction. When this party makes such an investment, it is vulnerable if another party tries to renegotiate the contract. Under such circumstances, the former party is ‘held up’. Incomplete contracts, opportunism and future uncertainties create transaction costs: that is the costs of using a price system to coordinate market transactions. Under TCE, the firm is chosen as a governance structure when the costs of carrying out a transaction on the market exceed those of completing the same transaction within a firm.

The Capability approach explores firms from a different but complementary perspective. Capabilities are defined by Richardson as ‘appropriate knowledge, experience and skills’ that are required by organisations to carry out activities. It is an approach that focuses on cost knowledge. For instance, it emphasises the concept of production costs which are incurred because knowledge is sometimes very costly to communicate among parties on the market. This is because not all knowledge can be codified. Much knowledge is tacit and can only be acquired through a time-consuming process of learning by doing. An organisation creates an environment in which learning is encouraged and routines can be practised and improved in the long run. Hence, knowledge communication becomes more effective and efficient within organisations than on the market. Put differently, a firm/organisation replaces a

26 Illya Segal and Michael Whinston, ‘Property Rights’ in Robert Gibbons and John Roberts (eds), The handbook of Organizational Economics (Princeton University Press 2013) 100-158.
market to engage business when information flow within a firm is more effective and efficient than it is among parties on the market. This also implies that market transactions might take place when information flow is more efficient on the market than within the organisations even though transaction costs are high.\(^{32}\)

Both TCE and the Capability approach contribute to studies on strategic management.\(^{33}\) TCE is widely cited as an indispensable factor of a firm’s performance when market transactions or hybrid arrangements are required by firms to do business.\(^{34}\) The Capability approach is widely used as a fundamental building block in the field of strategic management. The following analysis will show that the capabilities of a firm not only determine the boundaries of the firm but also differentiate one firm’s market performance from another.

### 3.2 Strategic Management Theories

There are two mainstream approaches for strategic management. One is the ‘competitive forces’ approach which emphasises the influences of industry structure and position of a firm in this industry on its competitive performance. The other is the ‘capability and resource’ approach which focuses on the effects of a firm’s internal factors on competition. Both approaches show factors that shape competition. The former concerns the external environment of a firm while the latter concerns the internal factors. Both internal and external factors are related to a firm’s performance in competition.

#### a. Framework for Analysing Firms’ External Environment

Porter’s ‘five forces’ approach has been widely adopted by managers to examine the market position of a firm in an industry.\(^{35}\) It introduces five major forces that shape competition in an industry. These are: (1) the threat of a new entrant; (2) supplier

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33 Douma and Schreuder (2002).
34 Transaction costs exist both outside and inside a firm because of the ubiquitous asymmetry of information. However, in general, such costs are lower within an organisation than them between parties on the market. Therefore, transaction costs normally are considered when a hybrid organisation structure is adopted by a firm in doing businesses.
power; (3) buyer power; (4) the threat of substitutes; and (5) rivalry.36 This framework emphasises the function of the strategic response to competitors’ moves in competition which fits into an oligopolistic market like the console hardware market where participants possess a similar position in the market.37 Details of this framework will be given when it is used to analyse this industry below.

![Five Forces Framework Diagram]

**Fig 1. Five Forces Framework**38

### b. Frameworks for Analysing Firms’ Internal Factors

Strategic management also emphasises ways of coping with competition through utilizing firms’ internal resources and capabilities. VRIO is normally adopted to analyse a firm’s internal factors in order to understand the sources of competitive advantages. This tool is developed on the basis of Resource-Based View (RBV) which emphasises ‘firm-specific capabilities and assets and the existence of isolating mechanisms as the fundamental determinants of firm performance’.39 RBV is an

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36 Ibid.
economic theory which suggests that firm performance is determined by resources and capabilities controlled by firms. Under VRIO, valuable (V), rare (R) and costly-to-imitate (I) resources and capabilities can be sources of competitive advantages. However, whether or not any of these can generate competitive advantages depends on the organisation structure (O) adopted by firms. Therefore, ‘O’ determines whether or not a firm can be organised to exploit the full competitive potential of its resources and capabilities.

The original framework of VRIO is VRIN which is an acronym of ‘Valuable, Rare, Costly-to-imitate and Non-substitutable’. This framework asks four questions which are the same as the questions under VRIO except for the last question. The last question of VRIN is whether or not they are non-substitutable. As will be shown below, the replacement of N with O in VRIO can be seen as an upgrade in response to the Dynamic Capability approach (DCA), another line of analysis on the competitive advantages of firms.
DCA emphasises the dynamic nature of competition. Compared with the original RBV, DCA focuses on providing guidance for managers of firms to build and maintain sustainable competitive advantages. The primary difference between DCA and the original RBV is that DCA *de facto* distinguishes the concept of ‘dynamic capabilities’ from the concept of ‘ordinary capabilities’ that is used under the original RBV. In the context of DCA, dynamic capabilities refer to a ‘firm’s ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments’. In short, it emphasises a firm’s ability to sense opportunities, seize them and make proper changes that correspond to a rapidly changing environment. By introducing three concepts – process, position and path-dependencies – DCA demonstrates both the sources of and restraints on sustainable competitive advantages.

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46 Teece (2009).  
48 Ibid, p. 198.  
Process is normally associated with ‘routines’. It is defined as all regular and predictable behavioural patterns of firms. They include production routines, decision routines, routines of communication, and hiring and firing routines. They are important elements both of ordinary capabilities and dynamic capabilities. For DCA, competitive advantages can be generated if routines upon which the firm’s capabilities and resources become distinctive and firm-specific. They are created, shaped and reshaped during daily practice within the firm and will persist for a long time. Some of them are tacit and cannot even be understood by the firm which has adopted them. Even when they are understood, they are costly to imitate by competitors because they are not only tacit but also rarely stand alone to generate competitive advantages.

Position refers to the current status of a firm with respect to the distinctive assets it possesses. Teece lists four major categories of assets that are important for a firm’s performance. They are: difficult-to-trade knowledge assets, complementary assets, reputational assets and relational assets. The concept of ‘difficult-to-trade knowledge assets’ are in fact equivalent to valuable, rare and costly-to-imitate resources (VRI) under RBV. Complementary assets are important when there is an attempt to apply technological know-how in a weak ‘appropriability regime’. Its position is decided by both the nature of technologies and the legal system in which it is located. A complementary asset is an important element in competition, with many researchers recommending that they should be owned by the same firm in order to secure returns on investment. However, it is sometimes too costly for a firm...

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51 Ibid.
52 Kathleen Eisenhardt and Jeffery Martin, ‘Dynamic Capabilities: what are they?’ (2000) 21 Journal of Strategic Management 1105-1121, p. 1106 (New product development routines, quality control routines and technology or knowledge share routines are important to dynamic capabilities.).
55 Teece (2009), p. 128.
56 David Teece, ‘Profiting from Technological Innovation: Implications for Integration, Collaboration, Licensing and Public Policy’ (1986) 15 (6) Research Policy 285-305. (The concept of appropriability regime or regimes of appropriability refers to whether a firm’s innovations or technologies can be easily protected from being imitated. If the answer is no, then such innovations or technologies are in the weak regime.).
57 Ibid, p. 278.
to own all complementary assets within an organisation. As such, firms have to access external assets. External resources and capabilities can generate competitive advantages if firms are able to access, utilise and orchestrate them as effectively as they do internal resources and capabilities in order to make timely responses to environmental changes.\(^{58}\) In other words, external relational assets can generate temporary and even sustainable competitive advantages if they are distinctive. Although Teece appears to agree with this view, he does not provide a detailed framework that can guide managers in assessing whether or not, and to what extent a firm’s external relationship can generate competitive advantages. Fortunately, other theories give some guidance which will be discussed later. As reputational assets, reputations often summarise overall information about a firm and its products or services. They are also related to branding and trademarks because brands and trademarks are the short-cuts to convey such information. The main value of reputational assets is external, i.e. they reflect the attractiveness of a firm among its customers.

Path or path-dependence demonstrates the dynamic feature of competition. It describes the continuing evolution of organisational processes and their role of knowledge-carrying.\(^{59}\) In short, a firm’s capabilities are constrained by its current position and processes.

The emergence of DCA facilitates the improvement of RBV. Barney replaced VRIN with VRIO to introduce concepts of path dependence and dynamic competition into RBV. Therefore, VRIO can also be used to assess a firm’s dynamic capabilities. These supplement DCA, especially when DCA only provides a conceptual framework instead of a strategy tool that can be utilised by managers in their daily work. However, Teece also argues that it is necessary to leave factors of dynamic capabilities ‘incomplete, inchoate, and somewhat opaque’ so that they are flexible enough to provide guidance for managers to assess long-term competitive capabilities of firms.\(^{60}\) With regard to short-term or medium-term competitive advantages of firms in an environment where disruptive innovations take place less

\(^{59}\) Penrose (1959), Nelson and Winter (1982).
\(^{60}\) Teece (2009), p. 8.
frequently, VRIO is capable of providing an equivalent but more precise framework than Teece’s DCA. When disruptive factors intrude, DCA and VRIO can also be used together in the analysis so as to balance foreseeable and unforeseeable factors that affect firms’ long-term competitive position.

Teece explored sources of dynamic capabilities in detail and classified them into five major categories.⁶¹ These sources, if relevant, can be adopted in our analysis of competitive advantages of firms in this industry. VRIO will also be linked with these five sources to show why it can also be adopted to assess dynamic capabilities.

The first type is routine or process selection and implementation.⁶² Certain routines or processes are essential elements of a firm’s dynamic capabilities. Routines such as learning routines are designed to achieve improvements. As shown earlier, imitating some routines or processes is time-consuming and a decade-long adoption cycle is not uncommon.⁶³ Under VRIO, such routines or processes are valuable, rare and costly-to-imitate. Even if such processes are imitated, competitors’ organisation structure might not be compatible with the processes. As such, the competitive advantages of firms still cannot be fully generated by imitators at least within a certain period.

The second type is the business model design, selection and implementation. A business model is the manner in which a firm ‘deliver[s] value to customers, entice[s] customers to pay for value, and convert[s] those payments to profit’.⁶⁴ This type of source is associated with one of the external factors – customers/buyers. A business model can be seen as a plan of financial and organisational ‘architecture’ for a business.⁶⁵ It is about choosing technologies, target market, financial terms, marketing strategies, production chain arrangement, etc. For instance, all three console firms have chosen a similar model for console production. This choice, as will be shown in the next part, is a result of a firm’s consideration of both external and internal factors. The ability to select, adjust and improve the business model is

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⁶¹ Teece (2009), pp. 158-168 (They are called by Teece as five fundamental management/organizational skills lying at the heart of dynamic capabilities.).
⁶² Ibid, p.159.
⁶³ Ibid.
⁶⁴ Ibid.
important because some models will be better than others in adapting to the ecosystem.

The third type of source is about the investment choice regarding complementary and co-specialised assets.\textsuperscript{66} Co-specialised assets refer to complementary assets where the value of an asset depends on its use in connection with other assets.\textsuperscript{67} Joint use of co-specialised assets enhances their value. Teece used the Apple iPod as an example to illustrate the importance of co-specialization in competition. Although Apple does not itself manufacture the iPod, it owns the iTunes service from which customers can buy and download music easily.\textsuperscript{68} The combination of the iPod and its iTunes music service has allowed Apple to outcompete Sony which once dominated the portable music-player market. This example also implies that co-specialization does not necessarily require a firm to internalize all co-specialised resources or capabilities.\textsuperscript{69} The same principle also applies to console production where outsourcing is widely adopted by console firms. Under VRIO, if the combination of co-specialised resources and capabilities is valuable, rare and costly-to-imitate, it may be worth investing in.\textsuperscript{70} With regard to ways of controlling complementary assets, firms have to make their own choices.

Other sources of dynamic capabilities include asset orchestration, knowledge sharing and coordination.\textsuperscript{71} They include functions of management in developing and implementing unique strategies, forging ‘fit’ assets, structure and process corresponding to changes of technology and customer needs.\textsuperscript{72} A firm is thus required to proactively adapt, redeploy and reconfigure (orchestrate) existing resources and capabilities to ‘fit’ these changes. The required resources and capabilities can be obtained from both inside and outside a firm. For instance, Intel and Micron formed a joint-venture to develop the 3D NAND Flash, a new type of fast

\textsuperscript{66} Teece (1986); Teece (2009).
\textsuperscript{68} Teece (2009), p. 162 (‘83% of the components [of iPod] are made by Japanese companies’ at that time.).
\textsuperscript{69} Ibid, p. 162.
\textsuperscript{70} Barney and Hesterly (2015), pp. 101-102.
\textsuperscript{71} Teece (2009), p. 163.
\textsuperscript{72} Ibid.
storage hard-drive, when the market was dominated by Samsung. They entered this market successfully thanks to their collaboration. Asset orchestration, knowledge sharing and coordination can also be classified as abilities to organise external and internal resources and capabilities to exploit their competitive potential. They can be classified under the ‘O’ of the VRIO framework.

Finally, dynamic capabilities can be developed through efficient learning, technology development and IP protection. It is important to create an environment in which learning, knowledge-sharing and knowledge-creating are encouraged. At the same time, it is also important to establish proactive mechanisms to monitor and control leakage of important information. Given that outsourcing and joint-developing have become common practices, a governance procedure must be developed to assist the flow of technology across organisational boundaries while protecting IPRs from misappropriation by partner firms. It is also related to VRIO because strong IP protection can make a resource costly to imitate and rare.

Teece summarised five fundamental organisational/management skills which lie at the heart of dynamic capabilities and which correspond to the above-mentioned five types of source. They are: (1) learning and innovation process; (2) business model ‘design’ competence; (3) investment allocation decision heuristics (to achieve co-specialization); (4) asset orchestration, bargaining and transactional competence (coordination); and (5) efficient governance, pro knowledge-sharing and learning environment creating. Like other capabilities, these skills must be built or at least assembled. They cannot be bought or ‘outsourced’. As suggested earlier, an upgraded VRIO de facto can be used to test these dynamic capabilities as well.

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75 Barney and Hesterly (2015), p. 100.
76 Teece (2009), p. 164.
80 Ibid.
81 Cardeal and Antonio (2012).
However, neither the original RBV nor DCA have addressed external relational resources and capabilities as detailed as they have done with internal resources and capabilities. Competitive advantages can be generated from relational resources and capabilities as well. In other words, if VRIN is created on the basis of original RBV, it is incapable of testing whether or not competitive advantages can be generated by a firm’s external resources and capabilities such as through joint ventures or strategic alliances. DCA also does not give a clear and precise framework on the extent to which dynamic capabilities can be derived from a firm’s external relationships. Therefore, the relational view (RV) is introduced here. This was done by Dyer and Singh who related RV with RBV, thus creating ‘extent RBV’ (ERBV) which extends a firm’s internal resources and capabilities to include those relational resources and capabilities.82

c. The Relational View, Extent RBV and the Synthesised Framework

If a full vertical integration model is not viable in a market, the inter-organisational arrangement (external networks), hereafter referred to as partnerships, becomes more important for a console firm to gain competitive advantages.83 RV is widely adopted by researchers who have explored the relationship between a firm’s performance and its external business partnership. This approach emphasises that idiosyncratic inter-firm linkage can be a source of competitive advantages. In other words, if relational-specific resources and capabilities are valuable, rare and costly-to-imitate, they can still give competitive advantages.84 In general, partnerships are

formed for three major purposes linked to strengthening the competitive position of firms. First, firms form a partnership to access complementary resources and capabilities (endowment). Second, firms benefit from learning from their partners and sharing risks. Third, firms might ‘borrow’ the reputation and marketing power of partners. A partnership should possess the following four attributes if it aims to realize the abovementioned purposes and translate them into competitive advantages: (1) inter-firm relation-specific assets; (2) substantial knowledge exchange; (3) a unique combination of complementary resources or capabilities; and (4) effective governance to lower transaction costs.

The former three attributes are shared by the original RBV and DCA. One primary difference between ERBV and the other two approaches is that sources from which competitive advantages are generated under ERBV are relational-specific, literally outside firms. However, like dynamic capabilities, they must also be developed and built. The introduction of TCE into ERBV demonstrates the significant roles of governance, bargaining power and other measures in regulating relationships between partners. Effective governance becomes more important in such relational ties in terms of attenuating the opportunistic behaviour of partners and improving the overall performance of partnerships. Reputation, sufficient inter-firm communication, relationship commitment and trust have proved to be important factors in addition to governance to attenuate opportunism and improve the performance of partnerships.

85 Stuart (2000), p. 808 (The author concluded that resource access and reputation borrowing are two purposes of alliance.).
Although relation-specific resources and capabilities might be more difficult to build than their internal counterparts, their impact on the competitive advantages of firms cannot be ignored, especially when it is nearly impossible to internalize the whole value chain on the market. This is the case when competitors’ positions are delicately balanced.\(^\text{91}\) When all competitors adopt a similar structure, having a good partnership management to develop and build relation-specific resources and capabilities might contribute to the competitive advantages of firms.\(^\text{92}\) Significant time and capital have to be spent by both parties on building and developing such resources and capabilities. As recommended by researchers who have conducted analyses of the performance of partnerships, companies with complementary resources, a good reputation as partners, or who have had a previous cooperative experience might be preferred over another by a company which plans to form a partnership.\(^\text{93}\)

To conclude, both firms' internal and relational-specific resources and capabilities contribute to their competitive advantages. VRIO can be used to assess a firm’s long-term competitive advantages by evaluating the resources, capabilities and organisation structure that it possesses. However, a firm’s position in a market is also affected by its external environment. External factors such as competitors’ moves, customers’ (game players) preference and parties in the stream of distribution all affect the results of competition. A firm should therefore utilise its resources and capabilities to cope with this external environment. The rest of this chapter will examine the external environment of console firms and game companies and offer some insights into the ways that they cope with this environment.

4. **Competition in the Home Console Game Industry**

In the following section, Porter’s Five Forces Framework will be used to examine relationships between parties in this industry. Factors that affect the ability of

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93 Ibid.
console firms to capture returns will be identified. Suggestions on ways in which console firms can access and organise resources and capabilities to cope with the environment will be given at the end of this part. In addition, the game companies will also be analysed in the same way as console firms given their importance to innovation in this industry.

4.1 The External Environment Test

Console Hardware Market Analysis

a. Barrier to Entry

According to Porter, there are six conditions that can be used to measure whether or not the entry barrier to a market is high. These will be used to assess the home console game industry.

The capital required is the first and the most important condition for entry into this industry. Entry into the hardware market is extremely difficult for new entrants. From a historical perspective, potential new entrants need to possess at least two characteristics – ‘deep pockets’ and relevant capabilities and resources. Time is also required. For instance, before Microsoft entered into this industry, it had a partnership with Sega designing the operation system for Sega’s Saturn. Microsoft also invested large amounts of money yet continued to bear losses for a long time before making profits after its entry into the market.\(^\text{94}\)

The economies that come from scale is the second entry barrier.\(^\text{95}\) This can be divided into two categories: supply-side economies of scale and demand-side benefits of scale.\(^\text{96}\) Both are characterised by network effects. The hardware market


\(^\text{95}\) Porter (2008), p. 81.

\(^\text{96}\) Ibid.
is mature and saturated. This implies that customers in console market trust these three companies and rarely consider other companies. The effect of economies of scale is amplified in this industry by network effects. With regard to the demand-side benefits of scale, the more customers buy a platform, the more valuable the platform becomes, and the more developers will develop games for it. Thus, users of the platform can play more games because of this and more customers buy this platform. It is a cycle. In contrast, when only a few people buy a newcomer’s platform, other customers will be less likely to buy this platform, and developers will not develop games for it. This leads to a vicious circle.

The demand-side economies affect the supply-side economy. The supply-side economies of scale arise when the console production of console firms reaches a certain scale so that firms enjoy lower costs per unit. This implies that newcomers must come to this market with a level similar to that of incumbent companies in order to compete with them. This scale is decided by final consumers. However, it is difficult to achieve such a level when customers in this market still only trust incumbents. In other words, newcomers have to bear long-term losses before winning customers over, otherwise, it will be very difficult to enter this market.

Customer switching costs is the third entry barrier. Switching costs are high for a customer wishing to buy a newcomer’s console instead of the products of an incumbent company. A new entrant’s platform is less likely to possess customer-bases and game supports. Both game developers and customers will wait to see how large the potential customer base will be for a new entrant’s product. Unless a newcomer sells products at a relatively lower price than that of competitors, customers might not be willing to take the risk of buying the products.

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100 Porter (2008), p. 81.
Incumbency advantages independent of size is the fourth entry barrier. In addition to their large size, the top three console firms have other advantages that are not available to potential entrants. The most obvious one is their established brand identities. Other advantages include their cumulative experience of orchestrating production and distribution, and relatively larger portfolio of first-party games and blockbuster sequels. Proprietary technologies such as patents can also be obstacles for newcomers. Although patents of core components can be licensed from upstream hardware suppliers, IPRs on other components might also matter. For instance, if a new firm wants to compete in the seventh generation market, it has to bypass the patents of remote controllers held by Nintendo, Sony and Microsoft. All these are advantages of incumbent console firms that make it difficult for a new entrant to compete effectively in the market.

Government policy could be considered as the fifth entry barrier. This is not commonly seen in the developed markets unless it is a highly-regulated economy. However, it may not be the same in an emerging market. This factor will be examined in Chapter V as the Chinese home console game market is highly regulated by the government.

The sixth entry barrier is unequal access to distribution channels. Consoles are distributed physically. Although they can be ordered online, console firms still partly rely on wholesalers and retailers to reach final customers. Hence, newcomers will compete with incumbent firms for limited shelf space. It is relatively hard to convince retailers to display their products instead of incumbents’ products given that existing firms account for 97% of the hardware market.

It is clear from the above that it is extremely difficult for newcomers to enter the hardware market. Even if newcomers achieve this, sacrifices must be made by them in order to compete with incumbent firms in the long run. Disruptive innovation might be a factor in the future to lower the entry barrier. For example, VR might lead mobiles or tablets to compete directly with console firms. However, this would not

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101 Ibid.  
102 Pike (2015) (The survey found that users of Xbox One list brand as the top reason for purchasing Xbox One.).  
103 See above n 1.
happen until mobiles or tablets are as powerful as consoles and VR becomes much cheaper.  

b. The Threat of Substitutes

The current main substitutes for consoles are personal computers. However, one significant advantage of consoles is that they deliver far superior performance than computers at the same price and over a longer term. Customers of consoles do not need to worry about changing them during their lifecycle as frequently as computer users who have to change them or compromise performance via ‘tweaking’ (in effect minimizing the most processor-demanding aspects of game play) game settings in order to run the latest games. Hardware suppliers customise chips and other semiconductor components specifically for console platforms in order to optimise the efficiency and power of consoles. Game companies will also put all their efforts into designing and optimising their performance corresponding to console specs throughout their lifecycle. For those game lovers on a budget whose sole purpose is to play games, buying a console offers more value than buying a computer. In order to illustrate this point, we can compare two scenarios. Assume a lifecycle of a console is seven years. Person A spends $300 on a console in scenario one. Person B spends $300 on a computer in scenario two. Two years later, when a new game comes out, A can still have the best gaming experience with the console while B’s $300 computer is not powerful enough to deliver the same experience, or worse still, the computer cannot even run the game. B has to buy a new one in order to play this game. Alternatively, B can choose to buy a gaming computer which may cost $2000. It will still not provide a consistent gaming experience for him both because the PC uses general-purpose chips and because PC game companies design

104 ‘The Real Cost of Virtual Reality’ (CNET, 26 June 2016) <http://www.cnet.com/news/the-real-cost-of-virtual-reality/> accessed 26 June 2016 (Oculus Rift costs $599. HTC Vive costs $799. The author also pointed out users have to change to powerful computers to use VR.).
108 See, e.g., O’Donnell (2012), p. 103 (Games can be programmed in specific ways to optimise hardware performance.).
games on the basis of technologies which would be available when the game was launched. Overall then the performance-price ratio of a console is much higher than a PC’s.

The position of home consoles (games) may be threatened by mobile equipment such as smartphones and tablets. Many studies have attributed the drop in popularity of hand-held consoles to the rise of mobile gaming. Nevertheless, mobiles will not compete directly with home consoles in the near future for two major reasons. First, in terms of processing power, home consoles are far more powerful than mobiles. The gaming experience delivered by consoles is for this reason far beyond mobile equipment. Secondly, the main purpose of playing a mobile game is different from playing on consoles. Mobile games are used by people as a convenient way to kill time. In contrast, a console game normally requires a player to spend more time and money on it. Compared with mobile games, the biggest selling point of console games is the big screen and high-quality game performance. Unless mobile hardware becomes as powerful as consoles and VR becomes affordable, mobile games will not compete with home console games directly.

Other substitutes such as TV, movies and physical exercise do not significantly threaten console and console games. This is indicated by the fact that these traditional ways of entertainment were in existence for a long time before video games emerged and have co-existed with video games for more than three decades.

In addition to the above-mentioned substitutes, which are legal ones, illegal copies of games (game piracy) are de facto substitutes for authentic games. Console firms

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111 Ibid.

sell hardware at a loss in the expectation of making profits from games. If players all played illegal copies instead of authentic games, both console firms and game companies would suffer heavy losses. Therefore, illegal copies of authentic games can be seen as a type of substitute for authentic games. Compared with the other types of substitutes mentioned above, game piracy is the biggest threat to the present well-being of this industry.

c. The Power of Suppliers

Powerful suppliers can appropriate more of the value of consoles by charging higher prices or shifting costs to industry participants. Console firms’ upstream hardware suppliers are chip manufacturers such as Intel, IBM and AMD. With regard to the software market, console firms themselves and other game companies are the suppliers.

Six major factors affect the power of suppliers in relation to console firms. The first concerns the degree of concentration of the industry in which suppliers are located. In other words, if there are fewer suppliers, then suppliers will be more powerful and vice versa. In the semiconductor industry, only a few semiconductor firms can provide chips to console firms. Only IBM, Intel, AMD and Nvidia have supplied CPU and GPU for the last four generations of consoles. The high degree of concentration increases suppliers’ bargaining power with the console firms. This leads to the second factor – whether console firms can ‘backward integrate’ the supply chain or, alternatively, whether the suppliers can forward integrate console firms’ businesses. If suppliers can forward integrate, they have a relatively stronger bargaining power with console firms. Conversely, if console firms can backward integrate the supply chain, they have a relatively stronger power with suppliers.

Moore’s law is no longer capable of predicting the development speed of computer technology because improving the performance of chips requires a longer time of development and an increased investment. Even large incumbent companies like

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113 Porter (2008), p. 82.
Intel may not be able to afford development costs. Hardware suppliers spend a significant portion of their capital on R&D and production. The CEO of International Business Strategies, Handel Jones, estimated that a fab or foundry for current microprocessors costs around $7 billion while Intel’s revenue in 2015 was $55.4 billion. The revenue of AMD, which supplies custom chips for all three mainstream console firms, was much less at $5.5 billion. The costs of the same fab will increase to $16 billion in 2020 which is an increase of around 17% per year on average.

However, the annual growth rate of Intel’s total revenue in 2015 was only 2% more than in 2011. It is worth mentioning that Intel is one of the few firms in this industry that can afford to own both R&D and fabs. This explains and also implies a trend of future disintegration of the R&D and production chain in this industry. Semiconductor firms have to shift costs to their customers from different industries. Recouping costs not only requires a much larger installed-base than the video game industry but also production differentiation to meet different customers’ demands as computers in research labs may require different chips from home electronics.

Therefore, revenues generated by the home console game industry may only be a small proportion of the total revenue of the semiconductor industry. However, for a console firm, it will be too costly to develop all technologies required by a console in-house. That is why, for instance, Sony spent about $400 million on CPU development for PS3 by forming a joint venture with IBM and Toshiba. It was also reported that XBOX signed a $3 billion deal with AMD for custom chips. Whether or not this is true, it is undoubtedly the case that high development costs of semiconductor

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115 Ibid (Even Intel may not be able to afford R&D costs alone in future.).
116 Ibid.
119 Ibid (automobile industry also widely use chips. the average automobile has about $350 of semiconductor content, with nearly 80% of that in microcontroller units, analog, and power.).
components is one of the major factors that has led console firms to rely on external companies for supplies.

In addition, resources and capabilities required to compete in the console game industry differ from those in the semiconductor firms. Even if they decide to forward integrate, it takes both time and capital for a new entrant to gain profits from the new market. On the other hand, it is even harder for console firms to backward integrate the supply chain, not only because of the substantial R&D and production costs but also because of the many proprietary technologies possessed by suppliers. Microsoft recently began to design chips in-house.\textsuperscript{122} However, these chips are specifically designed for data centre, cloud and search engine technologies which require chip performance and efficiency far beyond the chips of consoles.\textsuperscript{123} The difficulty of backward integration is shown by Sony’s failure to deliver the PS3 and its use of AMD’s SoCs on the PS4 even though it has similar capabilities in chip design and manufacture.

A supplier’s product portfolio and the sources of a supplier’s revenue are two other factors. As shown earlier, if a semiconductor supplier does not just rely on this industry as a major source of revenue and its products vary, its bargaining power will be stronger than another supplier whose revenue relies heavily on orders of components by console firms. In the case of AMD, an increase in its revenue relied heavily on console firms’ performance in the console hardware market.\textsuperscript{124} In other words, the more consoles are sold, the more revenue AMD gains. Therefore, in this case, AMD’s bargaining power with console firms is not as strong as Intel’s if Intel is a supplier for console firms because Intel’s overall revenue does not rely heavily on the video game industry.

\textsuperscript{122} ‘AMD 2014 Annual Report on Form 10-k’ (AMD, 19 February 2015), p. 23 (‘The success of our semi-custom SoC products depends on securing customers for our semi-custom design pipeline and the consumers’ market conditions, including the success of the Sony [PlayStation 4] and Microsoft Xbox One game console systems worldwide’).


\textsuperscript{124} ‘AMD 2014 Annual Report on Form 10-K’ (AMD, 19 February 2015).
Switching costs also affects the leverage between console firms and suppliers. However, this factor does not strengthen a supplier’s bargaining power as much as other factors. Console firms are free to choose suppliers when they start to design next-generation consoles. However, once a supplier is chosen, the console firm will be locked in the partnership for seven to ten years: i.e. the lifecycle of a console. Leverage of the firm with suppliers will influence the hardware costs of console firms. To alter the leverage, a console firm has to use its own capabilities and resources. For instance, Microsoft possesses stronger bargaining power than Sony in its partnership with AMD because AMD’s revenues also depend on Microsoft’s support in the Windows system. Nevertheless, the analysis above implies that a console firm’s leverage with hardware suppliers is relatively weak.

d. The Power of Buyers

Buyers in this context refer to distributors, retailers and the final customers. With regard to distributors and retailers of hardware consoles, their bargaining power with console firms has not changed much because consoles have to be distributed physically to final customers. They can still influence customers’ purchase decisions given their close proximity to final customers. Although such an influence has been weakened due to the diversity of sources of information, console firms still tend to rely on them to reach consumers.

With regard to game distribution and retailing, the bargaining power of upstream firms (console firms and game companies) has become increasingly stronger due to their forward integration of the digital distribution stream. In the past, game companies and console firms had to compete for limited shelf space in high-street stores if the games were delivered physically. Due to this, retailers charged publishers, or console firms if the game was a first-party game, significant market development funds for displays in the store.\footnote{Williams (2002), p. 49.} This business model conferred on retailers considerable leverage over publishers/console firms to the extent that, for each copy of a game sold a decade ago, retailers could capture approximately 30% of
its value. High-speed, cheap internet access has changed this model. The three mainstream console firms started to develop their online platforms a decade ago and now they own distribution platforms from which final customers can buy games and add-ons. Digital distribution is now becoming the primary way to distribute games. The leverage of console firms and game companies with retailers and distributors has increased as a result.

With regard to final customers, they have four basic requirements for a new generation console platform. Firstly, the launch price must not be far beyond the average price of a platform in the same generation. Secondly, it should be much more powerful than platforms in the last generation and deliver an acceptable level of performance when compared to platforms of the same generation. Thirdly, it must have a large number of supporting games. Lastly, it must have a large installed base because online gaming is an indispensable part of gaming entertainment today. These four conditions are interdependent. Although customer recognition is limited, the majority of them are rational enough not to make a purchasing decision until all the console platforms come out. They will use their limited recognition and common sense to anticipate the trend of this market. Some of them will purchase consoles and games at Christmas because they know the consoles and games are much cheaper during that time. Therefore, console firms and game companies have to predict customer behaviour to transform their investment into profits.

Another two issues of relevance are parallel importation and the reselling of second-hand games. When games and consoles leave the control of upstream firms, they

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128 Add-ons refer to any digital contents that relate to original games but are not included in original bundles of the game.
131 ‘Hardware Year-Over-Year Comparison’ (Vgchartz) <http://www.vgchartz.com/tools/hw_yoy.php?reg=Global&start_year=2006&end_year=2016&console> accessed 15 March 2017 (From 2004-2016, there is no exception, number of consoles sold in December of every year is significant higher than it in other months.); Nair (2007).
might be resold by buyers to others. If the games and consoles are new, they might be distributed to another country where the same products are sold at a higher price. As shown in the introduction to this thesis, maximizing profits is sometimes not the main objective of console firms or game companies, with prices being set in one region higher than in another. It is often government intervention or other external factors that lead to price differences.\textsuperscript{132} If parallel importation of consoles or games cannot be restrained, firms cannot make legitimate returns on investment. This threat is much more common in emerging markets than in the US and Japan where games and consoles are typically sold at the lowest prices in the world. Parallel importing has to be stopped or local companies may not be able to appropriate sufficient returns.

Second-hand game trading is another factor that affects the profitability of upstream firms. Used games are traded either in retail stores or online stores. In retail stores, a used game is much cheaper than a new one even though they are placed side by side. Customers might be attracted by its lower price and buy it instead of a new one. Under such a circumstance, upstream firms capture fewer returns than if customers buy used games. It is retailers that benefit from such trades as they pay sellers a lower price for a used game and sell it for much more to one of their customers.\textsuperscript{133} Such trades ultimately benefit neither game players nor game companies.

e. Rivalry Competition and Key Factors to Success

As mentioned above, this industry exhibits a network effect.\textsuperscript{134} This is when the value of purchasing a console platform increases as the number of other platform

\footnotesize{\textsuperscript{132} See, e.g., ‘Who, What, Why: are tech goods cheaper in the US than the UK’ (BBC Magazine, 12 June 2013) <\texttt{http://www.bbc.co.uk/news/magazine-22868787}> accessed 15 March 2017 (Tax and cost of doing business are two factors that contributes to the price difference of consoles.). On 22 February, ‘Xbox One with Gears of War: Ultimate Edition’ was sold 285 Pounds which equal to 401.591 USD on the Amazon UK. The VAT is 57 pounds, which equals to 80.318 USD. The same product was sold 300 USD including tax, which is normally 6-8% on average on the Amazon US. All calculation is based on the exchange rate on 22 February 2016 XE Convertor website. 

\textsuperscript{133} For instance, on 18 March 2016, GAME (UK) pay £2.8 for pre-owned Assassin’s Creed IV (PS4) in cash while selling the same one at £9.9. A new Assassin’s Creed IV costs £ 17.18 on Game’s Official Website.

\textsuperscript{134} See n 12 in General Introduction.
users increase.\textsuperscript{135} This is a two-sided market, divided by console firms in the middle. Both sides show a network effect. On the one hand, the larger the customer base held by a console platform, the more game companies will develop second and third-party games for this platform. On the other hand, customers generally prefer a platform with a large customer base to a platform with a smaller one. This can be referred to as a same-side (network) effect. In addition, game companies normally use the current customer base as one parameter to evaluate whether a platform could be expected to have a customer base in the future. Customers, in contrast, will use the number of currently supported games on a platform as a parameter to predict whether more games will be released for this platform. This can be referred to as a cross-side or indirect (network) effect.

A network effect amplifies even a small advantage of a firm in competition, especially when the positions of competitors are delicately balanced.\textsuperscript{136} The fundamental way for a console firm to build and maintain its position ahead of others in competition throughout the lifecycle of its consoles is to establish a large customer base. Empirical studies have shown three major factors which contribute to building and increasing a customer base, namely pricing, hardware performance and game variety.

The high hardware costs and final customers’ preference for consoles with a lower price-performance ratio compel console firms to price a console much lower than its production costs. They subsidise the costs of hardware production with profits derived from the sale of games.\textsuperscript{137} Empirical studies have confirmed that the launch price of next generation console platforms is critically associated with their success in building an initial customer base during the entire lifecycle.\textsuperscript{138} When an expected customer base is achieved, console firms can reduce the hardware price further to attract more customers who do not have the platform. Given that hardware costs normally fall fast over time, in the most optimistic scenario console firms can profit

\textsuperscript{136} Teece, Pisano and Shuen (1997), p. 512.
\textsuperscript{137} Nair (2007).
\textsuperscript{138} Shankar and Bayus (2003); Clements and Ohashi (2005).
both from console sales and game royalties when they reduce a console price.\textsuperscript{139} Research, nonetheless, shows that the effect of price reductions on the sales performance of consoles lasts only for its lifecycle.\textsuperscript{140} The same strategy influences sales performance of a game in a similar pattern even beyond the lifecycle of console platforms.\textsuperscript{141}

Game variety also affects customer base-building during the lifecycle of a console platform. The effect becomes increasingly obvious in and after the middle of the product cycle.\textsuperscript{142} Although a first-party game is in general more likely to boost console sales than a third-party game, there are limits on the number of such games that can be developed within a consoles’ lifecycle.\textsuperscript{143} Console firms thus have to rely on second or third-party games to some extent to enlarge the customer base.

Lastly, powerful hardware is also required for a firm to capture returns consistently in the long-term.\textsuperscript{144} A new generation platform must be far more advanced than the last generation. In addition, it must not be significantly less powerful than products of the same generation. The technological standard of one generation is dynamic and determined by mainstream console firms. In short, a console has to possess an average specification for its generation in order to survive in competition. A far above average specification might give a console firm an advantage in competition in terms of performance at the expense of high hardware costs. However, a console platform with below average standard specifications will not maintain a sustainable advantage in competition throughout its lifecycle. Nintendo Wii was always cited as an example to support the argument that even consoles with a low-level specification are able to out-compete high-specification consoles. However, this did not reflect the whole picture. In the case of the Nintendo Wii, although the low

\begin{flushleft}
\textsuperscript{140} Clements and Ohashi (2005); Chitagunta, Nair and Sukumar (2009).
\textsuperscript{141} Ibid.
\textsuperscript{142} Clements and Ohashi (2005), p. 517.
\textsuperscript{143} See, e.g., ‘Microsoft 2004 Annual Report’ (According to unofficial source, there are approximately first-party games published for Xbox during 2001-2005. This reports states that there are 425 games in total for Xbox.).
\end{flushleft}
specification saved on production costs, its lifecycle was much shorter than that of the far more technically advanced and capable PS3 and Xbox 360 consoles.

After Microsoft and Sony released their own motion controllers, the Nintendo Wii lost any competitive advantage over the Microsoft and Sony products. Nintendo had to release its next generation console Wii U almost one year ahead of its competitors. This step made Nintendo vulnerable to the risk that Wii U’s specs would be left behind by its competing products.\textsuperscript{145} Game players were rational and patient enough to wait for the release of competing products and make comparisons between these products before making purchasing decisions. During this period, the new generation Wii U competed with the older generation Xbox 360 and PS3. But Nintendo were not able to increase its market share. Certainly some people who possessed Wii bought the Wii U because new games for Wii had become fewer with the launch of the next generation console. However, many people who owned either the Xbox 360 or PS3 were prepared to wait for next generation consoles because new games were still being released for the Xbox and PS3 during this period. Wii U’s poor sales performance again illustrates the disadvantage of less powerful hardware. During the period between the launch of Nintendo’s Wii U and the launch of the competing XBOX ONE and PlayStation 4, the Wii U’s sales were disappointing. In other words, Nintendo’s first-move advantage was not as successful as expected in terms of building an expected customer base. In Wii U’s first month, its sales in the US were not as good as Xbox 360, a platform that was released eight years before Wii U.\textsuperscript{146} It is worth pointing out that the marginal cost of producing an Xbox 360 was significantly reduced under its market price when Wii U was introduced so that Microsoft profited from each XBOX 360 sold. As such, even though the success of the motion controller partly concealed the disadvantage of Wii caused by its less powerful hardware in competition with XBOX 360 and PlayStation 4, Wii U has exposed this weakness completely in the eighth-generation console war. Although Wii U was launched one year ahead of the other platforms, the total sales of Wii U

were left behind by Xbox One and PS4. The figure below shows that Sony took only two months to achieve the same customer base which took Nintendo one year and two months to achieve. 

![Graph comparing total sales of PS4, Xbox One, and Wii U](image)

**Fig 3. PS4 vs Xbox One vs Wii U - Total Sales**

The analysis above shows that hardware spec is also indispensable to the success of a console. Although innovation on other parts of a console is able to confer a temporary competitive advantage, the length of time during which console firms can capture returns consistently is dependent on hardware performance.

In sum, five forces analysis shows that competition mainly exists between incumbent console firms because it is extremely difficult for a new entrant to enter the hardware market. In order to capture consistent returns throughout the lifecycle of a console, a console firm has to strike a balance between marketing price and hardware performance/costs to build a large customer base. In addition, analysis regarding the power of buyers also shows that parallel importing and trade of used games can affect the ability of upstream firms to capture legitimate returns and might harm the whole industry.

**Console Software Market Analysis**

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148 Ibid.

149 Ibid.
As far as the barrier to entry is concerned, the console software market is easier to enter than the console hardware market. Due to new policies adopted by Sony and Microsoft around 2013, even individuals can develop games for console platforms at an affordable price. The shift in policy saw the console firms start to provide small and individual developers with a one-stop service, ranging from providing free development kits and free online publishing to digital distribution. However, competition in this market is no less fierce than in the hardware market. Thousands of studios are competing in this industry while big titles normally account for a large proportion of the total revenue of this market.\textsuperscript{150} Individuals or small start-ups cannot compete with big publisher-owned studios and studios owned by console firms directly. Thus, whilst it is now easier for newcomers to enter this market, it is difficult for them to appropriate returns on investment within the short term. As has been shown above, the threat of substitutes to console games is small unless they are illegal copies of authentic games.

Of course, it is possible to see console firms (platform providers) as suppliers of game companies. Although the bargaining power of game companies is much stronger than it was in the 1980s when the market was dominated by one firm, the power of game companies is generally still relatively weaker than that of console firms. There are exceptions, for instance, Electronic Arts which is a big publisher that owns many studios and blockbuster game titles. Its bargaining power with console firms is thus stronger than that of small and medium-sized game companies. Buyers of game companies are exactly the same as analysed above – game players.

The last factor is competitive rivalry. In the console software market, independent developers are competing both for investment from independent publishers or console firms and for final customers. Likewise, publishers or console firms, as they own developers, are competing for customers. However, this industry has experienced large scale mergers and acquisitions.\textsuperscript{151} Console games, AAA titles

\textsuperscript{150} Marchand and Hennig-Thurau (2013), p. 146 (62\% of top 10 game producers are big studios and publishers in 2011. However, the level of concertation is lower than it in other entertainment industries.).

\textsuperscript{151} See e.g., O’Donnell (2012), p. 104 (successful developers are either acquired by publishers or become publishers.); Nicholas O’Keefe, \textit{Software Games in the Danish Experience Economy} (1\textsuperscript{st} edn, Samfundslitteratur 2008), p. 27 (‘game publishing has been a great tendency towards the
(blockbuster games) in particular, are now developed by studios owned by large publishers. With regard to success factors, in addition to sufficient financial support, the most important one is game quality.\(^{152}\) Other relevant factors are the selection of appropriate platforms and genre.\(^{153}\) It is also worth mentioning that unlike console hardware, the price of a console game may not significantly affect a game company’s competitiveness as software prices in the console game industry are relatively high and relatively close to each other.

This brief analysis of the console software market suggests that factors that affect returns of game companies are not very different from factors that affect returns of console firms. The four sub-questions mentioned in the introduction to this thesis can, therefore, be applied to test the hypothesis both in the console hardware and software market. However, what needs attention when returns of a game company are analysed is the relationship between game companies and console firms. In the first place, the bargaining power of game companies with console firms will affect the game companies’ returns. A console firm may require fewer royalties from a game company with a blockbuster title than one with a less well-known title. In other words, the game company can capture more returns if it holds a famous and successful title. Another issue is that console firms also compete with game companies directly because console firms own studios. Therefore, console firms may hold back competitors in a number of ways especially when games are developed by external parties without their authorisation.

4.2 Competitive Advantages of Console Firms and Game Companies

a. Competitive Advantages of Console Firms


\(^{153}\) Ibid; Marchand and Hennig-Thurau (2013), p. 146.
A monopoly is a position of considerable market power. If there were only one console firm in the videogame industry, it could charge customers a higher price compared to the actual situation where several suppliers compete in the same market. A console firm that enjoyed a monopoly could choose to backward integrate/internalise the supply chain if it had large financial capital and expected to capture returns in the long-term. However, such a pattern of competition changes when more than two firms compete. This is the case with competition in this industry which is characterized by an oligopolistic structure. As shown above, neither console firms nor semiconductor suppliers can enter each other’s industry easily. Even if a large console firm like Microsoft could backward integrate the semiconductor supply chain, it would take a long time for it to adapt to a new environment. This option is closed due to another important factor – competition between console firms. A console firm has to consider competitors’ strategic response and find a balance between integration and partnership to decide which model will be chosen in hardware production. So far, all mainstream firms prefer forming a partnership for integration. Therefore, a console firm can maximize its profits in two ways. Firstly, a console firm can increase its leverage in relation to its upstream and downstream parties in the value chain. Secondly, it can create and gain competitive advantages over competitors.

With regard to the supply chain, console firms have two options if they cannot backwardly integrate: one is to buy custom chips from suppliers, the other is to form formal or informal partnerships with suppliers. Both ways will not put console firms at a disadvantage in terms of the launch price. However, it becomes more difficult for console firms to gain competitive advantages under this structure because the performance of different console platforms might be similar. For instance, both Microsoft, in respect of the XBOX One and Sony, in respect of the PS4, formed partnerships with AMD which designs custom System-on-a-chip (SoCs) for them.

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154 Teece, Pisano and Shuen (1997), p. 512 (Authors held that if firms’ competitive position is more delicately balanced, as with Cok and Pepsi, then strategic conflict is of interest to competitive outcomes.).
156 A System-on-a-Chip (SOC) includes CPU, GPU, and other necessary parts of consoles except RAMs and power. See, Steven Mather and Andrew Rassweiler ‘Microsoft Xbox ONE Hardware Cost Comes in
In the last generation, even though Sony formed a joint venture with IBM and Toshiba to develop a new CPU for the PS3, Microsoft bought the CPU design from IBM which delivered similar power to the Xbox 360. As shown above, resources or capabilities that are valuable, rare and costly-to-imitate are sources of competitive advantages. Hardware power is necessary for a console platform to survive competition during its lifecycle. However, it is not enough to maintain a firm’s competitive advantages because console firms’ organisation structure may not be able to translate such assets to their advantage. Something else that is VRIO should be developed if a console firm is eager to become a market leader.

It is difficult but possible for a console firm and its suppliers to develop relational-specific resources and capabilities given the long duration of partnerships. Partners can learn from each other in the partnership. Specific routines of learning, knowledge-sharing and communicating could be established after cooperating for a long period. From a long-term perspective, such cooperative activities might lead to a merger or acquisition if one party wants to enter industry of another. A long-term partnership could be a trial and shorten the period of transition to Mergers and Acquisitions.

Although semiconductor components constitute the greater part of a console platform, console firms must introduce innovative ideas in relation to players’ game experience in order to gain competitive advantages and basic components such as the CPU, GPU and RAM are not of themselves enough to bring an attractive gaming experience to players. Console firms have most recently been focussed on innovating in the game interface system, with the introduction of motion controllers in the last generation of consoles and more recently still with virtual reality headsets.


157 Suhong Li and others, ‘The Impact of Supply Chain Management Practices on Competitive advantages and Organisational Performance’ (2006) 34 The International Journal of Management Science 107-124 (This empirical study shows that high level of supply chain management enhances competitive advantages.).

The last major source of competitive advantages, which allow a company to generate more returns than its competitors, is the game. First-party games are valuable, rare and costly-to-imitate. They can be translated into profits easily because they are developed in-house and with the full support of console firms. Such games boost console sales. For instance, people bought more Nintendo 64s to play *Donkey Kong* though PlayStation dominated the market.\(^{159}\) *Halo* sequels have had the same effect on the sales performance of Xbox. Research shows that certain game titles can shift a hardware customer base by as much as 5%.\(^{160}\) Blockbuster (AAA) third-party games may increase sales performance of platforms. Nonetheless, they are not normally platform-specific which means that this cannot bring competitive advantages to a particular console firm. A console firm thus has to look for second-party games with a view to offering a distinctive product. Second-party games are exclusive to one particular platform. An example is the *Gears of Wars* series which was developed exclusively for the Xbox.\(^{161}\) However, relational resources and capabilities need to be built and developed. Before acquiring *Gears of War*, the Microsoft Game Studio had worked closely with Epic, the former owner of *Gears of War* for more than a decade.\(^{162}\) Like independent publishers, console firms are now also involved in publishing. By cutting out publishers, console firms can approach developers that hold promising copyright works. A second-party game not only brings short-term advantages for console firms, it can also lead to the acquisition of studios or game titles which can benefit both studios and publishers.\(^{163}\) Sony Computer Entertainment has acquired many independent studios and formed

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\(^{159}\) Kent (2001).  
\(^{162}\) Ibid.  
exclusive partnerships with other independent developers in the past few years.\textsuperscript{164} For third-party games, console firms have to strengthen their bargaining power with third-party game companies in order to increase their returns from the value chain. However, royalties or licensing fees that are too high may divert game companies to other platforms. A console firm must take a balanced view according to its actual position in the market.

\textbf{b. Competitive Advantages of Game Companies}

With regard to the competitive advantage of game companies, individual game developers have to attract investment, either from publishers or console firms. As developers owned by console firms or publishers do not need to worry about funding, quality becomes the priority. Selecting a genre that is popular may contribute to success in competition. Furthermore, game companies should develop strong titles both to attract console firms and increase leverage with them. As mentioned above, the underlying reason for choosing a platform is to increase the chance of products becoming known by customers. However, this strategy is passive and is not enough for a game to stand out from among others. Game companies have to deliver information to customers to draw their attention and attract them to buy their products. Quality is important in the perception of customers. Nevertheless, the actual quality of a game may not be the same as that perceived by customers.\textsuperscript{165} A popular genre can also suffer from the problem of saturation which means that other companies also select the same popular genre.\textsuperscript{166} Hence, even if a game belongs to such a genre, it still faces the obstacle of being recognised by customers. Quality, genre and selecting the appropriate platform \textit{de facto} differentiates one game from another. However, customers have to be aware of these attributes before they make purchasing decisions. That is why marketing is so important for game companies. Asymmetry of information between a game company and customers has to be overcome to make the company successful.

\textbf{5. Conclusion}

\textsuperscript{164} Ibid.  
\textsuperscript{166} Sacranie (2010), p. 6.
This chapter has outlined competition in the home console game industry. The high hardware costs, network effect and oligopolistic nature of the market primarily determine console production which in turn affects the business models of game development and distribution. Given this reality, the analysis in this chapter has identified factors that affect returns that can be captured by console firms and game companies. They are:

1. Competitiveness of the firm;
2. Bargaining power of the firm;
3. Game piracy, parallel importing and second-hand game reselling.

These factors and effects of competition on returns enable us to divide and rephrase the original question into four sub-questions as given in the introduction to this thesis. These are given again below:

1. How do IPRs affect market competition (hardware market and software market)?
2. How do IPRs affect a firm’s capabilities to compete with competitors (competitive capabilities or competitiveness)?
3. How do IPRs affect a firm’s capability to bargain for a larger proportion of total revenues with other non-competitive parties in the streams (hereinafter referred to as leverage or bargaining power)?
4. How do IP laws regulate game piracy, parallel importation of games and second-hand game trading to maximize total revenues the whole industry can capture?

The following chapters will examine the hypothesis in relation to these questions.
Section II

Chapter II: Patents and the Home Console Game Industry
1. Introduction

The purpose of this chapter is to consider and evaluate the effects of patent law on the incentives to invest in development of new products in the home console game industry in light of the factors that influence competitiveness in this industry and as identified in the previous chapter. The focus of analysis is naturally on the semiconductor industry since most of the operational parts of a console are supplied by firms from that industry. In other words, the more inventions that emerge in the semiconductor industry, so the more choices a console firm has to apply them in the home console game industry.

Highlighting both the legal function and the information functions of patents, the analysis demonstrates that patents de facto intensify competition by facilitating vertical disintegration of the semiconductor industry so discouraging the emergence of monopolies. In addition, the analysis demonstrates how patents contribute to the patent owners’ ability to capture returns in a competitive market environment. These two effects of patents have a profound impact on the incentives to invest in the development of novel products.

The chapter is divided into five parts. The second part continues the examination of the industrial structure of the semiconductor industry, and explains how this industry operates and its relationship with the home console game industry. The third part addresses two issues. Firstly, it analyses the legal and information functions of patents and shows how patents work to reduce information asymmetry, promote communication efficiency and increase information spillovers. Secondly, it addresses the inherent problems of the patent system and sets out to show how these problems have to an extent been mitigated by the tailoring of patent laws by the courts. The fourth part proceeds to argue that patents intensify competition in the semiconductor industry through facilitating vertical disintegration of this industry. It gives detailed analysis of
how patents support the vertical disintegration, a process which itself allows patent owners in the semiconductor industry to maximise returns on investments made in research and development. At the same time, the analysis considers the implications of this for all firms in the stream of production and for the downstream console firms. The fifth part shows how patents may increase the competitive advantages of a console firm while at the same time helping start-ups in this industry capture returns from investments made in the development of new products.

2. The Home Console Game Industry and the Semiconductor Industry

In Chapter I, the analysis showed the inevitable trend of disintegration within the semiconductor industry and console hardware supply chain. The majority of the parts of a console platform are supplied by semiconductor companies. Console power and performance is a basic and necessary factor underpinning most of the product developments in the home console game industry. Both R&D and production of these parts require heavy investment. Such costs have led to disintegration within the semiconductor industry. The majority of firms in this industry are highly specialised, either in chip R&D or fabrication. In the contemporary industry, a so-called ‘fabless’ trend is apparent. A fabless firm refers to a firm that only invests in chip development and research, and outsources fabrication to third-party semiconductor fabrication plants (foundries or ‘fabs’), which specialise in the production of products designed by fabless firms. In contrast, a firm that owns both R&D and foundries is called an integrated device manufacturer (IDM). There are some ‘fab-lit’ firms which lie between these two extremes. However generally, this industry is characterised by separation between design and production with most firms relying on specialised third-party foundries for product production. This can be seen from statistics which show that third-party semiconductor foundries accounted for most of the revenues from all foundry sales in 2013.¹

¹ ‘Top 13 Foundries Account for 91% of Total Foundry Sales in 2013’ (IC Insight, 28 January 2014) <http://www.icinsights.com/news/bulletins/Top-13-Foundries-Account-For-91-Of-Total-Foundry-Sales-In-2013/> accessed 15 March 2017 (According to IC Insights, 10 of these 13 foundries are pure-play
Console firms rely heavily on these semiconductor firms for hardware supply. Compared with backward integration of the supply chain, such organisation of the hardware supply chain saves both research costs and production costs for console firms.

Vertical disintegration enables firms to concentrate on specific activities. They do not have to be large integrated conglomerates such as IBM or Intel compete effectively. Specialised firms can compete with large integrated conglomerates by relying on external resources and capabilities. Specialisation lowers the entry barrier to the semiconductor industry and thus intensifies competition and prevents the emergence of monopolists. As will be shown later, patents contribute to disintegration in the semiconductor industry. Furthermore, patents have allowed proprietors to maximize their returns on investments in new products so ensuring that the market remains viable for multiple participants. Few patent scholars address this contribution of patents to competition when they analyse the association between patents and the incentives

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that they provide. Patents are typically considered to have a negative effect on competition because of how they safeguard monopolies. This chapter will attempt to offer a more balanced perspective on the dynamic relationship between patents, competition and new product design and development.

3. The Legal Perspective and Function of Patents

The last few decades have seen considerable progress towards the international harmonisation of patent law. According to Article 28 of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs), patents confer on their owners the exclusive right to exploit their patented technologies. A patentee is permitted to prevent third parties from ‘making, using, offering for sale, selling, or importing’ infringing products. Article 27 of TRIPs lists the conditions of patentable subject matters. Any invention can be patented as long as it is new, involves an inventive step (or is non-obvious) and is capable of industrial application (useful). Despite patents being domestic rights, members of the World Trade Organization (WTO) are under an obligation to give effect to the requirements laid down in TRIPs. TRIPs sets down the general and minimum standards of patent protection and leaves many important issues such as claim construction and infringement to domestic laws. The following analysis will primarily use the United States as an example to illustrate the impact of the patent system in the semi-conductor and game console industries. The US was selected not only because it possesses the largest semiconductor industry and home console game industry in the world but also because it is a richer source of information compared to, for instance the European Union and the UK, so far as exposing the inherited problems of the patent system, demonstrating the dramatic transformation of this system, and

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3 TRIPs, art 28.
4 Ibid, art 27.
showing how courts react to these problems. However, the EU (UK) patent system will also be considered to go some way to corroborate the analysis of US patent law.

Patents are widely used in the semiconductor industry to protect technical inventions, ranging from R&D to fabrication process technologies. Although analysis in this chapter focuses on patents only, this does not mean that other rights such as design rights or trade secrets are not also put to use in this industry. Patents have been selected for two major reasons. First, the nature of the rights granted means that the patent system is particularly well adapted in allowing proprietors to disclose information to third parties whilst leaving their legal holdings intact and in this way the system contributes to the vertical disintegration of the industry and intensifies the competition in the industry. This function cannot be achieved by way of other types of protection such as trade secrets. Secondly, other rights, and in particular the industry specific rights in semiconductor topographies and designs do not prevent third parties from coming out with the same idea independently. Patents by contrast provide protection against even independent devisers of the protected invention. Moreover, patents protect both products and the processes that are implemented in semiconductor components and used in making these components. All these factors combine in a way that means that patents grant their owners considerable market power in respect of the inventions protected by the patent.

3.1 The Legal Basis of Patent Functions

Patents have two major functions. One is the legal function – the right to exclude. A patent gives its owners an exclusive right to exploit the value of a patented invention

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and recoup costs. Another is an economic function – an information function which reduces information asymmetry and facilitates knowledge spillovers.\(^7\)

In general, a hypothetical addressee is used in the domestic patent system to determine whether a patent can be granted. In the US, this addressee is referred to by the acronym: ‘PHOSITA’; that is a person who has ordinary skill in the art.\(^8\) A patent must enable the PHOSITA to carry out a patented invention without due experiment.\(^9\) This addressee is used by the court to test both ‘enablement’ and whether what is claimed is ‘non-obviousness’. By reading the specification and claims of a patent, readers are supposed to be able to understand the scope and the mechanism of the patented invention. In theory, others must design around patented matters or obtain authorisations from the patentee to avoid infringing the patent. A patentee is given a monopoly on a patented technical invention for a period, normally 20 years during which period it can exclude others from capturing returns from technologies that fall within the boundaries claimed by its patent.

Patent owners are required to publicly disclose information about patented inventions in exchange for the right to exclude. Patent applications have to be published within 18 months of the filing date or priority date.\(^10\) During the process of application, third parties can challenge patent applications. In theory, patent applications are examined by the patent office which is a public authority that applies standardised criteria and procedure.\(^11\) Therefore, information conveyed by a patent possesses a certain degree of credibility.\(^12\) Even though in some areas the disclosed information may not enable a PHOSITA to fully carry out the patented invention, it does provide some level of

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\(^8\) 35 USC §112.
\(^11\) Dan Burk and Mark Lemley, The Patent Crisis and How the Courts Can Solve it (University of Chicago Press 2009) (USPTO is using different criteria corresponding to characteristics of industries. In the same industry, the criteria are the same.).
\(^12\) Long (2002).
information about the technical attributes of the patented invention. External observers can read patent-related documents to obtain information about patented technologies.

In addition, patents may deliver two other types of information. Firstly, patents and patent portfolios can be used by competitors and potential trading partners to identify and assess the technical attributes of their owners because technologies owned by patent owners in effect represent their technical capabilities.\(^\text{13}\) For instance, patents and a patent portfolio held by a patentee may indicate its core technological capabilities and thus can be used to measure its strategies of technological development.\(^\text{14}\) Secondly, patents can signify to external observers both the quality of patented inventions and indirectly then the quality of the owners in terms of their technical capabilities.\(^\text{15}\) Empirical studies have shown that patents are often relied on as an alternative to acquired reputation by start-ups in order to attract and secure external investment.\(^\text{16}\)

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\(^\text{13}\) See, e.g., Sungjoo Lee and others, ‘Business Planning Based on Technological Capabilities: patent analysis for technology-driven roadmapping’ (2009) 76 Technological Forecasting & Social Change 769-786 (This article suggested ways of using patent analysis to measure technical capabilities of patentees in order to find new business opportunities.); Changwoo Choi and Yongtae Park, ‘Monitoring the Organic Structure of Technology Based on the Patent Development Paths’ (2009) 76 Technological Forecasting & Social Change 754-768 (Patents are analysed to identify the historical development of technologies, core technology, obtain ideas for new technology development, and search for patent technology for licensing.); Hsian-Chun Wu, Huang-Yi Chen, and Kung-Yen Lee, ‘Unveiling the Core Technology Structure for Companies through Patent Information’ (2010) 77 Technological Forecasting & Social Change 1167-1178 (Patents are used by authors to identify core technology capabilities of Taiwan Semiconductor Manufacturing Company (TSMC), the biggest specialised foundry in the semiconductor industry.).

\(^\text{14}\) Ibid.


\(^\text{16}\) See, e.g., David HSU and Rosemarie H Ziedonis, ‘Resources as Dual Sources of Advantage: implications for Valuing Entrepreneurial-Firm Patents’ (2013) 34 Strategic Management Journal 761-781 (Patents are used by start-ups to attract and secure financial backing.). See also, Joshua Gans, David Hsu and Scott Stern, ‘The Impact of Uncertain Intellectual Property Rights on the Market for Ideas: evidence from patent grant Delays’ (2008) 54 (5) Management Science 982-997 (Patents are used as an alternative way to reputation in attracting partnership or investment.); S Wagner and I Cockburn, ‘Patents and the Survival of Internet-related IPOs’ (2010) 39 research Policy 214-228 (Patenting is positively associated with survival among listed internet companies. It shows that high quality patents, which are unusually highly cited by following patents would make patent owners more attractive acquisition targets.); Christian Helmers and Mark Rogers, ‘Does Patenting Help High-Tech Start-Ups?’ (2011) 40 Research Policy 1016-1027 (This article provides a general overview of relationship between a start-up’s performance and patents it possesses. It shows that start-ups with patents have higher asset growth than non-patentees. One of authors’ explanation is that patents attract more venture capital which in turn generate more returns.).
Likewise, a firm looking for merger and acquisition targets can compare and evaluate candidate target companies’ technical capabilities by assessing their patents.\textsuperscript{17}

In addition to conveying information to the public, a patent standardises information. In other words, a patent codifies information. The uniform format of patent documents, standard of application and legal procedure, and standardised vocabulary simplify the communications between patent owners and the public. For instance, people can find a specific patent by searching its number. It becomes much easier for outside parties to identify and locate patents using these standardised formats. At the same time, codified technical information conveyed by patent documents can be used as a common basis of communication between patent owners and outside parties, which is a useful way to enhance mutual understanding.

Some researchers deny the abovementioned information functions. Instead, they argue that US patent law \textit{de facto} discourages observers from reading patent-related documents.\textsuperscript{18} Under US patent law, the well-informed infringer runs the risk of being convicted of ‘wilful infringement’ and with this the risk of the patentee being awarded treble damages.\textsuperscript{19} However, recent developments have made this problem less acute given recent decisions by the US Court of Appeals of the Federal Circuit (Federal Circuit). To form a better understanding of the change in case law in this respect, it is necessary to go into case law development in some detail. Until relatively recently, it was up to a jury in a District Court to determine whether or not wilful infringement was present.\textsuperscript{20}

\begin{itemize}
\item \textsuperscript{18} 35 USC § 284 and 285. The UK Patent Act 1977, s 62 (If the defendant was unaware of the patent existence, damage will be limited.). See also, Robert Merges, ‘A Transactional View of Property Rights’ (2005) 20 (4) Berkeley Technology Law Journal 1147-1520, p. 1506.
\item \textsuperscript{19} Ibid.
\item \textsuperscript{20} See, e.g., Laura Masurovsky and Jacob Schroeder, ‘A Radical Change in Wilful Infringement Litigation’ (Finnegan, Henderson, Farabow, Gareet & Dunner LLP, 3 January 2013) <http://www.finnegan.com/resources/articles/articlesdetail.aspx?news=fa1f12f3-e9bd-4003-b26a-0ceaab135a30> accessed 23 June 2016.
\end{itemize}
District Court judges were often reluctant to depart from the view of the jury.\(^\text{21}\) Furthermore, a negligence-type standard of reasonableness was adopted by the Federal Circuit to determine whether or not there was wilful infringement if a District Court decision was appealed to it.\(^\text{22}\) This meant that if an accused infringer was actually aware of the patent rights of others, an affirmative duty of care was imposed on him. He had to obtain counsel’s competent opinion before engaging in possible infringing acts.\(^\text{23}\) Failure to show evidence of seeking such an opinion would risk him being held liable for wilful infringement. In practice, it was very difficult for an accused infringer to persuade the Federal Circuit to overrule a District Court decision under this negligence-type standard. However, in *Halo Electronics*, the US Supreme Court held that merely because an infringer knew about the patent in issue was not of itself sufficient to support a claim of wilful infringement and an award of treble damages.\(^\text{24}\) The court highlighted the subsequent inventors’ considerable costs of looking for expert views in practice and was cautious about the trend of companies to use the threat of wilful infringement to force a settlement.\(^\text{25}\) Justice Breyer thus held that court must be careful in determining wilful infringement and granting treble damages.\(^\text{26}\) In his opinion, treble damages should only target cases of egregious misconduct.\(^\text{27}\) In other words, even if wilful infringement is found by the court, treble damages will not automatically be granted. The consequence is that so far as the threat of a finding of wilful infringement discouraged the reading patent documents, that negative effect has been significantly diminished by the Supreme Court’s ruling. This implication is supported by empirical studies which found that companies have indeed sought and read patent-relevant literature.\(^\text{28}\) The problem

\(^{21}\) Ibid.
\(^{22}\) Underwater Devices v Morrison-Knudsen 717 F2d 1380 (Fed Cir 1983).
\(^{23}\) Ibid.
\(^{24}\) Halo Electronics v Zimmer and Styker 136 S Ct 1923, 1937 (2016) (Justice Breyer Concurring)
\(^{25}\) Ibid, 1938.
\(^{26}\) Ibid.
\(^{27}\) Ibid.
is not and has never been significant in the UK and most EU countries because typically damages in patent infringement actions are compensatory rather than punitive.\textsuperscript{29}

The information function of patents is also a product of ‘knowledge spillover’.\textsuperscript{30} In particular, patents facilitate diffusion of information not only through the formal disclosure made on the publicly available patent register, but also through other means such as licensing and patent pools.\textsuperscript{31} Empirical studies have found that in addition to obtaining the right to exclude, firms apply for patents for two other purposes, namely – increasing bargaining power and avoiding litigation.\textsuperscript{32} In other words, patent owners use patents to negotiate cross-license agreements to access external resources. When more than two patent holders are involved, a patent pool may be established so that pool members can use each other’s patents freely and even license them to third parties.\textsuperscript{33} A

\textsuperscript{29} ‘Ultraframe: a view of patent damages’ (Slaughter and May, August 2006) <https://www.slaughterandmay.com/media/39218/intellectual_property_plus_1_jul_-_aug_2006.pdf> accessed 16 November 2016 (The damages under the UK patent system is compensatory and are not used to punish defendant.); ‘Civil Damages in Intellectual Property Rights Cases’ (European Observatory on Counterfeiting and Piracy, 2009) <http://ec.europa.eu/internal_market/iprenforcement/docs/damages_en.pdf> accessed 16 November 2016 (‘most member states [of EU] refuse to apply damages that are explicitly punitive’). See also, Thomas F Cotter, ‘Punitive Damages for Patent Infringement in the UK’ (Comparativepatentremedies, 27 November 2013) <http://comparativepatentremedies.blogspot.com/2013/11/punitive-damages-for-patent.html> accessed 16 November 2016 (The author mentioned that the authors of the AIPPI Report stated that they are aware of no cases in which a court in the UK had awarded exemplary damage for patent infringement.).

\textsuperscript{30} Wesley Cohen and others, ‘R&D Spillovers, Patents and the Incentives to Innovate in Japan and the United States’ (2002) 31 Research Policy 1349-1367, p. 1364 (Information disclosed by patents played the central role in diffusing information across competitors in manufacturing sector.).

\textsuperscript{31} Ibid (Licensing is also proved to be another important means of diffusing information.).


good patent pool, normally a complementary patent pool, also enhances the efficiency of market transactions through the licensing of bundled patents to third parties which reduce its transaction costs. Such mechanisms facilitate knowledge dissemination both within and across industries. For instance, recently Intel and Nvidia reached a settlement after litigation. Through a cross-licensing arrangement between Intel and Nvidia, they can freely use each other’s patented technologies that are covered by the cross-licensing agreement. Intel can now produce a Sandy Bridge successor based on Nvidia technology to compete with Nvidia in the graphics chip market. In turn, Nvidia has the opportunity to develop ARM-based processors to challenge Intel in the microprocessor market. This illustrates one way in which patents can act to diffuse information. As will be shown later, this function contributes to facilitating vertical disintegration, intensifying competition and increasing the information resources available to firms to allow them to develop new products in the semiconductor industry. However, before developing that argument, the inherent problems of the patent system have to be addressed given that these can have a negative effect on competition and a corresponding effect on new product development.

3.2 Remedies for ‘Patent Crisis’

Many people have pointed out the failings of the patent system. Burk and Lemley for instance identify four major problems: (1) the flood of bad patents; (2) patent holdups; (3) patent thickets; and (4) anti-commons concerns. Bad patents refer to patents that do not actually meet the statutory requirements but through oversight or

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34 Ibid (In general, a complementary patent pool is allowed under antitrust law because it is pro-competition. However, controversy still exists regarding a substitute patent pool because it may confer on patent owners the anti-competitive market power.).
37 Ibid.
38 Burk and Lemley (2009), p. 22.
41 Ibid, pp. 86-89.
mistake nevertheless pass the examination and are granted. Patent thickets are created from the many patents normally attached to a product. In this environment, each firm holds patents for defensive purposes. Patents embodied in one product might be held by different parties. These parties have to reach an agreement so that the product can reach the final customers. Anti-commons describes the problem of coordination of these patent owners before production. Patent holdups involve problems occurring after firms have sunk costs in technologies whilst unconsciously infringing the patents of others. These problems are interdependent. The increasing number of low-quality patents leads to and exacerbates the three other problems.

All four problems manifest themselves in the operation of non-practising entities (NPEs). This is particularly problematic because certain internal mechanisms of the patent system that offset the consequences of the problems are ineffective if patents are held by an NPE. In particular, although patent holders can litigate or threaten to litigate against accused infringers, their right to exclude is offset by being countersued and having the validity of their patents challenged. This mechanism maintains the balance of the patent system and protects both patentees and accused infringers. Cross-licensing agreements and patent pools are also designed on the basis of this internal mechanism. However, such a balance is broken by NPEs because they are immune to countersuits and find cross-licensing unattractive as they do not use patents to practise

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The only purpose of NPEs is to acquire patents to litigate or threaten litigation in an effort to extract rents from practising entities.

The home console game industry relies heavily on software for profits. Therefore, software patents may inhibit competition and creativity in the software game market if they are of low quality. Although statistics show that the quality of patents in the semiconductor industry is relatively higher than in other industries, there is no harm in increasing patent quality given that inventions in this industry are generally cumulative. Like other industries in the US, both industries are exposed to the threat of NPEs. In order to restore the balance of the patent system, patent quality should be improved and the incentive to abuse the patent system should be suppressed.

There are two ways to reduce these problems: one is to enforce stricter requirements for obtaining patents, which is an ex ante measure that can be taken by patent offices; the other is to regulate the behaviour of patentees, which is an ex post measure carried out by courts. This part focuses on the latter for two reasons. First, a significant number of patents have been granted which means these patents, including low-quality patents,

47 Collen Chien, ‘Starups and Patent Trolls’ (2014) 17 Stanford Technology Law Review 461-506 (It is because patent trolls do not practice in the same market as alleged infringers which means they are immune to counter-litigation.).


may be used in litigation or as a threat of litigation. Second, court decisions can change the behaviour of both patentees and applicants, and thus affect the number and quality of patent applications received by the patent office. In other words, bad quality patents or the misuse of patents cannot exert negative influences if their owners have little incentive to litigate or use litigation as a threat. Courts can play an important role in this to reduce such incentives by sending messages to the public. By correctly identifying the industry-specific problems, courts can use their discretion to interpret and tailor the law in individual cases to solve these problems. The following analysis will demonstrate how courts remedy the ‘patent crisis’ caused in particular by NPEs. As will be shown below, courts have tightened up conditions for obtaining patent protection in order to expose low-quality patents to the risk of being invalidated during litigation. Courts also improve standards in granting injunctions to lower the likelihood of patents being used by NPEs to extract money from market participants. At the same time, some patentees can exercise their right to exclude through the International Trade Committee (ITC) as an alternative way to prevent the importation of patent-infringing products. Courts have also addressed this issue to reduce incentives to use this means to abuse patent rights.

a. Reform of Software Patents

In the EU, software is explicitly said not to be regarded as patentable subject-matter. EU states have consequently been very cautious in granting software-related or computer-implemented inventions (CII) patents. It is quite difficult for an CII to be

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50 Burk and Lemley (2009).
52 The US Tariff Act, § 337 (19 USCS § 1337 (a)(2)).
53 EPC, art 52 (2)(c).
54 See, e.g., Aerotel v Telco [2006] EWCA Civ 1371 (UKCA) (The UK Court of Appeal in this case denied the view that CII invention can pass patentability test merely because of being running on a machine.). See also AT&T Knowledge Ventures v Comptroller General of Patents Designs and Trademark [2009] FSR 19, at [40] (Lewison J); HTC Europe v Apple Inc [2013] EWCA Civ 451 (UKCA), at [50]; Lantana Ltd v Comptroller General of Patents Designs and Trademark [2014] EWCA Civ 1463 (UKCA), at [44]-[51].
patented in Europe. By contrast, CIIs could easily overcome the threshold of patentability in the US before Bilski. Many researchers blamed the approach adopted by the Federal Circuit regarding patentability in State Street Bank on the flood of software patents and low-quality patents. The Federal Circuit in this case held that a claimed invention was eligible for patent protection if it ‘produced a useful, concrete and tangible result’. In other words, doing little more than adding the words ‘do it with a computer’ to a set of claims was enough to allow a claimed invention to pass this patentability test in the US. In Bilski, the US Supreme Court (USSC) rejected the approach used by the Federal Circuit in State Street Bank, holding that it was an inadequate way to determine whether or not a CII was patentable subject matter. Two recent decisions of the USSC on CIIs further affirmed the court trend to increase the standards of patent protection for CIIs. The ‘Mayo test’ was introduced in Mayo to determine whether a category was outside or inside patent protection. This test was then affirmed by the USSC in Alice. The Mayo test distinguishes patent-eligible and patent-ineligible matters and requires an invention to possess an inventive concept that is sufficient to transform an abstract idea into a patentable matter. Compared with the previous approach applied by the Federal Circuit in State Street Bank, standards for CIIs

55 Even some commenters claimed that it becomes much easier to have software patent granted in the Europe, the extent to which those patents are protected in each member state depends on domestic law so far. In the case of the United Kingdom, those patents might not as effective as them in other member state given the aforesaid UK court’s attitude toward software patents. See also, Susan J Marsnik and Robert E Thomas, ‘Drawing a Line in the Patent Subject-Matter Sands: does Europe provide a solution to the software and business method patent problem?’ (2011) 34 Boston College International & Comparative Law Review 227-327, 231.
56 See, e.g., Bessen and Meurer (2008), p. 211 (Authors argued that the ‘useful, concrete, and tangible’ approach adopted by the Federal Circuit in State Street Bank implied that any subject matter test to preclude abstract patent claims has been eliminated for software.).
57 State Street Bank v Signature Financial Group 149 F 3d 1368 (Fed Cir 1998).
58 Bilski v Kappos 561 US 593 (2010). See also, In re Bilski 545 F 3d 943 (Fed Cir 2008).
59 Mayo v Prometheus 132 S Ct 1289 (2012) (The alleged invention involves a method carried out by computers to give drugs to a patient and decide whether to increase or decrease dosage of drugs. The court held that it was not a patentable subject matter.).
60 Alice v CLS Bank International 134 S Ct 2347, 2355 (2014) (The alleged patent on a computer-implemented, electronic escrow service for facilitating financial transaction was held invalid.).
61 Mayo (n 59).
created in the Mayo test are much higher. By applying the test, the USSC in Alice held that the claimed invention lacked an ‘inventive concept’ since it merely required conventional computer implementation which failed to transform the abstract idea into a patent-eligible invention. Under the Mayo test, a significant number of previously granted CIIs have been exposed to the risk of being revoked as they may not possess an ‘inventive concept’. This is consistent with figures which show that a significant number of CII-related patents that were granted pre-Alice are held to be invalid by the courts post-Alice.

At the same time, courts can construct patent claims by strictly applying conditions to narrow the scope of patent protection. For instance, ‘enablement’ can be used by the court to invalidate patent claims if the invention claimed by its claims is not supported by the specifications. In other words, if the PHOSITA cannot carry out the claimed invention on the basis of reading the patent application and applying their ordinary skills, then the relevant claims may be invalidated and the scope of the patent is thus narrowed. In this way, courts can control the scope of a patent to avoid impeding innovations following the patented technologies. All these acts of the courts suggest

62 Alice (n 60), 2348 (They introduce ‘inventive concept’ into the original Machine or Transformation Test, which was initially brought by the USSC in Diamond v Diehr 450 US 175 (1981)).
63 Ibid.
64 See, e.g., Steven Callahan, ‘Alice: the death of software-related patents’ (Northern District of Texas Blog, 1 May 2015) <http://www.ndtxblog.com/?p=3550> accessed 15 March 2017 (Since Alice, 57 of 76 decisions are made in favour of defendants by invalidating plaintiffs’ patents); Robert Sachs, ‘Alice Storm in June: a deeper dive into court trends, and new data on Alice inside the USPTO’ (Bilskiblog, 1 July 2015) <http://www.bilskiblog.com/blog/2015/06/alicestorm-a-deeper-dive-into-court-trends-and-new-data-on-alice-inside-the-uspto.html> accessed 15 March 2017 (The average invalidate rate of patents in litigation after Alice was 73.1%. To break this rate down, 70.2% in the District Courts and 92.2% in the Federal Circuit.).
65 See e.g., Stitrick v Dreamworks et al 516 F 3d 993 (Fed Cir 2008) (Patent was held to be invalid because the claimed scope is too broad to be supported by the specification, according to which an ordinary person skilled in the art cannot carried out such invention without undue experiment.). For comment, see, Audrey Millemann, ‘Lack of Enablement- a strong tool for invalidity’ (Weintraub Firm, 4 June 2008) <http://www.theiplawblog.com/2008/06/articles/patent-law/lack-of-enablement-a-stronger-tool-for-invalidity/> accessed 15 March 2017 (The author asserted that lack of enablement may be becoming a far more powerful tool.); John Allison and Lisa Larrimore Ouellette, ‘How Court Adjudicate Patent Definiteness and Disclosure’ (2016) 64 (4) Duke Law Journal 609-695.
that courts are concerned about the quality of patents and try to minimise their negative impacts on fair competition. It is plausible to infer that patents owners who own low-quality patents might be more reluctant to litigate. Targeted firms, on the contrary, might have more courage to challenge the validity of patents in litigation. The quality of new applications may also improve because an invalid patent cannot be used in litigation even if it passes the patent office’s examination.

b. Reform of Injunctive Relief

Injunctive relief reflects one of the key features of patents – the right to exclude. Although such a right can help innovators capture returns from innovation, it can also be misused by right holders to impede competition. The preliminary injunction is considered a potent weapon in patent litigation because patentees can prevent a third party from engaging in infringing activities including selling competitive products even if a patent case is still pending. A permanent injunction can be used by patent owners to restrain infringers from all infringing activities permanently. They are powerful because a firm can use them to disrupt competitors’ strategies or even force competitors out of the market. In this way, injunctive relief has become a powerful weapon for patent misusers including NPEs.

The EU’s Enforcement Directive makes interim and final injunctions available across the Europe while leaving the power of injunctions to the national court of the member states. Preliminary injunctions are uncommon in some member states, such as the UK.


and France.\textsuperscript{70} For instance, the UK courts are reluctant to grant interim injunctions except in cases involving infringement of pharma patents.\textsuperscript{71} As regards the permanent injunctions, very few cases have argued whether a permanent injunction should be granted.\textsuperscript{72} Before the UK Supreme Court’s (UKSC) decision in \textit{Coventry v Lawrence},\textsuperscript{73} permanent injunctions were granted as a matter of routine in most patent cases where infringement was found. In \textit{Coventry}, the UKSC gave a more flexible approach that can be used by the lower court to determine whether or not to grant permanent injunction following a finding of patent infringement. Although there has been a limited amount of activity in the lower courts,\textsuperscript{74} the UK Court of Appeal’s (UKCA) recent decision in \textit{HTC v Nokia} implies that a permanent injunction may not be automatically granted following a finding of patent infringement.\textsuperscript{75} If this signals the caution of UK Court about permanent injunctions, the incentives to abuse patent right will be suppressed.\textsuperscript{76}

Likewise, the US courts have also tightened up the conditions for granting injunctive relief.

\textbf{Preliminary Injunction}

\textsuperscript{70} Kartrin Cremers and others, ‘Patent Litigation in Europe’ (2016) Europe Journal of Law and Economics 1-44 (‘Preliminary injunctions tend to be rare in France. This is also the case in the litigation system of the UK (England and Wales), where preliminary injunctions are relatively uncommon in patent cases’.).


\textsuperscript{73} \textit{Coventry v Lawrence} [2014] UKSC 13.

\textsuperscript{74} See above n 72.

\textsuperscript{75} Gary Moss, ‘HTC v Nokia: in the United Kingdom will an injunction be granted following a finding of patent infringement’ (2014) 9 (5) Journal of Intellectual Property & Practice 351-352 (The author highlighted the point that injunctions did not follow automatically when patent infringement was found by the court.). See also, \textit{HTC v Nokia} [2014] RPC 31 (UKCA) (HTC appealed against a High Court Judge’s refusal of a general stay of a permanent injunction granted to the Nokia to restrain HTC from infringing Nokia’s European patent. The UKCA allowed the appeal.)

\textsuperscript{76} \textit{Shelfer v City of London Electric Lighting Co} (1895) 1 Ch 287. \textit{Navitaire v EasyJet Airline} [2004] EWHC 2271 (Ch) (Pumfrey J). \textit{Virgin Atlantic Airways v Premium Aircraft Interiors UK Ltd} [2011] EWCA Civ (Jacob LJ) (In these two cases, the judges emphasised that the grant of an injunction must be grossly proportionate to the right protected. If grant of damages is sufficient to compensate the loss of patentees, the injunction is less likely to be granted by the court.).
Under US law, four conditions need to be satisfied for a court to issue a preliminary injunction: (1) the patentee’s likelihood of success on the merits; (2) whether the patentee will suffer irreparable harm without injunctive relief; (3) whether hardship falls in the patentee’s favour; (4) the public interest in favour of a preliminary injunction. Nowadays, it has become increasingly difficult for a patentee to obtain a preliminary injunction. The first prong may become more difficult to prove as the validity of patents is more likely to be challenged by accused infringers. Furthermore, case law shows that the second prong requires a patentee to establish a direct causal relationship between alleged infringement and alleged irreparable harm. Some detailed analysis may be helpful to understand why this is the case. In Apple v Samsung (Apple I), Apple’s motion for a preliminary injunction was denied both by the District Court and Federal Circuit because the patent on the ‘bounce-back’ feature in this case was not the selling point of the iPhone. In other words, consumers who had bought the infringing product (Samsung’s smartphone) would not change their minds and buy an iPhone instead if Samsung’s smartphone did not have the infringing technology. In Apple v Samsung (Apple II), the District Court’s decision to grant Apple a preliminary injunction was overruled by the Federal Circuit which held that ‘a sufficiently strong casual nexus relat[ing] to the alleged harm to the alleged infringement’ was not

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78 See, e.g., Lee Gesmer, ‘It’s Difficult to Get a Preliminary Injunction in a Patent Infringement Case’ (MassLawBlog, 20 February 2008) <http://masslawblog.com/patents/its-very-difficult-to-get-a-preliminary-injunction-in-a-patent-infringement-case/> accessed 15 March 2017. See also, Gerald Sobel, ‘Examining the Extra Burden Imposed on A Patentee Who Seeks a Preliminary Injunction’ (1983) 32 The American University Law Review 985-1008 (The author argued that the threshold was too high and suggests lower the threshold, which appeared to become reality later as indicated by literature listed in n 69 of this chapter. However, the threshold now became higher again.).

79 Stitrick (n 65).


81 Apple I, 1321 and 1323-1324.
established by the court. The Federal Circuit held that Apple could establish such an association if it proved that consumers purchased Samsung’s smartphone because it included the infringed patented function. The claimed patented function in this case was not among the top five reasons for consumers selecting the Android smartphone. After *Apple I* and *Apple II*, the Federal Circuit applied the same test in other cases and demonstrated how to interpret the second prong of the test further. In *LaserDynamics v Quanta Computer*, the Federal Circuit held that LaserDynamics must establish that the patented feature drives consumer demand for Quanta’s assembled computers (an entire multi-component product) in order to have a preliminary injunction granted. It also held that ‘it is not enough to merely show that’ the patented feature ‘is viewed as valuable, important, or even essential to the use of the laptop computer’. A product like a console is constituted by various patented technologies. It would be extremely difficult for a patentee to establish such causal relationships between alleged infringement and irreparable harm even though infringement could be proved. Without passing the second prong of the test, a court will not consider the third and fourth prongs. Hence, it is quite difficult for patentees to get preliminary injunctions granted.

**Permanent Injunction**

US courts are also cautious about granting permanent injunctions after *eBay v MercExchange (eBay I)*. In *eBay I*, the USSC denied the presumption that a permanent injunction would be granted almost automatically following a finding of infringement. The USSC in *eBay I* highlighted the danger of injunction abuse as a tool to gain unfair

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82 *Apple v Samsung* 695 F 3d 1370, 1374 (Fed Cir 2012) (Apple II).
83 *Apple II*, 1376.
84 Ibid.
85 *LaserDynamics v Quanta Computer* 694 F3d 51 (Fed Cir 2012).
86 Ibid, 67-68.
87 Ibid.
89 Ibid.
market power. In *eBay I*, the USSC held that a four-factor test must be satisfied if a plaintiff sought a permanent injunction. Specifically, a patentee must show:

‘(1) that it has suffered an irreparable injury; (2) that remedies available at law are inadequate to compensate for that injury; (3) that considering the balance of hardships between the plaintiff and defendant, a remedy in equity is warranted; and (4) that the public interest would not be diserved by a permanent injunction’. 

When *eBay III* was sent back to the District Court, the court denied the injunctive application to MercExchange by interpreting the four-element test. The court’s reasoning in this case has been widely adopted by subsequent courts when these courts have declined to grant a permanent injunction to a patentee. With regard to irreparable injury, the court held that MercExchange had not demonstrated such harm because it had ‘acted inconsistently with defending its right to exclude’ by ‘follow[ing] a consistent course of licensing its patents to market participants’. The court held that ‘the consistent course of litigating or threatening litigation to obtain money damage [of MercExchange] … indicates that MercExchange has utilized its patents as a sword to extract money rather than as a shield to protect its right to exclude’. As to the second prong of the test, the court held that MercExchange had an adequate remedy because its consistent acts to obtain royalties implied that a remedy could be made through monetary damage. Third, the court found that the factor of ‘the balance of hardship’ favoured neither party. The court also found the fourth public interest favoured damage rather than an injunction because MercExchange was merely ‘seeking an injunction for a bargaining chip to increase [its] bottom line’ and this outweighed ‘the

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91 *eBay* (n 88), 391.
92 Ibid, 391.
93 *MercExchange v eBay* 500 F Supp 2d 556 (ED Va 2007).
94 Ibid, 569.
95 Ibid, 572.
96 Ibid, 583.
97 Ibid, 583-586.
public ... benefits from a strong patent system’.98 For these reasons, the injunction application was denied by the court.

The District Court in eBay II delivered a clear message which indicated its concerns about NPEs. This appears to echo Justice Kennedy’s concurring judgment in eBay I99 in which he explicitly differentiated eBay I from historical patent litigation by pointing out that it concerned a NPE that utilised an injunction ‘as a bargaining tool to charge exorbitant fees to companies that seek to buy licenses to practice the patent’.100 At the same time, Justice Kennedy asserted that an injunction might be inappropriate ‘when the patented invention is but a small component of the product the companies seek to produce and the threat of an injunction is employed simply for undue leverage in negotiations’.101 In addition, as another reason to deny an injunction, Justice Kennedy expressed his concern about NPEs by listing the ‘burgeoning number of patents over business methods, some of which are of potential vagueness and suspect validity’.102

The eBay decisions suggest that injunctive relief cannot be automatically granted even when a patent infringement is found. A new approach to patent infringement remedies – a bifurcated system of property rules (rights to exclude) and liability rules – was created by the USSC in eBay I. The former rules apply if both parties are practising and competing in the market. Granting injunctive relief allows the practising patentees to exercise their rights to exclude as this is the main way to enforce property rules.103 The latter applies when plaintiffs are NPEs who consistently profit through patent litigation or by threatening litigation to extract money from market participants, the amount of which nonetheless is decided by a third-party authority.104 The effectiveness of the eBay

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98 Ibid, 588.
99 eBay (n 88).
100 Ibid, 395-396 (Kennedy J Concurring).
101 Ibid, 396-397.
102 Ibid, 397.
104 See, e.g., Doug Renleman, Complex Litigation: injunction, Structural remedies, and contempt (Foundation Press 2009), p. 128 (Monetary remedies are more characteristic of a liability rule.).
decisions in terms of limiting NPEs is indicated by a recent empirical study which shows that practising firms who compete with alleged infringers can still obtain permanent injunctions in the majority of cases in which patent infringement was found by the court but NPEs’ injunction requests were denied. The bargaining power of NPEs has, therefore, been reduced after losing the weapon of injunctions.

The analysis above regarding the injunctive relief under the US patent law shows that preliminary injunctions are more difficult to obtain if patents are of low quality or if patented technologies account for a small part of the entire marketed product and have no determinative power that affects a customer’s purchase decision. Court decisions on permanent injunctions further show that injunctions cannot be automatically granted even when patent infringement is found by courts. Hence, the foresaid analysis on injunctive relief under both the US patent law and UK patent law shows that courts are capable of exercising their discretion to tailor laws to solve specific problems in the patent system. As demonstrated before, on the one hand, practising patentees can still use patents as bargaining chips to access competitors’ resources via cross-licensing or patent pools. This ensures that patents can continue to facilitate information spillover within and across industries. On the other hand, injunctive relief weapons have lost their primary power for NPEs even when infringement is found. It shelters competition


in one industry from external interference and maintains competition within the industry as injunctions may reduce competitors.

c. Unifying attitude of ITC and Courts towards NPEs

A patentee can exercise the right to exclude through the ITC as an alternative means to file suits in District Courts if the alleged infringing products are imported from outside the US. However, the ITC’s decisions can be appealed to the Federal Circuit which means that the Federal Circuit decision can affect the ITC decision. Both the ITC and the courts have been cautious about the inherited problems of the patent system and have tailored the law to restrain patent abuse. This can be seen from the Motiva case in which the plaintiff (Motiva) requested ITC to prohibit importation of Nintendo’s Wii into the US on the basis that Nintendo’s Wii infringed its patent. Motiva relied on 19 USC § 1337. Under this provision, a ‘domestic industry’ can prevent an infringer from importing to sell alleged patent infringing articles into the US. ITC denied Motiva’s request by reasoning that it did not satisfy the domestic industry requirement because the only activity to commercialise patented technology by Motiva was filing the complaint with it. This decision was confirmed when it was appealed by Motiva to the Federal Circuit. The court held that Motiva did not engage business and were not ‘substantial’ nor were they ‘directed toward a licensing program’ that would ‘encourage adoption and development of articles that incorporated Motiva’s patent technology’ in the home console game industry.

d. The Shortage of Reforms and Remedies

The preceding examination of US cases demonstrates that the courts are capable of playing a role in reducing the inherited problems of the patent system. Although this encourages accused infringers to challenge the validity of patents, threats of litigation may be sufficient to intimidate accused infringers if legal fees are high and an accused

107 Motiva v ITC 716 F3d 596, 601 (Fed Cir 2013).
108 Ibid.
109 Ibid, 598.
110 19 USC § 1337 (a)(2).
infringer has to pay them no matter whether they win or lose the case.\textsuperscript{111} In comparing the EU and US patent systems, scholars have found that NPEs are less active in EU countries, the UK in particular, than in the US.\textsuperscript{112} They attributed this difference to the high quality of patents and fee-shifting practice (attorney fees) in the EU system.\textsuperscript{113} As demonstrated above, the US courts have already taken various actions to improve the quality of patents including invalidating previously granted low-quality CII patents.\textsuperscript{114} However, what they cannot solve is the issue regarding attorney fees. In the US, each part of a patent suit bears its own costs of litigation, no matter what the result is. In EU countries such as the UK, the general rule on legal costs is that the loser pays the winner’s legal fees.\textsuperscript{115} This fee-shifting practice discourages claimants with a low probability from suing.\textsuperscript{116} It also saves on the costs of challenging patents, and thus encourages the accused infringer to challenge the validity of patents. As suggested by many researchers, implementation of fee-shifting in patent litigation in the US could both increase patent quality and reduce the likelihood that patents are used to


\textsuperscript{113} Ibid.

\textsuperscript{114} Mayergoyz (2009), pp. 258-260; Helmers, Love and McDonagh (2013), p. 511 and n 2 (Authors in these articles contended that higher thresholds of granting CII patents is one of major reasons for EU possessing higher quality patents than US.). See also, Commission of the European Communities, ‘Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee’ COM (2008) 465/3 <http://ec.europa.eu/internal_market/indprop/docs/rights/communication_en.pdf> accessed 15 March 2017. (the report contends that patents in the EU generally are of high quality.).

\textsuperscript{115} ‘Will US Patent Trolls Soon be Making Their Way to the UK?’ (TaylorWessing, October 2013); Helmers, Love and McDonagh (2013).

\textsuperscript{116} Chien (2012), p. 377.

threatening litigation simply for the purpose of extracting money from the accused infringers.\(^{117}\) However, it is the legislature rather than the courts that can change the rules on attorney fees.

The example of attorney fees suggests that courts alone cannot eliminate all these problems. The above analysis, nonetheless, shows that courts are able to minimise the negative influences of patent misuse in the areas of competition and innovation under the contemporary patent system. As long as the benefits of the patent system exceed the costs caused by its problems, the patent system can be justified as providing a net social benefit.

4. **Patents, Vertical Disintegration and Competition**

Vertical disintegration lowers the threshold of entry of both industries, but especially the semiconductor industry. This avoids monopolies and intensifies competition. Fabless firms like AMD and Nvidia can compete with large integrated conglomerates in the same market. The following paragraphs demonstrate the ways in which patents contribute to facilitating vertical integration to intensify competition in the semiconductor industry. Its implications for semiconductor firms and downstream console firms are drawn at the end of this part.

**4.1 Right to Exclude and Vertical Disintegration**

The above-mentioned Intel-Nvidia example will be used here to demonstrate the important role of patent protection in vertical disintegration. To aid illustration, two hypothetical scenarios will be compared. Scenario A has patent protection while scenario B lacks such protection. As discussed earlier, when Intel and Nvidia both were blocked by each other’s patents, they could negotiate either for a cross-licensing or so as to form a patent pool to avoid conflicts. Both parties were able to benefit from the cross-licensing agreement. In the case of Intel-Nvidia, they entered each other’s market via a cross-license where they could compete with each other on a more advanced level

without repeatedly investing in technology that already existed. That is generally the most likely result in scenario A.

In scenario B, Intel has three options: it can choose to develop the same technology again in-house; it can copy or reverse-engineer Nvidia’s technology as long as there is no direct contract between Nvidia and Intel which protects Nvidia’s trade secrets; or it can choose to buy the technology from Nvidia or share it with Nvidia. In general, Intel will prefer the second or third options to the first. Developing the same technology requires both capital and time. Even if the same technology is developed, Intel still cannot compete with Nvidia in the graphics market because Nvidia is likely to have a more advanced version of the technology. Copying or imitating it through reverse-engineering will save time and costs for Intel given that a trade secret does not protect information that has been disclosed to the public. As soon as information about the technology leaves the organisation, the technology is exposed to the risk of being copied. Nvidia may also not wish to sell the technology to Intel because of this and the likelihood of creating a potentially powerful competitor. Without patent protection, once information about the technology leaks out, there is no way to stop its use and development by competitors which potentially then would allow Intel to develop a new product on the basis of this technology whilst, leaving Nvidia unable to recoup its costs in the initial research and development of the technology.

As such, the most secure way for Nvidia to behave is to integrate the whole value chain, ranging from R&D to production, within the organisation, and restrain employees via non-disclosure agreements (NDAs), work-for-hire or non-competitive clauses to guard against the technology leaking. Although in this case Nvidia may recoup costs by exercising its monopolistic market position there is a risk that it will abuse its market position because of a lack of competition. For instance, it may charge its business

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118 See e.g., Dan Callaway, ‘Patent Incentives in the Semiconductor Industry’ (2008) 4 Hastings Business Law Journal 135-152, p. 142; Rajshree Agarwal, Martin Ganco, and Rosemarie Ziedonis, ‘Reputation for Toughness in Patent Enforcement: implications for knowledge spillovers via inventor mobility’ (2009) 30 Strategic Management Journal 1349-1374 (Analysis shows that employees ‘job-hopping’ is an important channel of knowledge leakage from one firm to another. However, patents can be used to prevent the leakage.).
customers a price that is as high as they can bear, forcing them to further subsidise costs to final customers. Nvidia will not have the strong incentive to innovate further that it would have had when facing competition.

Analysis of scenario B also suggests that small and medium-sized companies such as fabless firms are less likely to compete with large integrated conglomerate companies in the same market. Since the former have to rely on the market to carry out their innovations, they may not be able to recoup costs from innovations if there is no patent protection for information-transfer. This in turn increases the likelihood of a monopolistic market. As shown in scenario A, patents make information/inventions tradeable and transferable. Patentees still have exclusivity in capturing returns from patented technologies even if information about these technologies is disclosed to outsiders. Patentees can prevent inventions being copied even if no contract exists between them and the alleged infringers. Small and medium-sized firms are able to rely on market transactions to carry out their innovations and compete with large integrated IDMs. Hence, patents facilitate vertical disintegration by conferring on owners exclusivity over disclosed information on technologies.

4.2 Information Disclosure, Transaction Costs and Vertical Disintegration

Patents also contribute to vertical disintegration by reducing transaction costs. Transaction costs represent the costs of a market transaction. As shown in the second chapter, transaction costs can be divided into three types: (1) search and information costs; (2) bargaining and decision costs including drawing contacts; and (3) policing and enforcement costs.\(^{119}\) All three types represent resource losses because of a lack of information.\(^{120}\) Information asymmetry is the fundamental cause of transaction costs which is further exacerbated by future uncertainty, opportunistic behaviour and limited rationality.\(^{121}\) Parties on the market possess different levels of information concerning


\(^{120}\) Ibid.

\(^{121}\) Teece (1986); Hart (1995).
trading opportunities or about the quality or other attributes of resources that are available on the market. Search and information costs represent resources that are spent on finding and comparing such information. Furthermore, a firm has to find out whether the other party in the negotiation is willing to participate in trading under certain conditions. During such a process, both parties have to disclose sufficient information in order to reach agreement and write contracts.\textsuperscript{122} They are less likely to reach agreement when disclosed information is not sufficient because firms risk adverse selection once they enter the contract. As mentioned, one party may disclose key information in negotiations in order to attract another party to enter into trade. However, the latter may abandon the negotiation once it gains the key information. These concerns have to be resolved before concluding a trade. Policing and enforcement costs are incurred because firms do not know whether parties in a trade will violate the contract. Incomplete contracts and opportunistic opportunities are two resources of policing and enforcement costs.\textsuperscript{123} For instance, hold-ups happen when one party makes a transaction-specific investment which would be devalued dramatically were it to be redeployed for other purposes. Other factors also lead to policing and enforcement costs. For example, a firm may not be able to supply enough components to buyers in time if it lacks production capacity. Therefore, transaction costs are one of a number of the factors that determine the limitations of a firm. However, firms may still conduct activities via market transactions even if transaction costs are high.\textsuperscript{124} Measures have to be taken by parties to reduce transaction costs under such circumstances.

Patents can be used by external observers to reduce search and information costs by disclosing information. By searching patent databases which can be accessed by the public, searchers can locate owners of required technologies more easily. Although trademarks can be used to reduce search costs as well, they nonetheless do not convey information about the technical attributes of required products, which is more

\textsuperscript{122} Williamson (1985).  
\textsuperscript{123} Hart (1995).  
\textsuperscript{124} Langlois and Foss (1999).
important in the ‘business to business’ (B2B) market where such technical products are to be applied in final products than in the ‘business to consumer’ (B2C) market. Information about the technical attributes of both parties is also important for forming R&D partnerships in which the technical capability of partners is one of several important criteria in selecting partners. Such information can be obtained by searching and analysing patents held by potential sellers or R&D partners.

After identifying and locating trade opportunities, a firm can negotiate further with potential partners. During this process, both parties need to exchange information. Normally, another party (buyer/licensee) needs more information than the patent holders (seller/licensor) to avoid making an adverse selection. Patent holders, on the other hand, worry about leakage of key information if a buyer/licensee abandons the negotiation. Patents can be used to protect information about both patented inventions and even complementary tacit information of such patented inventions when it is disclosed in a negotiation. The patent holder may be more likely to disclose further information on the basis of information that has been disclosed by patents because the patents prevent another party from carrying out the same invention even if that party gains both technical information and relevant tacit knowledge. As a result, a buyer can thus obtain more information to avoid making an adverse selection. At the same time, patents simplify communication by standardising information conveyed by patented-related documents. For instance, standardised vocabulary can promote communication efficiency between parties. Likewise, patent holders do not need to fully disclose and explain a technology if it is patented in repeated transactions. In addition, patents are sometimes important to start-ups or small companies that have not acquired a reputation. The ability of patents to signify the quality of patented inventions and

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can be obtained by searching and analysing patents held by potential sellers or R&D partners.

125 See, e.g., Youngjung Geum and others, ‘Identifying and Evaluating Strategic Partners for Collaborative R&D: index-based approach using patents and publications’ (2013) 33 (6) Technovation 211-224 (Patents were used by authors in a way to identify and select appropriate strategic partners.).

owners can be used in a similar way to reputation – to persuade another party to enter the contract even when the latter has not obtained sufficient information. All of these properties of patents reduce bargaining and decision costs.

After entering into a relationship, the function of patents of reducing transaction costs may not be as obvious as it was before forming the partnership. Patents can reduce policy and enforcement costs by facilitating communication between parties.\(^{127}\) However, other forms of governance should also be adopted. For instance, parties involved in repeated transactions can build mutual trust to reduce policing and enforcement costs. With regard to partnerships, they can choose different forms of partnership to reduce transaction costs. Firms prefer to form joint ventures instead of loose partnerships to conduct cooperative R&D because governance in a joint venture is normally much stronger than in a contractual partnership.\(^{128}\) Furthermore, patents can facilitate exchange of both (codified) technical and tacit knowledge between parties on the market, which in turn may increase the competitiveness of a specialised firm. Such effects can be observed using the Capability approach introduced in Chapter I.

### 4.3 Information Modularity and Partitioning, Capabilities and Vertical Disintegration

The Capability approach emphasises that knowledge is expensive and difficult to codify. Internalisation is preferred because it facilitates information flow within organisations due to internal coordination by developing routines and capabilities. Therefore, information flow among parties on the market must be facilitated if firms want to find a market in which to conduct activities. Patent law divides complex technology into many discrete units by defining the boundary of each unit. Then, a patent codifies knowledge about each unit as a transferable asset. Despite patented technologies being different, ways to codify information are consistent. A patent is standardised as a document with


Standardised formats. Standard vocabulary is offered by the patent system which simplifies communication. As such, patents reduce costs of communication and negotiation between two parties even when they have different background knowledge. A patent title or barcode can be used to represent a collection of all technical information. Using it in such a way creates a common technical language that in turn contributes to the transfer of technologies. Although tacit knowledge may not be codified in patents, codified information disclosed by patents creates a knowledge pool that can be shared by patent owners and parties in transactions through which tacit knowledge can be transferred more easily. In such cases, a patent owner may bundle tacit knowledge with patents and license or transfer them together. For instance, a patent owner can send technical teams to work closely with licensees to assist them in absorbing tacit knowledge. In other words, by attaching tacit knowledge to patented inventions, market transactions become more efficient. Hence, patents contribute to disintegration by promoting communication among different parties and facilitating the transfer of technical and tacit information.

4.4 Patents, Disintegration and Competition in Semiconductor Industry

Markets for semiconductor products are B2B markets which means that technical information is the fundamental and indispensable factor needed for a firm to enter and compete in this industry. At both the R&D and production stage, the majority of firms need external parties in this industry. The patent system enables them to identify and locate required technologies by providing search engines and disclosing information.

129 Standardised formats: application numbers, bar codes, date of grant, name of inventors, name of assignees, a title, citation of prior patents, specifications of claims.


132 Ibid.

133 Ibid.
both about technologies and the owners of technologies. Furthermore, patents help a firm to assess and evaluate the required technologies and the owners of these patents. Patents also promote efficiency of communication and negotiation between patent owners and potential partners or licensees by creating a common language pool. Once a relationship is formed, patents facilitate knowledge transfer between the two parties.

For production, tacit knowledge is attached to patented knowledge to facilitate technical and tacit knowledge-sharing between a fabless firm and third-party foundries. In a research partnership, patents owned by each party will maximise the background information that is necessary to share among partners to carry out new innovations. Combining such shared language and other measures that are used to facilitate knowledge sharing such as forming a joint venture, a R&D partnership is more likely to achieve competitive results by making the most of both parties’ capabilities and resources. In other words, such partnerships may operate as efficiently as an organisation in conducting research.

Patents work in the same way to promote the communication of technical and tacit knowledge between console firms and hardware suppliers. Hardware components of a console are either bought from or customised by suppliers. In the latter case, console firms have to work closely with hardware suppliers to optimise console performance. For instance, a supplier has to customise both CPU and GPU (SoCs) in order to make them compatible and maximise the efficiency and power of a console designed by the console firms. Other parts of the console are supplied by other hardware suppliers. It is necessary that all parts can work well together to produce a powerful console. All these suppliers and the console firm have to understand each other well in such cases. Codified information delivered by patents can, therefore, be used both as a starting point and background knowledge shared by the console firm and its hardware suppliers. Relevant tacit knowledge can be communicated among them on this basis. By facilitating the sharing of codified and tacit knowledge, the hardware supplier is more likely to be able to find suitable parts for the console firm.
In general, monopoly harms social welfare while competition benefits society which is why antitrust law prevents market monopoly and people who are concerned about monopoly rights patents confer on patentees. However, as shown above, competition may lead to a monopoly without patent protection. Considering that competition is considered one of the impulses for innovation¹³⁴ both patents and competition are necessary and complementary in terms of stimulating innovation.¹³⁵ As competition becomes much fiercer in the semiconductor industry, firms are compelled to innovate in order to gain a larger market share. In such cases, patents give their owners a certain degree of guarantee on capturing returns from innovations. To be outstanding in the semiconductor industry, technical innovation is an indispensable factor. This means that R&D is necessary for a firm in this industry. On the other hand, a firm has to translate outcomes of R&D into products as it is a way to recoup costs. R&D and production constitute a cycle to carry out innovations sustainably.

Vertical disintegration in the semiconductor industry lowers its entry barrier.¹³⁶ A fabless firm can focus on the R&D of a new product while a third-party foundry can be specialised in the R&D of manufacturing technologies. This improves the R&D efficiency both for fabless firms and third-party foundries,¹³⁷ and it allows both of them to compete with IDMs at the R&D stage. Furthermore, when a firm, whether it is an IDM or a specialised firm, is not capable of conducting R&D alone to compete with the market dominants, it can choose to form a partnership with other firms. By combining the resources and capabilities of both parties to develop relational-specific resources and capabilities, they are more likely to gain competitive advantages over market dominant companies. A recent example which is relevant to the console industry is the

¹³⁴ See, e.g., Aghion and others (2005), p. 701. (Competition facilitates innovation where firms have similar market position, neck-and-neck firms.); Aghion and others (2014).
development of 3D flash NAND storage. This market was dominated by Samsung, an IDM. It released a 3D flash storage product (V-NAND) in 2013 which was the most advanced storage technology at that time. The other four major competitors could not compete with Samsung alone. Instead of developing similar technologies in-house, Intel and Toshiba formed a joint venture with other firms that specialised in the storage market. Intel and Micron formed IM Flash around 2000 while Toshiba and SanDisk formed a joint-venture in 2006. Both partnerships have existed for at least a decade. Each group developed their own 3D flash storage technology. In 2015, the former carried out a similar product (3D Xpoint) while the latter released BiCS 3D-NAND storage. In order to compete with its competitors’ new products, Samsung announced a more advanced product than the product released in 2013.

With regard to the fabrication of designed products, an example can be found in the development of FinFET 14nm process which is used in the design of chips. Intel developed and produced this technology in-house. In order to challenge Intel’s dominant position, Samsung (IDM), Globalfoundries (third-party foundry) and IBM (IDM) formed a partnership to share R&D costs with the aim of implementing similar

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138 A Xbox One console has one 8GB flash memory produced by SK Hynix in addition to 8GB DDR3 memory. Flash memory is dramatically faster than DDR3 memory.


140 ‘Micron Partnership list’ (Micron) (Intel and Micron formed joint-venture in 2005. Not until 2013 did they start to develop 3D NAND technology to challenge Samsung.).


techniques for building chips.\textsuperscript{145} Recently, Samsung licensed the 14nm manufacture process to Globalfoundries.\textsuperscript{146} At the same time, another third-party foundry, TSMC, also developed its own patented technologies for fabricating 14nm chips. Fabless firms could, therefore, contract out the manufacture of 14nm chips to these foundries to compete with IDMs such as Intel.

The analysis above demonstrates that patents \textit{de facto} intensify competition in the semiconductor industry by facilitating vertical disintegration. This lowers the entry barrier, allowing specialised firms in the market while enabling these firms to compete with large IDMs. These two examples also demonstrate that patents contribute to technology diversity by compelling firms other than patent owners to develop substitutive technologies to compete. When others carry out substitutive technologies, the patent owners are compelled to innovate further to maintain competitive advantages. Impacts of patents on innovation in the semiconductor industry have two implications for the console game industry.

Console firms have more options when they select hardware suppliers as this results in an increase of its leverage in transactions. This is important for them as the cost-performance ratio of hardware is a key contributory factor to competition success. For example, although there are only a few suppliers of custom CPUs and GPUs, Microsoft and Sony still have more options than when there is only one supplier. By choosing a supplier that has weaker bargaining power against console firms where other conditions are equal, console firms can benefit more from the relationship. In the current generation, Microsoft and Sony chose AMD rather than Intel or Nvidia as their suppliers of SoCs. AMD’s revenues from game consoles thus depend on the sale performance of


consoles. Such an arrangement suppresses the opportunism of both parties in the transaction. Both console firms and hardware suppliers have an incentive to make an effort to improve the sale performance of consoles. However, Intel accounts for about 90% of the CPU market while Nvidia leads the GPU market which suggests that revenues from the console industry are only a small proportion of their total revenues. If they choose Intel, console firms may not gain such favourable terms and conditions in terms of payment methods and customer service. As a result, either hardware costs will be much higher or console performance will not be as good as custom ones.

Patents thus act to intensify market competition which results in console firms having more options in terms of selecting novel technologies. For upstream hardware suppliers, patents allow them to exclude others from profiting from the technologies these patents embody. Patents also allow hardware suppliers in effect to spread costs involved in research and development to downstream industries including the home console game industry. These downstream industries constitute a large installed base for semiconductor companies so increasing the possibilities of hardware suppliers capturing sufficient returns from the market to cover the investment made in the development of new products. Although patents intensify competition and give console firms more opportunities to select hardware suppliers, their overall leverage with hardware suppliers is relatively weak, chiefly because the home console game industry is only a small portion of the consumers that the hardware companies supply. The consequence is that console firms struggle to profit from hardware sales because the profits from the market tend to go to the upstream suppliers and thus need to find

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147 See above n 122 in Chapter I.
148 See, e.g., ‘Market Share Held by Leading Graphic Chip Vendors Worldwide from 2nd Quarter 2009 to 4th Quarter 2015’ (Jon Peddie Research, February 2016) <http://www.statista.com/statistics/264444/market-share-held-by-graphics-chip-vendors-since-2nd-quarter-2009/> accessed 15 March 2017 (The statistic showed that Intel account for 71.6% of GPU market. This is largely because its CPU product has integrated graphic chips. As regards to independent graphic chips, Nvidia leads the market followed by AMD.).
another way of making a profit. In practice this is by selling games or otherwise controlling the software market.

5. **Patents and Competition in the Console Hardware Market**

Although patents have similar effects on the architecture of the home console game industry, their contribution in facilitating vertical disintegration is more focused on the hardware market. Given the fact that most parts of a console are supplied by semiconductor firms, the extent to which patents facilitate the vertical disintegration of the console hardware industry is far less significant in comparison with the semiconductor industry. A review of the console game history indicates that console firms generally focus on developing console interface system, which is the part that changes the way games are played. The sense of Touch and the visual sense are the two human senses which console firms focus on as these are the two senses used by players most frequently during game playing. Thus in general, console firms focus on developing new controllers and display equipment. Compared with other parts of the console such as SoCs and 3D NAND storage, present technologies involved in controllers and visual equipment are much less cumulative, less systematic and involve fewer development costs. Therefore, at least for now, console firms are free to choose either to utilise internal capabilities and resources or rely on external ones to develop controllers and display equipment, which is why patents have significantly less impact on the home console game industry than on the semiconductor industry in terms of facilitating vertical integration and competition. However, this does not imply that patents do not impact on other aspects of this industry. The following analysis focuses on console firms and start-ups in the industry to illustrate how patents affect the ability of console firms and start-ups to gain returns.

5.1 **Competitive Advantages of Console Firms**

As pointed out in the second chapter, there are three ways for a console firm to gain competitive advantages in the current organisation of console hardware production. Two are relevant here. Firstly, it can build relational-specific resources and capabilities
with parties in supply chains. Secondly, it can focus on the innovation of console interface systems to create a unique gaming experience to attract final customers.

A long-term relationship is required to derive competitive advantages from external relationships. A supply relationship between hardware suppliers and console firms is normally a long term one which means that a console firm may gain a competitive advantage from such relationships. Studies show that information exchange and knowledge-sharing are the fundamental resources of competitive advantages that are derived from external relationships.\(^{150}\) As indicated above, patents standardise technical information and facilitate communication among parties. It is important for hardware suppliers to coordinate with third-party foundries to supply components required by console firms in time. If these are delayed, it will affect revenues of both console firms and hardware suppliers. Furthermore, it is also important for console firms to upgrade hardware and fix unexpected hardware deficits during the console lifecycle. These tasks all require console firms and hardware suppliers to work closely. Information conveyed by the patents can be used with other measures to facilitate exchange of technical and tacit knowledge in order to give a timely response to such contingencies. For instance, the ‘red eye’ problem of Xbox 360 required Microsoft to identify the causes of the problem and solve it by working closely with hardware supplier, ATI.\(^{151}\) The efficiency of coordination will be improved if parties share a common bond.\(^{152}\) Patents provide a starting point to build such a common bond between console firms and suppliers.


\(^{152}\) See above n 131.
However, when all console firms use the same suppliers, the competitive advantage gained from the supply chain may not be as obvious as when console firms use different suppliers. A console firm can also differentiate its product from others to attract customers. As mentioned, console firms generally change the way players interact with games by introducing new controllers and display equipment. A console firm is free to choose to either develop such an invention in-house or rely on external resources and capabilities. In the fifth and sixth generation eras, Nintendo, Sony and Microsoft all launched their controllers with vibrate-feedback functions (rumble rather than force-feedback).

Nintendo developed this technology in-house and protected it with patents. To compete with Nintendo, Sony and Microsoft released their own controllers by obtaining licences from Logitech and Immersion. There are two more recent examples – motion sensing controllers and VR. In the last generation, Nintendo benefited from Wii’s motion controllers and new method of playing games and led the console market for a while. Sony and Microsoft had to make counter moves to turn the situation around. Microsoft accessed similar technology by forming a partnership with PrimeSense, a start-up company founded in 2006, which licensed patents on 3D sensor technologies to Microsoft and also designed Kinect for it. Compared with Nintendo’s motion controller, Kinect is more advanced. It frees the hands and captures

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153 Rumble is just shaking and is not as accurate as force-feedback which simulates reality situation corresponding to what is happening. The latter is a characteristic of a steering wheel rather than a controller.

154 Immersion v Sony 2005 US Dist Lexis 4781 (ND Cal 2005) (Sony used Logitech’s Cyberman manual and US patent 5,669,818 to prove Immersion’s fifth claim of US patent 6,424,333 invalid on the basis of obviousness. Sony also tried to anticipate another claim of patent ‘333’. By proving Immersion intentionally concealed relevant information about prior art in patent application, Sony aimed to revoke claims by proving Immersion deceit PTO.).

155 See, e.g., US Patent 8,535,155 ‘Video Game Using Dual Motion Sensing Controllers’, Assignee Nintendo Co Ltd (Priority Date 1 May 2006, Granted Date 17 September 2013).

156 For concept of 3D sensor technologies, see, e.g., Robert Scoble and Shel Isreal, Age of Context: Mobile, Sensors, Data and the Future of Privacy (CreateSpace Independent Publishing Platform 2013) (3D Sensor is used in Kinect to enable people to control equipment with simple gestures.).

body movements with cameras.\textsuperscript{158} Unlike Microsoft, Sony developed its own PlayStation Move in-house and obtained its own patents on this technology.\textsuperscript{159} As a result, PlayStation 3 and Xbox 360 caught up with Wii in terms of sale performance in the second half of the console lifecycle. Although the three companies applied different strategies and used different technologies, they achieved the same objective.

Another similar example is the strategies pursued by Sony and Microsoft to develop VR. Sony continued to use its internal capabilities to develop VR that it had put in place in 2013. For its part, Microsoft formed a partnership with Oculus in 2015. Oculus was a start-up founded in 2012 which specialises in VR technologies. Nevertheless, both Sony and Microsoft will launch their new products at the end of 2016 for a similar price. Although it is too early to tell which one is better and which will generate more returns, this example demonstrates that Microsoft can compete by accessing and utilising the external resources and capabilities that it lacks. However, it does not mean that Microsoft cannot develop VR in-house as such a strategy is decided by other factors beyond a firm’s internal capabilities and resources. These examples have two implications. First, patents in such cases protect console firms which have developed relevant technologies in-house from being imitated. Second, patents also give opportunities to console firms to access substitutive technologies that are available on the market. When all other conditions are equal, it is the customers who decide which technologies they prefer. Although the decision whether or not to develop a technology in-house is complex, in both cases patents increase the likelihood of console firms capturing returns from a particular technology as long as such a technology is welcomed by the customers.

5.2 Implications for Start-Ups

\textsuperscript{159} See, e.g., US 8,368,753B2 ‘Controller with an Integrated Depth Camera’, Assignee: Sony Computer Entertainment America (Priority Date 17 March 2008, Granted Date 5 February 2013.).
With regard to the external parties which provide substitutive technologies to console firms, patents also strengthen their ability to capture returns from these technologies. This is because patents can be used by these firms to attract investors or potential partners. The history of the home console game industry shows that innovative technologies of console interface hardware, ranging from vibrating controllers, motion controllers, to VR, have always been developed by small or medium-sized companies that were newly-founded (start-ups). These firms may not possess the characteristics that reputation or market influence as incumbent firms do when they developed these technologies. Patents thus can be used to signify to console firms the quality of the owners. Information disclosed by patented documents can be used by console firms as one of several criteria to evaluate the former. For example, start-ups such as PrimeSense and Oculus did not have enough time to acquire a reputation when they brought in new technologies. However, they needed capital investment to translate their ideas and technical capabilities into profitable products. The patents held by them disclosed information to console firms so that the latter could evaluate technologies and the patent owners. The exclusivity enjoyed by a patent owner and with this the enhanced prospect of capturing returns on investments in the protected technology also attracted console firms to enter into a transaction with them as the ultimate purpose of console firms in acquiring a technology is to translate it into profits.

Another benefit of patents is that they protect start-ups from being ‘bullied’ by these incumbent companies. Patents confer on start-ups the right to prevent incumbent companies using the same patented technologies without consent. For example, Immersion once sued Microsoft and Sony for patent infringement of their vibration controllers.\(^\text{160}\) Nintendo was immune to litigation because it designed controllers in

\(^{160}\) For information on Immersion Co., see, e.g., ‘Immersion Corporation Reports Fourth Quarter and Full Year 2015 Results’ (Immersion, 25 February 2016) <http://files.shareholder.com/downloads/IMMR/1866910963x0x877714/9215DF90-D902-4D71-B9E5-7B5479D48C59/IMMR_News_2016_2_25_Corporate.pdf> accessed 15 March 2017 (Someone argued that Immersion is a patent troll. However, this argument is too subjective. Founded in 1993, the company is specialised in developing feedback technologies regarding electronic items.). For information on patents in the case, see, Immersion (n 154); US Patent 6,275,213 ‘Tactile Feedback Man-Machine Interface Device’, Assignee: Virtual Technologies, Inc (Priority Date 1 May 2001, Grant Date 14 August 2001.) (Virtual
different ways; Microsoft reached a settlement with Immersion; while Sony chose to fight but ultimately lost. Immersion has become a fortune 500 firm since the litigation and continues to innovate haptic technologies. Another example involves Xbox One Elite controllers. In 2015, Microsoft decided to develop the controllers with Scuf Gaming, another small company founded in 2010 which specialised in developing third-party controllers for professional gamers. The major reason for this partnership, as can be implied from Scuf’s announcement, was Scuf’s patents. Therefore, start-ups are more likely to capture fair returns from transactions with console firms if their technologies are patented.

The analysis offered in this part also suggests that patents are important for the growth of start-ups and society. Although start-ups bring new technologies, these technologies have to be translated into products that are accepted by final customers. Otherwise, neither society benefits from scientific progress nor the developers of novel products able to capture returns on their investments. In such cases, patents facilitate the speed of application of new technologies while enabling start-ups and console firms to capture returns in the home console game industry.

6. Conclusion

This chapter has set out to demonstrate the role patents play in intensifying competition in the semiconductor industry while increasing the likelihood that semiconductor

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161 See, e.g., US Patent 5,897,437 ‘Control Pack’ Assignee: Nintendo Co Ltd (Priority Date 9 October 1995, Grant Date: 27 April 1999); US Patent 6,676,520 ‘Video Game System Providing Physical Sensation’, Assignee: Nintendo Co Ltd (Priority Date 9 October 1995, Grant Date 13 January 2004) (Nintendo’s vibration is generated by one motor.).
162 Immersion (n 154) (The court held that Sony was liable for patent infringement and should pay damage $82million directly to immersion.).
companies will be able to capture returns on their investments in novel products. In this way, console firms could have more suppliers and innovative products to select. However, the far larger customer base supplied by the semiconductor industry means that console firms have little leverage and must find another way to transfer hardware production costs to other parties.

In this chapter, patents were shown to possess functions that (1) confer on patent owners the right to exclude; (2) make information tradable and transferable; (3) disclose technical information; and (4) standardise, modularise and partition technical information. Patents can, therefore, be used to reduce transaction costs and promote communication efficiency in market transactions. The vertical disintegration of the semiconductor industry and the separation between the semiconductor industry and the home console game industry are facilitated as the transaction costs are reduced and communication efficiency is promoted.

The results of the examination of courts’ roles in reducing inherited problems of patent system were corroborated. This was followed by a comparative study was conducted in the fourth part which showed that patents *de facto* intensify competition and reduce monopolies in the semiconductor industry. Although a firm has lower returns in a competitive market than in a monopoly market, competition motivates firms to develop different technologies to compete for downstream customers. Under such circumstances, a patent confers the exclusive right on its owner to capture returns from this patented technology if it is successfully commercialised. As such, this chapter argues that fierce competition in the semiconductor industry benefits console firms by providing more innovative products and by relatively increasing their leverage with hardware suppliers. However, hardware suppliers can still extract significant value from transactions with console firms to recoup costs due to their overall strong bargaining power.

In addition to affecting the home console game industry indirectly, patents are found to have an impact on the ability of both console firms and start-ups to capture returns
from innovations. For console firms, patents contribute to their competitive advantage in two ways. Firstly, patents promote communication efficiency between console firms and suppliers so that console firms are more likely to gain a competitive advantage from supply chains. Secondly, a console firm which develops innovative technologies that could differentiate its console platform from those of others can use patents to prevent competitors from extracting returns from the same technologies. However, the patent system also reduces the difficulty for other console firms to access substitutive technologies that are available on the market to catch up with the lead firm. These technologies are normally owned by firms that are much smaller and younger than console firms. Both parties are found to benefit from the patent system. Console firms can utilise the technologies of start-ups to gain competitive advantages or offset those of their competitors. Patents also ensure start-ups capture fair returns from innovations in transactions with console firms.

Furthermore, the analysis in this chapter hints at the problem for console firms in relying exclusively or even primarily on hardware sales to capture returns on investment. In addition, choosing the same supplier of SoCs increases the difficulty for console firms to differentiate one console platform from another. Therefore, software games become increasingly important for console firms to gain competitive advantages and appropriate returns. The following chapters will demonstrate how copyright and trademark law affect both competition and the ability of innovators to capture returns on the software game industry.
Chapter III: Copyright and the Home Console Game Industry

1. Introduction
This chapter aims to evaluate the ways in which copyright can be used by firms to maximise their returns on investment and with this the implications for innovation in the home console game industry. As console firms and game companies rely on the sale of games for their profits, copyright is potentially important to them in terms of capturing returns on the investment they made in developing and marketing these games. The following analysis will show that copyright can be effectively used by game companies to stop game piracy. Despite the exclusivity that it confers, copyright having only limited effects in terms of preventing others developing similar games.

This chapter is organised in the following way. The second part focuses on the influence of copyright on competition between game companies. Two major issues will be addressed in this part: one is to find out whether or not copyright can solve the problem of game cloning; the other is to determine how copyright affects an individual company’s competitive advantage and bargaining power. In the third part, the focus of the analysis moves to the relationship between a console firm as a platform provider and game companies. The purpose of the analysis in this part is to find out whether copyright automatically confers on a platform provider market power that distorts competition in the console software market and so potentially reduce the incentives of game companies to innovate. Both the second and third part will include a detailed examination of statutory and case law in the US and EU in order to explore the extent to which copyright impacts on these two types of relationship. The fourth part considers the effectiveness of copyright in solving the problems of game piracy. This part will show the ways in which a copyright holder can enforce its copyright to reduce losses caused by game piracy. The fifth part tries to assess the effectiveness of copyright in preventing parallel importing of games and second-hand game reselling. The final part gives a conclusion in which a summary of the answers to the four questions is provided.
2. **Copyright Protection and the Console Software Market**

Unlike trademark law, copyright law in the EU is not harmonised to a great extent though there are many harmonising directives. Among them, there are three directives that may be relevant here: (1) the InfoSoc Directive,\(^1\) (2) the Ecommerce Directive,\(^2\) and (3) the Computer Program Directive\(^3\). Outside the scope of these directives national copyright rules continue to apply. Furthermore, the European Union Court of Justice’s (CJEU) interpretation of these directives in its judgments is useful for forming a comprehensive understanding of copyright protection in the EU. Both the directives and the CJEU’s interpretation of these aim to harmonise certain aspects of copyright within the EU. These directives are, therefore, also implemented in national law in EU member states including the United Kingdom; at least this was the case before the referendum result of the 24 June 2016 which set in motion the process for the UK to leave the European Union. At this stage, it is impossible to say what the future relationship between European and UK copyright law will be.\(^4\) For the moment it is enough to note that the United Kingdom Copyright, Designs and Patents Act 1988 (CDPA 1988) implemented both the InfoSoc Directive and the Computer Program Directive. UK court approach the interpretation of the CDPA 1988 in a way that is generally consistent with the CJEU’s interpretation of the parallel provision in the directives. Therefore, before officially leaving the Union, decisions made by UK courts can also be used to supplement the CJEU’s judgments so as to form an overview of the copyright system in the EU. With

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4. According to Article 50 of the Treaty on European Union (Lisbon Treaty), a member state which decides to withdraw from the Union must notify the European Council of its intention. The Union then shall negotiate and conclude an agreement with the State. Normally, the UK will become a free and independent state at the end of the two-year period from the day when the UK gives its notice of its intention to leave the Union under the Article 50 of the Treaty despite whether the UK and European Council reach an agreement or not. The UK has decided to have a hard Brexit and may not subject to CJEU’s jurisdiction. Theresa May will trigger Article 50 in March. However, the whole process of Brexit will take about two years. Therefore, the current relationship between directives on copyright and UK copyright law will not change until two to three years later.
regard to the US copyright system, copyright law and other related laws are contained in Title 17 of the United States Code (17 USC).\(^5\)

Copyright confers on rightholders many exclusive rights but this chapter focusses on only three. They are: (1) the right of reproduction,\(^6\) (2) the right to communicate works to the public,\(^7\) and (3) the right to first market or right of distribution.\(^8\) These types of rights affect the ability of a right holder to capture returns both directly and indirectly. However, unlike the other two types of rights, the most basic right, the reproduction right, is not absolute. Outside instances of blatant and unaltered copying, whether or not this right is enforceable is decided on a case-by-case basis.

### 2.1 Copyright and Console Games

To determine whether a defendant’s work infringes a plaintiff’s copyright work, the US and UK courts and the CJEU each have their own approach. Although there are differences between the approaches of the CJEU and UK courts, the following analysis will use the CJEU as the main approach given that both follow the directives and the CJEU’s interpretation of these directives aim to harmonise copyright protection within the EU. This means that, before Brexit, the UK court interpreted the domestic law in a way that was consistent with the CJEU’s interpretation of the parallel provision in directives. Hence, the following analysis will be divided into two parts, one looking at the US court’s approach and another at the CJEU approach.

#### a. The US Approach


\(^6\)17 USC §106 (1); InfoSoc Directive, art 2; CDPA 1988, s 17.

\(^7\)17 USC §106 (4)-(6); InfoSoc Directive, art 3; CDPA 1988, s 19 and s 20.

\(^8\)17 USC §106 (3); InfoSoc Directive, art 4; CDPA 1988, s 18.
To establish copyright infringement, a plaintiff must meet two conditions. Firstly, it must own a valid copyright in the infringed work. Secondly, the part copied by the defendant should be both substantial and protected by the copyright.\(^9\)

Unlike in the EU, registration is required in the US before a lawsuit can be filed by a copyright holder.\(^10\) A registration certificate of a work is *prima facie* evidence of its validity and ownership.\(^11\) The requirement of originality of a work is quite low in the US. For instance, in *Sheldon v Metro-Goldwyn Corp*, the Second Circuit held that originality required the author not to copy the work from some other source.\(^12\) Neither does it require a work to possess artistic merit.\(^13\)

At the second stage, a plaintiff must both prove that the defendant actually copied its work and appropriated sufficient protected expressions of the copy to violate its copyright. These two conditions are called ‘copying’ and ‘improper appropriation’ in the following analysis.

With regard to proof of copying, a plaintiff may prove that a defendant has copied either by providing direct evidence such as a defendant’s confession or, as in the majority of cases, by showing that the defendant had access to the plaintiff’s work and the defendant’s work is substantially similar to the plaintiff’s work.\(^14\) More precisely, if there is no similarity, then there is no access. In contrast, when there is a striking similarity between a copyright work and an alleged infringing work, a plaintiff may not need to provide evidence of access.\(^15\) Nevertheless, such a striking similarity should not be caused by anything in the public domain.\(^16\)


\(^10\) 17 USC §411 (a).

\(^11\) Ibid, §410 (c).

\(^12\) *Sheldon v Metro-Goldwyn Corp* 81 F2d 49, 54 (2d Cir 1936) (‘originality entails independent creation of a work reflecting a modicum of creativity’.).


\(^14\) See above n 9.

\(^15\) *Gaste v Kaiserman* 863 F 2d 1061 (2d Cir 1988).

\(^16\) *Ty Inc v GMA Accessories* 132 F 3d 1167, 1171 (7th Cir 1997).
The second step is to determine whether the defendant has copied enough of the plaintiff’s copyright work to be considered improper appropriation: has the defendant taken a ‘substantial part’ of the plaintiff’s work.

A video game is normally protected as a computer program and an audio-visual work.\(^{17}\) The US courts have not adopted a universal framework to assess ‘substantial similarity’ in cases involving these two kinds of works. The majority of courts have adopted the Abstract-Filtration-Comparison test (AFC) in assessing ‘substantial similarity’ between two computer programs.\(^{18}\) They normally use a ‘two-prong extrinsic and intrinsic’ test in relation to audio-visual works.\(^{19}\) Nonetheless, both tests emphasise that substantial similarity must be assessed among copyright-protected materials of a copyright work.\(^{20}\) Although these two tests are ad hoc and their use should be decided on a case-by-case evaluation, they both adopt a process which is called ‘analytic dissection’ which uses the same judicial doctrines to filter out and disregard the non-protectable elements.\(^{21}\) The judicial doctrines used by the courts in this process include idea/expression dichotomy and doctrine of mergers, functional exemption, doctrine of Scenes-a-faire and public domain.\(^{22}\)

The idea/expression dichotomy here, which is narrower than the ‘idea/expression dichotomy in the EU, means that copyright does not protect ideas.\(^{23}\) This doctrine was

\(^{17}\) Apple Computer v Franklin Computer 714 F 2d 1240, 1249 (3rd Cir 1983) (‘Thus a computer program, whether in object code or source code, is ‘literary work’ and is protected from unauthorised copying’); Midway v Bandai 546 F Supp 125, 139 (D NJ 1982); Teris v XIO 863 F Supp 2d 395, 401 (D NJ 2012).

\(^{18}\) Computer Associates International v Altai 982 F 2d 693 (2d Cir 1992) (The Second Circuit created this test); Robert Merges, Peter Menell and Mark Lemly, Intellectual Property in the New Informational Age (5th edn, Wolters Kluwer 2009), p. 552 (Authors argued that this test had been widely adopted by every US court and endorsed by many courts in Canada, the United Kingdom and France.).

\(^{19}\) Sid & Marty Krofft Television Productions v McDonald 562 F2d 1157 (9th Cir 1977).

\(^{20}\) Ibid, 1164 (In extrinsic test, ‘if there is substantial similarity in ideas, then the trier of fact must decide whether there is substantial similarity in the expressions of the ideas so as to constitute infringement’.).

\(^{21}\) Apple v Microsoft 35 F 3d 1435, 1443 (9th Cir 1994); Cavalier v Random House 297 F 3d 815,822 (9th Cir 2002). See also, Spry Fox v Lolapps 104 USPQ 2D (BNA) 1299, 1303 (WD Wash 2012); Brown Bag Software v Symantec Corp 960 F 2d 1465, 1476 (9th Cir 1992).

\(^{22}\) Computer Associates (n 18), 706; Capcom v Data East 1994 US Dist Lexis 5036, at 16-17 (ND Cal 1994); Spry Fox (n 21), 1303.

\(^{23}\) 17 USC §102(b).
further developed into the doctrine of mergers. This doctrine means that if an expression is inseparable from the idea, and thus becomes one of only a limited number of ways to express that idea; this expression is not protectable. For instance, in the case of a computer program, the Second Circuit argued that low level codes such as source code is more likely to be classified as an expression than high level codes, and an objective code which is more abstract is thus less likely to be an expression. It also argued that concerns over efficiency may limit the way to achieve certain functions which may make a certain expression necessary to achieve an idea. Such an expression, as held by the Second Circuit, is not protected by copyright either. Neither are functional aspects of a work protected by copyright unless ‘its artistic features can be identified separately and are capable of existing independently as a work of art’. With regard to the doctrine of Scenes-a-faire, it excludes from copyright protection ‘expressions that are ‘as a practical matter, indispensable or at least standard in the treatment of a given [idea]’.

In the case of a computer program, external factors are:

‘standard technologies ... (1) the mechanical specifications of the computer on which a particular program is intended to run; (2) compatibility requirements of other programs with which a program is designed to operate in conjunction; (3) computer manufacturers' design standards; (4) demands of the industry being serviced; and (5) widely accepted programming practices within the computer industry [may limit programmer’s freedom of design choice].

24 Computer Associates (n 18), 707 (The Ninth Circuit cited Baker v Selden 101 US 99 (1879) as the cornerstone for what had developed into the doctrine of merger.).
25 Ibid.
27 Data East v Epyx 862 F 2d 208 (9th Cir 1988).
28 Computer Associates (n 18), 709-710.
Hence, elements of a computer program that are dictated by these external factors may not be protected by copyright. Lastly, copyright does not protect elements that have existed in the public domain.\textsuperscript{29}

The analysis above shows the approach that the US courts have adopted to determine copyright infringement. It also briefly illustrates how this approach can be applied in cases involving computer programs. This approach can also be adopted by the court to determine infringement in cases involving audio-visual works, as will be shown later.

In general, the US courts normally consider the following factors in determining substantial similarity between a plaintiff’s game and a defendant’s alleged infringing work in the first stage of its ‘extrinsic and intrinsic test’.\textsuperscript{30} They are: (1) characters;\textsuperscript{31} (2) special moves and combinations of attack (acting games);\textsuperscript{32} (3) control sequence (acting games);\textsuperscript{33} (4) plot and sequence of events;\textsuperscript{34} (5) theme; (6) dialogue or language; (7) mood; (8) setting; and (9) pace.\textsuperscript{35} The extrinsic test is like the ‘Abstraction’ and ‘Filtration’ parts of the AFC test, as these consider objective similarities and filter out elements that are similar but not copyrightable. In the second stage (the intrinsic test), the court makes a subject comparison of two works through the perspective of an ordinary observer, focusing on the ‘total concept and feel’ of the two works.\textsuperscript{36}

The sequence of a move is the last thing that merits protection. The doctrine of mergers applies here because the limited number of buttons on a controller leads to a limited

\textsuperscript{29} 17 USC 102(b).
\textsuperscript{30} Spry Fox (n 21), 1303.
\textsuperscript{31} See e.g., Midway MFG v Dale Dirksneider and Harold Peterson 543 F Supp 466 (D Neb 1981) (Mighty mouth character vs Pac-man characters); Atari v North America Philips 672 F 2d 617 (7th Cir 1982) (The Seventh Circuit found substantial similarity between Pac-Man characters and the characters in a competitor’s video game.); Midway v Bandai (n 17), 146 (Court held that the particular insectile shape of the aliens in Galaxian game are protectable.); Marvel Enterprise v NCsoft Corporation 2005 US Dist Lexis 8448 (CD Cal 2005) (allowing users to create virtually identical character in a computer game.).
\textsuperscript{32} Capcom v Data East (n 22).
\textsuperscript{33} Ibid (Control consequence to make Street Fighter II characters fight using special moves and combination attacks).
\textsuperscript{34} Capcom v MKR Group 2008 US Dist Lexis 83836 (ND Cal 2008).
\textsuperscript{35} Funky Films v Time Warner Entertainment 462 F 3d 1072, 1077 (9th Cir 2006); Capcom v MKR (n 34); Johnathan Bissoon v Sony Computer Entertainment America (SCEA) 694 F Supp 2d 1071 (ND Cal 2010).
\textsuperscript{36} Sid & Marty Krofft (n 19), 1164; Apple v Microsoft (n 21), 1442; Cavalier (n 21), 822.
combination of buttons to make a specific move. This is ‘a functional process’ that is ‘indispensable to the idea’.  

The plot of a game and the sequence of events are also not entitled to protection, unless the copy is virtually identical.

The theme of a game, like that of a movie, is no more than an abstract idea which is not entitled to copyright protection. Likewise, a setting is also an abstract idea rather than an expression. This means that even if two games have the same setting, the setting is not a copyrightable element. In *Atari v Amusement*, in a case that involved two games set in space, the court held that the similarities between them were inevitable due to the shared idea of defending against attacking aliens in outer space.  

Similarly, in *Jonathan Bissoon v SCEA*, similar settings are held to be ‘generic and clichéd for stories involving Ancient Greece and Greek gods’. Sometimes, a setting might also lead to the application of Scene-à-faire in plots and event sequences. In *Capcom v MKR*, the court held that ‘these locales [a rural two-story mall with a helipad on the top and a gun shop and music playing inside] represent scenes-à-faire that flow from the unprotectable idea of zombies in a mall’.

Language in dialogue is copyrightable but the scope of protection is very thin. For instance, in *Spry Fox*, a case involving a strategy puzzle game where language in dialogue boxes was used to explain game concepts, the court held that such language is entitled to copyright protection but only against nearly identical copying. In *Capcom v MKR*,

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37 *Apple v Microsoft* (n 21), 1444.  
39 *Johnathan Bissoon v SCEA* (n 35), 1086-1087.  
40 *Metcalf v Bochco* 294 F 3d 1069, 1074 (9th Cir 2002).  
41 *Capcom v MKR* (n 34), at 29.  
42 *Spry Fox* (n 21), 1304.  
43 Ibid.
the court held that ‘only one allegedly similar line from a movie and a video game is insufficient to support a claim of infringement’. 44

The Scene-à-faire doctrine may also apply in a case which compares the mood/atmosphere of two works. Games of the same genre may adopt the same mood. In *Capcom v MKR*, the court cited *Olson v Nat’l Board*, 45 a case involving action-adventure television series and movies, holding that the ‘comic mood is common to that genre’. 46 Likewise, the pace of a game is also partly determined by genre. For instance, in a first-person shooting game such as *Call of Duty or Battlefield* the pace of the game needs to be fast and tense. In contrast, strategic games may have a slow pace. Furthermore, players can also change the pace of a game. Hence, even if two games share a similar pace this is unlikely to lead of a finding of substantial similarity.

Compared with the above-mentioned factors, characters and special moves or combinations of attack are more likely to be protected by copyright. A character is subject to copyright protection only if it is originally created and different from characters that are already in the public domain. 47 For example, the character of Pac-Man was protected in *Midway Mfg v Dale Dirkschneider* because it was initially created by developers and had not been in the public domain before it was created. 48 In contrast, in *Capcom v Data East Corp*, some game characters in *Street Fighter II* were not copyrighted because they are all derived from stereotype characters that have already been in the public domain. 49 Furthermore, in order to attract protection, such characters must not be the nature result of the setting or the theme of games. Trolls, elves or orcs may not be protected in games like *World of Warcraft* which are set in an ancient fantasy world. However, a character which possesses distinctive features, such as Arthas in *World of Warcraft* or Master Chief in *Halo*, may be entitled to protection.

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44 *Capcom v MKR* (n 34), at 28. See also, *Narell v Freeman 872 F 2d 907, 911 (9th Cir 1989)* (‘Ordinary phrases are not entitled to copyright protection’); *Identity Arts v Best Buy 2007 US Dist Lexis 32060*, at 12-13 (ND Cal 2007).
45 *Olson v. Nat’l Board* 855 F 2d 1446, 1451 (9th Cir 1988).
46 *Capcom v Data East* (n 22), at 29.
47 If it is in the public domains, it would be protected under the doctrine of scene(s)-à-faire.
48 *Midway MFG* (n 31).
49 *Capcom v Data East* (n 22), at 43-54.
Likewise, moves in an action game might be copyright-protectable if their designs are not derived from moves that have already been in the public domain. In *Capcom v Data East*, moves used by characters in *Fighter II* and *Fighter History* were the same because they were derived from actual martial arts moves and so the Scenes-a-faire doctrine applies. On the contrary, the simple design and movement of the playing pieces attracts copyright protection in *Teris* partially because they are not derived from the real-world representation.\(^{50}\)

The second stage of the test, the intrinsic test, assesses the total concept and feel from the standpoint of the ordinary reasonable observer.\(^{51}\) It is a subjective test.\(^{52}\) In *Metcalf*, the Ninth Circuit argued that substantial similarity in terms of total concept and feel can be found even if common elements fail the extrinsic test.\(^{53}\) However, as pointed out by the Northern California District Court, the Ninth Circuit was reluctant to apply this view in the cases which followed.\(^{54}\) In other words, if a plaintiff fails the extrinsic test, they are more likely to fail the intrinsic test.

Since elements examined in the extrinsic test are less likely to be protected under copyright law, it becomes quite hard for a plaintiff to pass the intrinsic test. The preceding analysis implies that copyright may provide limited (or ‘thin’) protection for a game as an audio-visual work from being imitated – the problem of game cloning. However, unless a competitor’s game is nearly identical to the plaintiff’s game, copyright may not provide significant protection.\(^{55}\)

**b. The EU Approach**
In the EU, a work, no matter what kind it is, is entitled to copyright protection if it constitutes an author’s own intellectual creation.\textsuperscript{56} In \textit{Painer}, the CJEU held that in relation to a photograph, the requirement is met when the ‘author was able to express his creative abilities in the production of the work by making free and creative choices’.\textsuperscript{57} There is no reason to believe that other types of work should be subject to a different originality standard and thus a computer program is entitled to copyright protection as long as it is created by the author exercising his creative ability freely in the program development. Likewise, other works which include elements that are perceivable by players on-screen are also entitled to protection if they are created by their owners in the same way.

The ‘intellectual creation’ test is also adopted by the CJEU in determining infringement. The CJEU requires that the common elements between a copyrighted work and an alleged infringing work constitute the author’s own intellectual creation.\textsuperscript{58} In other words, like the US court, a copyright holder can prevent a third party from copying its work in the EU only if the copied part is a copyright-protected matter. Since the ‘intellectual creation test’ is adopted by the CJEU both at the stage of determining originality of a work and at the stage of infringement determination, it is an open concept that can be interpreted by the CJEU to preclude matters that are not subject to copyright protection at either stage. For instance, the CJEU can go directly to the issue of infringement by examining whether the copied part is subject to copyright protection instead of examining a copyright work as a whole.\textsuperscript{59} This feature also benefits national courts which can interpret ‘intellectual creation’ to fit an existing test while remaining consistent with the CJEU’s interpretation of the directives in each individual case. For

\textsuperscript{57} \textit{Painer} (n 56), at [89].
\textsuperscript{58} Ibid.
\textsuperscript{59} \textit{Bezpecnostni softwarova Asociace} (n 56) (CJEU directly addressed the graphic user interface (GUI) instead of a whole computer program and held that GUI was not subject to copyright protection.).
instance, one additional condition for a work to obtain protection in the UK is that it
must fall within at least one category of copyrightable subject matters as listed in
section 1 (1) of the CDPA 1988. However, the CJEU appears to ignore this requirement
when it determines whether a work is original.\(^{60}\) The open concept of ‘intellectual
creation’ gives the UK courts freedom to introduce a subject matter requirement in a
case in ways that can still be consistent with the CJEU’s interpretation of originality and
infringement.

However, this open concept is not without restraint. The idea/expression dichotomy is
adopted to ensure copyright only protects the expression of ideas.\(^{61}\) However, unlike
the idea/expression dichotomy as that is applied in US copyright law, the CJEU has
interpreted this doctrine more loosely and the court has not further developed and
bifurcated the idea/expression into the doctrine of mergers or Scenes-a-faire doctrine
or functionality as has been done in the in the US. For example, as pointed out by the UK
Court of Appeal in *SAS v World Programming (SAS V)*, the functionality of a computer
program is perceived as or is similar to an idea and thus is not subject to copyright
protection.\(^{62}\) The idea/expression dichotomy is adopted by the CJEU in a way that is
similar to the doctrine of mergers and doctrine of functionality by the US court. For
instance, in *Bezpecnostni softwarova Asociace*, the CJEU cited and agreed with the
Advocate General’s (AG) view, holding that:

\(^{60}\) *Painer* (n 56), at [89]; Eleonora Rosati, ‘Towards an EU-wide Copyright? (Judicial) pride and (legislative)
prejudice’ (2013) 1 Intellectual Property Quarterly 47-68, p. 61 (‘What Painer suggests is indeed that
subject-matter categorisation is out of sight in CJEU interpretation of copyright architecture.’).

\(^{61}\) See, e.g., *Computer Program Directive*, art 1(2) and Recital 11. See, e.g., *Nova Production v Mazooma*
[2006] EWHC 24 (Ch) (UKHC), at [247]-[248]; *Nova Production v Mazooma* [2007] EWCA Civ 219 (UKCA), at
[44] (Both the UKHC and UKCA held that the similarities between defendant’s outputs of computer
programs and plaintiff’s outputs of computer programs were ‘a combination of a limited number of
generalised ideas which were reflected in the output of the program’ and ‘[did] not constitute a form of
expression of the literary works relied upon’).

\(^{62}\) *SAS Institute v World Programming* [2015] ECDR 17, at [41] (SAS V). See also, Case C-406/10 *SAS
Institute v World Programming* [2012] ECDR 1, AG [54] (AG Bot) (SAS II); *SAS III* (n 56), at [40].
‘the expression of those components is dictated by their technical function, the criterion of originality is not met, since the different methods of implementing an idea are so limited that the idea and the expression become indissociable’.63

This expression is similar to the definition of doctrine of merger and functionality doctrine under US copyright law as shown above. In SAS III, the CJEU expressly agreed with AG’s opinion in SAS II, holding that:

‘the main advantage of protecting computer programs by copyright is that such protection covers only the individual expression of the work and thus leaves other authors the desired latitude to create similar or even identical programs provided that they refrain from copying’.64

Furthermore, the CJEU in SAS III cited its own decision in Bezpečnostní softwarova Asociace, holding that source codes, other programming language and data files may be protected as other subject matter under the InfoSoc Directive if they amounted to their author’s own intellectual creation.65 Nevertheless, the CJEU precludes source codes, other programming languages and the format of data files in this case from copyright protection by reasoning that these elements are used in order to exploit certain functions of a computer program which, in its view, will monopolise ideas.66 Therefore, the CJEU’s rationale in this case is de facto the doctrine of merger and functionality but is disguised under the language of idea/expression dichotomy. As held by the UKCA in SAS V, Lewison LJ interpreted the CJEU’s rationale of precluding functionality as applicable to both the InfoSoc and the Computer Program Directives.67 This implies that elements of an audio-visual work will be assessed by the CJEU in similar ways as they are assessed by courts in the US as shown above. In other words, in a similar case, the CJEU may reach a similar conclusion as the US court does because they actually adopted a similar approach in determining infringement.

63 Bezpečnostní softwarova Asociace (n 56), at [49] and AG [75]-[76].
64 SAS III (n 56), at [41].
65 Ibid, at [45].
66 SAS III (n 56), at [46].
67 SAS V (n 62), at [33].
2.2 Copyright and Competition between Game Companies

There are three major types of software in the home console game industry. The first one is computer programs that are found in console hardware. These computer programs support the normal operation of consoles. Console firms also release development kits to help game companies develop games or applications (apps) that can run on these machines. It is console firms that own the copyright of such software.

The second type of software is called ‘middleware’, which runs parts such as game engines. The primary purpose of creating a game engine is to facilitate the development of graphics, sound, physics and the artificial intelligence (AI) function of a game. A game engine can be used repeatedly. Many game companies not only develop games but also license game engines they develop for other game companies. The third type of software is the games developed by game companies.

Among these three types of software, the first is the least entitled to because of its purely functional nature. Console firms are, therefore, less likely to prevent others, game companies in particular, from copying source codes, especially such source codes that are dictated by functionality to achieve compatibility between games and consoles. However, copyright still protects a development kit against copying as far as the source codes or object codes constitute expressions of ideas and are not dictated by functionality.68

Similarly, the middleware used by game companies to create games is also primarily functional. Some middleware enables developers to develop a game that can be played on different console platforms with few changes made to the game source codes. The most common game engines are used by developers to provide real-time 3D rendering capabilities. For instance, *Half-Life and Counter-striking* were created using the same Valve source engine – a 3D game engine. Given that middleware is a tool that can be used repeatedly by game developers to achieve different functions, programming language and ways of writing, its objects are directed either efficiency or are dictated by

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68 For the EU case, see, *SAS III* (n 56), at [38]. For the US case, see, *Apple Computer* (n 17).
external factors such as external technological standards and new hardware. Accordingly, copyright protection for such middleware is limited. That does not mean that middleware received no copyright protection. As mentioned in the last paragraph, source codes and object codes are still entitled to copyright protection provided they are not dictated by functionality. Even though developments in middleware may not be copyrightable, patents can be an alternative way to protect its technical features if the computer program is novel and inventive and meets the other conditions for patent protection.\textsuperscript{69}

Among these three types of computer programs, the last type is more likely to be protected by copyright since it is less functional compared with the others. The CJEU has held that source codes may be entitled to copyright protection if such language used by programmers is written in a way that reflects its own intellectual creation and such an expression is not merged with functionality.\textsuperscript{70} Computer programs found in a game are more than functional programs. Therefore, game companies may have more chance to prevent others from copying the source code of their games by enforcing copyright.

Furthermore, a game company may also choose to install technical protection measures (TPMs) to enhance the protection against unauthorised access by game cloners. As will be shown later, anti-circumvention provisions have conferred on game companies the right to prevent a third party from bypassing TPMs for purposes other than achieving interoperability, particularly in the US.\textsuperscript{71} Unless a game company is also a console firm, there is no excuse for its competitor to bypass its TPMs even if the latter acquires the game lawfully. This protection method increases the amount of time it takes a game

\textsuperscript{69} See, e.g., \textit{Feist Publications v Rural Telecom Service} 111 S Ct 1282, 1290 (1991); \textit{Atari v Nintendo} 975 F 2d 832, 842 (9\textsuperscript{th} Cir 1992) (‘An author cannot acquire patent-like protection by putting an idea, process, or method of operation in an unintelligible format and asserting copyright infringement against those who try to understand that idea, process, or method of operation’.).

\textsuperscript{70} \textit{SAS III} (n 56), at [42]. See also, \textit{SAS II} (n 62), AG [55] (AG Bot).

\textsuperscript{71} As will be showed below, reverse engineer exemption to anti-circumvention in the US only extended to conducting reverse engineering for the sole purpose of achieving interoperability. However, in the EU, conducting reverse engineer for the purpose of studying, observing or testing a computer program can also be exemptions to anti-circumvention protection.
cloner to clone games and helps the game company launch the game before its competitors.

With regard to elements other than computer programs, as has been shown, only a limited type of elements in a game attract copyright protection, such as audio-visual works both in the EU and US. Unless a game is nearly identically copied, copyright may only provide limited protection against third parties cloning games.

Unless conducting business in relation to selling ‘unlawful copies’, it is quite rare for a game company to directly copy the codes of competitors’ games. They may use different codes to achieve a similar visual appearance. Even when codes are copied, these codes may be not entitled to copyright protection if they are dictated by functionality. As regards visual appearance, only few aspects of a game – characters and moves are entitled to protection against cloning unless the copy is close to identical. Hence, in theory, a game company has ‘limited protection’ against game cloning. Game clones are commonly seen in mobile games and web games not only because the development costs of these games are far lower than the costs of console games but also because these games are far less complex than the latter. Home console games are normally developed by big game companies or console firms and cost a substantial amount of money. These companies are less likely to imitate competitor’s products because of high development costs. On the contrary, they want their product to stand out and be different from competitors’ products so that they can recoup enough costs. For them, contemporary copyright law provides a large space in which they can develop different kinds of expressions by sharing common ideas such as settings, themes or even characters. These companies are also free to develop functional middleware to optimise the compatibility of a game with hardware and bring a better game experience to players. Furthermore, big publishers and console firms in this industry have tighter control over games that are released on console platforms than other types of games. Cloned games may not pass such controls Even if cloned games are distributed by

72 The phrase ‘unlawful copies’ has the equivalent meaning as ‘pirated games’ below. For the use of the phrase ‘unlawful copies’, see, e.g., *Nintendo v Console PC* [2011] EWHC 1458 (Ch) (UKHC), at [5].
cloners, they have little chance to compete with original games as console firms possess far stronger marketing power than cloners. Therefore, although copyright may not provide sufficient protection against game clones, copyright intensifies competition between these companies by giving them a reasonably large space in which to create games. Indeed, there are also small and medium-sized independent game companies in this industry and their games might be imitated by cloners. In such cases, copyright only provides limited protection against game clones for these companies. However, the peer review mechanism for licensed games could be a more effective way than litigation to prevent game clones.73 In other words, for a licensed game, as far as a console firm can ultimately determine whether or not to distribute submitted games to the public, the likelihood of the game being harmed by game clones is quite low. Considering the low price an independent developer needs to pay a console firm for licenses,74 it may be better for a small independent developer to apply for a license and development kits from console firms.

2.3 Implications for Competitive Advantages and Bargaining Power of a Firm

As mentioned in Chapter I, both console firms and game companies profit from the sale of games. Using the VRIO framework, sources of competitive advantage must at least be valuable, rare and costly-to-imitate. It is true that a fantastic game is a valuable asset and can bring a game company competitive advantage over others. Owning a good game also increases its owner’s leverage with other non-competitive parties in this industry. However, the limited protection given to right holders by copyright implies that copyright may not render a game rare and costly-to-imitate automatically. Hence, other strategies must be adopted to make a valuable game rare and more costly-to-imitate. One of them is by the use of brands. As will be shown in chapter IV, branding and other marketing strategies make a game distinctive in the minds of customers. All

73 ‘Xbox Live Indie Games Frequently Asked Questions’ (Xbox Live Indie Games, Microsoft) <http://xbox.create.msdn.com/en-US/home/faq/xbox_live_indie_games#xboxfaq001> accessed 15 March 2017 (Microsoft does not allow developers to submit game clones and applies peer review to prevent IP infringement.).
74 Pitcher (IGN, 30 July 2014).
the relevant information that a game and marketing campaign delivers will all be associated by customers using brands which in turn affects their decision-making. A customer is more likely to buy a game with a famous title or under the name of famous publishers than a similar game developed by an unknown company. In other words, a brand may translate a game into a valuable, rare and costly-to-imitate asset if distinctive features of the game are associated with the elements of a brand that will not change in the long run, normally trademarks. Hence, games are the basis on which competitive advantages can be acquired. It is common for a game to be adapted into books or films from which the game company can capture returns in other industries and at the same time consolidate and increase its marketing power. In such scenarios, copyright gives a game company or a console firm the position; for instance, a reproduction right in the UK or a derivative right in the US to exploit the economic value of the game. The term ‘position’ rather than ‘exclusivity’ is used here because such a right is uncertain until it is decided by the court in individual cases. What is more special about copyright in the home console game industry is that it confers on a game company or a console firm absolute exclusivity to run electronic sports (e-sports). Like other sports matches, e-sports is a competitive gaming event. It is not only multinational companies investing heavily in this industry but also non-profit institutions such as universities. However, unlike other investors, game companies or console firms control the bottleneck of this industry since they have the exclusive right to communicate or perform the copyright work to the public. Everyone who intends to share in the returns from this industry has to obtain licenses from game companies and console firms. It is not only game companies and console firms that can capture returns from this industry, all businesses

75 The concept of marketing power is not the same as concept of market power. The former refers to the power of a game company to attract customers while the latter refers to market monopoly that distorts the fair competition. For details, see Chapter IV.
76 CDPA 1988, s 17 (The UK copyright uses idea/ expression dichotomy to determine whether two works are substantial similar even in a case involving derivative works.).
77 17 USC § 106(2).
79 17 USC § 106(4)-(5); InfoSoc Directive, art 4; The UK CDPA, s 19.
involved in this industry will increase their brand equity and thus marketing power among customers.\textsuperscript{80} In other words, a game company or a console firm has the exclusive control over this important means of increasing brand equity from which it can both gain competitive advantage and increase leverage with other non-competitive parties.\textsuperscript{81}

3 Copyright and the Relationship between Console Firms (Platform Providers) and Game Companies

The following section continues to examine the effect of copyright on the relationship between console firms as platform providers and game developers to show whether or not copyright automatically confers on platform providers market power to distort competition in the console software market and reduce returns a game company could have captured in an environment where competition was not distorted by such market power.

3.1 Anti-Circumvention Provisions

On an international level, the WIPO Copyright Treaty introduced anti-circumvention rules which require member states to provide technological measures to protect copyrighted works.\textsuperscript{82} For the US, these provisions are contained in 17 USC §1201.\textsuperscript{83} In the EU, Article 6 of the InfoSoc Directive requires its member states to ‘provide adequate legal protection against the circumvention of any effective [TPMs]’.\textsuperscript{84}

There are two types of TPMs in US and EU(UK) law, namely access control measures and copyright control measures.\textsuperscript{85} Unauthorised activities the primary or sole aim of which is to circumvent or damage these two types of measures are restricted by law. According to 17 USC §1201(a)(1), an act to circumvent an effective technological access control measure is prohibited. In addition to this prohibition, 17 USC §1201(a)(2) outlaws any

\textsuperscript{80} For the concept of ‘brand equity’, see Chapter IV.
\textsuperscript{81} For relationship between brand equity and competitive advantage and bargaining power, see Chapter IV.
\textsuperscript{82} WIPO Copyright Treaty (WCT), art 11.
\textsuperscript{83} 17 USC §1201 (2).
\textsuperscript{85} For the UK law, see CDPA, s 296 Z. For the US law, see 17 USC §1201(a) and (b).
acts that ‘traffic in any technology, product, service, device, component’ the primary purpose of which is to circumvent access control measures. The term ‘tool’ in this chapter refers to ‘any technology, product, service, device, component or part thereof’. A right control measure is defined in 17 USC §1201(b) as a TPM that ‘in the ordinary course of its operation prevents, restricts, or otherwise limits the exercise of a right of a copyright owner’.  

However, 17 USC §1201(b) does not ban the act to circumvent right controls since traditional copyright provides sufficient protection for right holders in this respect.  

However, it does prevent the distribution of tools whose primary purpose is to circumvent right controls.  

This type of prohibition is regarded as a reinforcement of existing copyright protection.  

EU Directives only lay down general requirements for member states to provide TPMs-related provisions; it is up to domestic laws to give detailed regulations.  

EU Directives drawn a clear distinction between protection measures on computer programs and other protected works. Article 6 of InfoSoc Directive, which was implemented by the UK under section 296 of CDPA 1988, aims to protect TPMs for non-software copyright works. Article 7 of the Computer Program Directive, which was implemented under section 296ZA-ZF of CDPA 1988, addresses TPMs attached to computer programs. These two articles/sections outlaw both acts of circumventing TPMs and acts of the ‘traffic in’ circumventing tools. There are two major differences between TPMs on software and TPMs on non-software works. First, article 7 of the Computer Program Directive and section 296 of CDPA 1988 only protect a ‘technical device’, either mechanical or electronic, while article 6 of InfoSoc Directive and Section 296ZA – ZF of CDPA 1988

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86 17 USC §1201(b)(2).
88 17 USC §1201(b)(2).
89 MDY v Blizzard Entertainment 629 F 3d 928, 945 (9th Circuit 2010).
protect TPMs which include, and are not limited to technical devices. Accordingly, neither of these two articles are confined to offering protection only to a pure software protection measure that is applied to a computer program. Second, article 7 and section 296 only prohibit acts of providing service and acts of the traffic in circumventing tools, the ‘sole purpose of which’ is to circumvent technical devices, whereas protection for TPMs for non-software copyright prohibit the same acts which ‘have only a limited commercially significant purpose or use other than to circumvent’ TPMs, a less demanding requirement than the ‘sole purpose’ requirement. Therefore, in theory, TPMs that are applied to non-software copyright work receive a broader and stronger protection than technical devices that are applied to pure computer programs. Despite these differences, a protection measure applied to a video game is entitled to the protection under article 7 of the Computer Program Directive or article 6 of InfoSoc Directive, or both; because a video game comprises not only computer programs but also other types of copyright work, and these works are all protected by TPMs. In *Nintendo v PC Box*, the CJEU held that technical measures, for the purpose of art 6.3 of [InfoSoc] Directive, can be embodied either in a video game or a console, or both. Despite TPMs being installed in the consoles rather than a video game, it is still protected under article 6 of InfoSoc Directive. For instance, The Italian Court followed the CJEU’s preliminary ruling in *Nintendo v PC Box* and held that Nintendo’s TPMs fell

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92 Simon Stokes, *Digital Copyright: law and practice* (2nd edn, Hart Publishing 2005), pp. 147. For an arguably contrary opinion, see, *Nintendo v Playables* [2010] EWHC 1932 (Ch) (UKHC), at [33] (The UKHC held that ‘technical device’ under s 296 can be read as broadly to include ‘any device intended to prevent or restrict acts that are not authorised by the copyright owner of that computer and are restricted by copyright’ - is a wide one’).
93 The UK CDPA 1988, s 296 (1)(b)(i) (TPMs for computer programs); s 296ZD (1)(b)(ii) (TPMs for non-software copyright works).
95 Case C-355/12 *Nintendo v PC Box* [2014] ECDR, at [23].
96 Ibid, at [37].
within the scope of protection provided by the InfoSoc Directive.\footnote{Before You Circumvent, Circumspect? Nintendo TPM Triumphs in Italy (IPKat, 24 November 2015) <http://ipkitten.blogspot.co.uk/search?q=NINTENDO+V+PC+BOX> accessed 4 December 2016.} In another case, \textit{Nintendo v Playables}, the UKHC also apply the CDPA in a similar way. In this case, the UKHC held that the TPMs installed in Nintendo’s 3DS was entitled to protection both under section 296 and section 296ZD of CDPA 1988.\footnote{Nintendo v Playables (n 92).} This implies that both console firms and game companies have less burden to prohibit circumventing acts and acts of traffic in circumventing tools.

3.2 Exemptions and Game Development

There are many exemptions to copyright protection. However, a particular type of exemption that is examined in this chapter is the exemption of reverse engineering. This type of exemption falls within 17 USC §107 and §1201(f) in the US and Article 5.3 and Article 6 of the InfoSoc Directive in the EU. The parallel provision of Article 5.3 and Article 6 can be found in section 50BA and 50B of the UK CDPA 1988.

In general, a game company has to obtain a license together with a development kit from a console firm if it wants to develop a game for that console platform. The license and development kit enable the game company to achieve compatibility between their games and the console. If a company wants to develop a game without licenses, it has to reverse-engineer the console firm’s hardware or software to understand how to achieve interoperability between a game and the console. Intermediate copying happens during the process of reverse engineering; for instance, when the software is running and loading.\footnote{InfoSoc Directive, art 2 (Intermediate reproduction in general is forbidden and classified as copyright.).} Because the compatibility information of a console is invisible to a game company, it may have to reverse-engineer a whole copyright work so as to identify such codes and information. Despite computer programs being essentially utilitarian, some elements may be entitled to copyright protection, especially when the company reverse-engineers a video game. The wholesale reproduction during the reverse engineering significantly increases the likelihood of copyright infringement even
though copyright protection for a computer program is ‘thin’. As copyright is granted to the author automatically as soon as the work is recorded in some form, console firms may have significant market power if a copyright automatically confers on them the right to prevent reverse engineering because in such a case all game companies must obtain licenses from console firms if they want to develop games for consoles. This will significantly increase console firms’ bargaining power, as hardware providers, with these game companies. Console firms may also extend such market power to the software market and distort the competition. As a result, innovation in game development would be distorted as game companies may capture fewer returns than if they developed a game in a market where console firms did not have such market power. The following paragraphs will examine whether or not a game company can develop games for a console without obtaining a license from the console firm.

a. Reverse Engineering Exemption and Game Development in the US

In the US, the doctrine of fair use is listed under 17 USC §107. In order to determine whether use is fair use under this provision, the court must consider four factors: (1) the purpose and character of the use; (2) the nature of the original copyright work; (3) the amount and substantiality of the portion taken; and (4) the effect of the use upon the potential market. In addition to these four statutory factors, there is a fifth factor – transformative use. This factor is normally introduced by a court when it assesses the first statutory factor. The court will take all circumstances into account and strike a balance between these factors when it determines whether the use of a copyrighted work is fair. However, a transformative use is not an absolutely necessary factor for a finding of fair use. Given that this factor is far less relevant to the topic discussed here, the following analysis will not consider it.

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100 17 USC § 106 (1); InfoSoc Directive, art 2.  
101 17 USC §107.  
103 Ibid, 591.  
104 Ibid, 579.
The first factor is in fact related to the last factor.\textsuperscript{105} Copying for a commercial purpose weighs against a finding of fair use.\textsuperscript{106} However, the commercial nature of a use is a matter of degree and thus can be rebutted by the purpose and characteristics of a particular commercial use.\textsuperscript{107} For example, in \textit{Sega}, Accolade reverse-engineered Sega’s Genesis consoles and games which caused intermediate copying of original works. However, its primary purpose was to identify the functional requirement for compatibility with Sega’s Genesis console platform in order to create its own creative Genesis-compatible works. The court held that the commercial aspect of its use was of minimal significance even though the new works competed with Sega’s copied games on the same market. The court also considered whether or not the copier lawfully owned the original work. In \textit{Atari}, the Federal Circuit ruled against Atari in a finding of fair use.\textsuperscript{108} One of its reasons was that Atari purloined the copy of the source codes of Nintendo’s original works from the copyright office.\textsuperscript{109} In contrast, Accolade’s lawful acquisition of Sega’s products became one of various factors that supported the court’s finding of fair use in \textit{Sega}.

The nature of the copyright work is the second factor to be considered by the court.\textsuperscript{110} Whether the copyrighted work is informational or creative is the key question asked by the court.\textsuperscript{111} As mentioned, some computer programs may, in essence, be utilitarian or functional. Even if they are expressions, they may not be protected if they are dictated by the function to be performed or are the only and essential means of fulfilling a task.\textsuperscript{112}

\begin{thebibliography}{9}
\bibitem{105} Sega v Accolade 997 F 2d 1510, 1523 (9th Cir 1992).
\bibitem{107} Sega (n 105), 1523.
\bibitem{108} Atari v Nintendo (n 69).
\bibitem{109} Ibid, 844-845.
\bibitem{110} 17 USC §107 (2).
\bibitem{111} Religious Technology v Netcom 907 F Supp 1361, at 1379 (ND Cal 1995).
\bibitem{112} Computer Associates (n 18), 711.
\end{thebibliography}
The third factor concerns the extent of copying.113 If the secondary user copies the ‘heart’ of the copyright work, the court is less likely to find the secondary use fair.114 However, as held by the USSC in Sony, ‘the fact that an entire work has been copied does not, however, preclude a finding of fair use’.115 If copying a substantial part of the original work is necessary, this factor will be found to be in favour of the defendant.116 This has to be measured against the purpose of copying. Purposes can be indicated by comparing the copiers’ products with original works. In Atari, Atari’s final product, the Rabbit chip, was found to contain instructions that were copied from Nintendo’s 10NES which were unnecessary for 10NES’s performance. As held by the Federal Court, this weighed against Atari’s claim that the purpose of its copying was to identify unprotected compatibility information.117 In contrast, in Sega, Accolade conducted wholesale copying when it reverse-engineered Sega’s games and consoles.118 However, the Ninth Circuit compared the final products of Accolade with Sega’s games and found that the only similarities were codes that were related to compatibility. Accordingly, the court held that wholesale intermediate copying was necessary to obtain information about compatibility while using similar codes in the final products was necessary to achieve the compatibility between Sega’s console and Accolade’s games.119

The final factor is the effect of the copier’s use upon the market.120 It questions whether ‘unrestricted and widespread conduct’ committed by the copier would adversely affect the potential market for copyright works.121 If copying results in diminishing potential sales, interfering with marketability or usurping the market in which the owner of the copied work operates, the copier’s use will not be found to be fair.122 However, the use may still be fair if such use simply enables the copier’s products to enter the same

113 17 USC §107 (3).
114 Harper & Row (n 106), 564-565.
115 Sony v Universal (n 106), 449-450.
116 Blanch v Koons 476 F 3d 244 (2d Cir 2006).
117 Atari v Nintendo (n 69).
118 Sega (n 105), 1525.
119 Ibid, 1526.
120 17 USC §107 (4).
121 Campbell (n 102).
122 Harper & Row (n 106), 567-569.
market as the owner of the original work. Reverse engineering of original games and consoles of a console firm to find out compatibility information which is utilised by copiers to create their own system-compatible games only makes the copier a legitimate competitor. Furthermore, the court will also consider public interest in assessing this factor. In *Sega*, the Ninth Circuit argued that reverse engineering conducted by Accolade increased the independently designed video game programs for the Genesis console, and thus increased the creative expression that the Copyright Act intended to promote.

The USSC emphasised that these four factors should be weighed together. In *Sega*, after considering the four factors, the Ninth court held that reverse engineering conducted by Accolade was fair even though the indirect purpose of it was to compete with Sega in the same market.

In addition, reverse engineering can become an exemption to anti-circumvention protection if the copier meets three conditions that are listed in 17 USC § 1201(f): firstly, if the person has obtained a copy of the computer program lawfully - the most common way in the case of the video game industry is to buy an official game; secondly, if the purpose of circumventing the TPMs is solely for the purpose of identifying and analysing the elements in the program that are necessary to achieve compatibility of its independently created program with others; and finally, if such elements have not been identified or been in the public domain before. Therefore, these conditions are essentially the same as factors of the fair use doctrine listed in 17 USC §107. The only difference is that fair use may extend to reverse-engineering a program to study and observe or test the functionality of a computer program in order to understand the underlying ideas or principles. This exemption is not available under anti-circumvention provisions unless this purpose is merged with the purpose of achieving interoperability.

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123 *Sega* (n 105), 1523.
124 Ibid.
125 *Campbell* (n 102), 578 (1994)
126 *Sega* (n 105), 1523.
127 17 USC§ 1201 (f).
Hence, reverse engineering a competitor’s games on which the competitor has installed TPMs is a violation of anti-circumvention provisions in the US if the competitor is not a console platform provider.

b. Reverse Engineering Exemptions and Game Development in the EU

Although there are no CJEU or UK court decisions specifically concerning unlicensed game development and reverse engineering, the CJEU’s interpretation of relevant provisions in directives and UK court interpretations of the parallel provisions in the CDPA 1988 in cases involving computer programs may give some insights into whether or not a console firm has such market power automatically conferred by copyright.

In the EU, recital 54 in the preamble of the InfoSoc Directive encourages the compatibility and interoperability of different systems. Article 5(3) and Article 6 of the EU Computer Program Directive addresses the reverse engineering exemptions for the purpose of determining the ideas and principles of the programs and the purpose of achieving interoperability.\(^\text{128}\) In SAS III, the CJEU interpreted the conditions of Article 5(3) to have the same effect as conditions of Article 6(2)(c) of the same directive.\(^\text{129}\) In order to use Article 5(3) and Article 6 as a defence, three conditions must be satisfied. Firstly, the person who carried out the reverse engineering should legally possess the computer program, for instance, either under a license agreement or authorised by copyright holders of the copied programs.\(^\text{130}\) Secondly, information that is necessary to achieve interoperability has not been available to the copier and reverse engineering should be confined to the parts of the original program which are necessary in order to achieve interoperability.\(^\text{131}\) In SAS III, the CJEU interpreted this condition to have been met as the lawful acquirer had not accessed the source code of the computer program.\(^\text{132}\)

Accordingly, using reverse engineering to infer source codes from object codes is fair.

\(^{128}\) Computer Program Directive, art 5.3 and art 6; CDPA 1988, s 50B (implementing art 6) and s 50BA (implementing art 5.3).
\(^{129}\) SAS Institute v World Programming [2013] EWHC 69 (Ch) (SAS IV), at [72] (Arnold J). See also, SAS III (n 56), at [60].
\(^{131}\) Ibid, art 6.1(b) and (c).
\(^{132}\) SAS III (n 56), at [61].
Thirdly, information obtained from the reverse engineer is not allowed ‘to be used for the development production or marketing of a computer program substantially similar to its expression or for any other act which infringes copyrights’.\textsuperscript{133} In other words, if the purpose of reverse engineering is to carry out a substitution of the copied program, then acts of reverse engineering are less likely to be treated as fair.\textsuperscript{134}

It appears that both the US and EU hold the same attitude towards exempting reverse engineering for the purpose of reaching interoperability from violation of copyright law. As for the purpose of determining the ideas and principles, this is permitted only in the EU unless this purpose merges with the purpose of reaching interoperability in the US. In addition to meeting the purpose requirement, defendants in both the US and EU have to prove that all copies they made were necessary to achieve the legitimate purpose. This assessment is made on a case-by-case evaluation as console firms generally do not disclose source codes to the public but provide development kits to licensees. If development kits and licenses are free of charge, reverse engineering may not be necessary to achieve interoperability even though source codes are not available. If development kits require licensing fees, the question may become whether the fees are beyond a defendant’s capital capabilities. If development kits are charged at an unreasonably high price in relation to a game company’s financial capacity, a game company’s act of reverse engineering is more likely to be justified. Furthermore, courts will consider all factors when they decide whether acts of reverse engineering are exempt from copyright infringement. For instance, a US court may consider the public benefits when it considers whether reverse engineering is fair. As mentioned, even though they are not licensed, independently developed games will increase the number of games.\textsuperscript{135} By conferring on console firms the right to prevent others developing games for their platforms, copyright is used \textit{de facto} in ways that are contrary to the initial purpose of its existence, that of promoting artistic expression that can be

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\textsuperscript{133} Computer Program Directive, art 6.2(c); CDPA 1988, s 50B (3)(d).
\textsuperscript{134} SAS III (n 56), at [60].
\textsuperscript{135} Sega (n 105), 1523.
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accessed by the public. Therefore, in general, a game company is free to decide whether or not to obtain licenses from a console firm before developing games for that platform.

Given this feature of copyright, both game companies and console firms now rely on contract law to preclude a lawful acquirers’ right to reverse-engineer their products. End-User License Agreements (EULAs) and Terms of Use (TOUs) are two types of agreement that normally contain the provisions that prohibit reverse engineering.\(^{136}\) The main question is whether or not such contractual rights can pre-empt copyright law.

**c. License Agreement**

In the US, conflict between rights stipulated in the license agreement and copyright statutory rights is regulated under 17 USC § 301(a). This section expressly states that the exclusive rights under 17 USC shall pre-empt ‘any equivalent rights in any such work under the common law or statutes of any state’, which covers EULAs and TOUs.\(^{137}\) In theory, copyright law should pre-empt contractual equivalent rights, especially when such rights are created by shrink-wrap license agreements.\(^{138}\) In terms of the validity of provisions that preclude the right of a lawful user to reverse-engineer, the attitude of US courts appears very unclear.\(^{139}\) In *Bower v Baystate*, Bower’s license agreement unambiguously prohibits reverse engineering.\(^{140}\) In this case, a majority of the Federal Circuit held that the defendant, Baystate, was liable for breach of contract as it reverse-engineered Bower’s software even though it held that such an act was fair under copyright law.\(^{141}\) Although the majority’s decision has not yet been explicitly overruled by the USSC, it has been heavily criticised not only by Dyk J in his dissent but also by

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\(^{137}\) 17 USC § 301 (a).

\(^{138}\) *Vault v Quaid Software* 847 F 2d 255 (5th Cir 1988); *Data Gen v Grumman System Support* 36 F 3d 1147, 1164-1165 (1st Cir. 1994); *United States v Spector* 55 F 3d 22, 24-25 (1st Cir 1995) (All these cases emphasised that at least an effective contractual waiver of defendant’s right under the statute of limitations can be reached only by mutual assent and consideration.); *Bowers v Baystate Technologies* 320 F 3d 1317, 1337 (Fed Cir 2002) (‘A freely negotiated agreement prevents pre-emption of a state claim that would otherwise be identical to the infringement claim barred by fair use defense of reverse engineer’.).

\(^{139}\) *Bowers v Baystate* (n 138).

\(^{140}\) Ibid, 1326.

\(^{141}\) Ibid, 1325.
Dyk J argued that the precondition for pre-emption is that the contractual rights must be equivalent to the copyright statutory rights. If they are different, contractual rights may not be pre-empted by the statutory copyrights, the so-called ‘extra element’ test. At the same time, Dyk J underscored that the provision which waives a lawful user’s right conferred by the statutory limitations must be freely negotiated. He then argued that such a provision in a shrink-wrap licensing is pre-empted because users have no freedom to negotiate with licencers and reach common assent. The majority of academics praised Judge Dyk’s dissent. Despite its arguably incorrect decision, unless the USSC clarifies the issue of pre-emption in this respect, the controversy may persist for a long time. So far, the contractual rights that preclude fair uses are more likely to be pre-empted by copyright statutory rights given the fact that

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143 Bowers v Baystate (n 138), 1335 (Dyk J Dissenting).
144 Ibid, 1337 (Dyk J Dissenting).
145 Ibid, 1338.
146 Ibid, 1337.
147 See above n 145.
Dyk’s dissent has been widely praised in academia and there has been no subsequent court decision that has expressly adopted the majority’s decision in *Bower*.\textsuperscript{148}

Unlike the US, the EU has a very clear attitude towards a contractual provision that excludes a third party right to reverse-engineer copyright works for non-infringing purposes. In *SAS III*, the CJEU emphasised Article 8 of the Computer Program Directive, holding that ‘any contractual provisions contrary to [Article 6] or to the exceptions provided for in Article 5(2) and (3) of [the InfoSoc Directive] shall be null and void’.\textsuperscript{149} The parallel provision of Article 8 can be found in section 50B(4) and 50BA(4) of the UK CDPA 1988. In *SAS IV*, after the CJEU made its preliminary rulings in *SAS III*, the UKHC nullified *SAS IV*’s contractual provision that precludes a lawful user’s right under Article 5(3) based on this contractual provision’s violation of Article 8 of the Computer Program Directive.\textsuperscript{150}

The analysis above shows, therefore, that a console firm cannot enforce its contractual provision to preclude a lawful user’s right to reverse-engineer its products in the EU. Likewise, in the EU, a game company cannot prevent its competitors from reverse-engineering its game either for the purpose of identifying ideas and principles underlying the game or for achieving interoperability between games and consoles. However, in the US, a console firm may prevent game companies from reverse-engineering its consoles and games using contractual provisions. However, it is still unclear whether or not such provisions will be universally accepted by all the courts in the US.

4 Copyright and Game Piracy

Unlike cloned games, a pirated game is almost an identical copy of an authentic game. In the console game industry, game piracy involves three major groups of persons. The

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\textsuperscript{149} *SAS II* (n 62), at [53].
\textsuperscript{150} *SAS IV* (n 129), at [79].
\end{flushright}
first group develops tools that can be used to crack security systems (TPMs) of games and consoles. They will then reverse-engineer games and consoles. The second group of persons distributes and disseminates illegal copies and tools either intentionally or unconsciously to the public. Internet service providers (ISPs) such as websites and forums belong to this classification. Sometimes, this group also includes file-sharing software providers, the software of which is used by end-users to download illegal copies. The last group comprises downloaders, normally the end-users, who acquire illegal copies and tools to bypass the security system of consoles and run illegal copies on them. These three groups of persons sometimes overlap.

There is no doubt that the last group infringes copyright directly when they (1) download illegal copies and tools, (2) use tools to crack the security system (TPMs) of consoles and games, and (3) run illegal copies on a console, as nearly identical copies are made either intermediately or permanently by the end-users without authorisation from copyright owners. However, it is very difficult, if not impossible, to capture every end-user who engages in primary infringing acts. Considering that the majority of these end-users cannot make illegal copies unless they have tools which enable them to remove or bypass the TPMs, preventing such tools from reaching end-users may be more effective in reducing losses caused by game piracy than going after every primary infringer. In order to effectively reduce game piracy, copyright confers on the owner the right to prevent game piracy by imposing liabilities for either secondary infringement or violation of anti-circumvention provisions on the two former groups of persons.

As will be shown below, copyright confers on its owner the right to prevent distribution of illegal copies of games and circumventing tools that are used to make illegal reproductions of games or bypass TPMs of games or consoles.

Nowadays, the internet has significantly increased both the speed and scope in terms of the diffusion of illegal copies and circumventing tools.\textsuperscript{151} An illegal copy of a game is


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normally uploaded as a very small file (‘torrent’) or as a link to a torrent on websites such as blogs, forums and those that specialise in storing and distributing such files (‘torrent websites’). A torrent file contains an index corresponding to illegal copies of games and can be opened using specific types of file-sharing software called P2P downloaders. A downloader will automatically search and link the user’s computer to other computers which use the same downloader in downloading the same illegal copies of games. Nowadays, almost all P2P downloaders do not have central servers where a central index or the illegal copies are stored. Rather they operate a decentralised architecture in which end-users’ computers can be both a server and a client at the same time. Compared with illegal copies of games, circumventing tools are much smaller. Tools are, therefore, normally uploaded by users directly onto the websites. Hence, internet intermediary like the above-mentioned websites appear to both conduct direct infringement by making intermediate copies and facilitate the speed and enlarge the scope of diffusion of illegal copies and circumventing tools.

Game companies and console firms can impose liabilities of secondary infringement on internet intermediary to stop the diffusion of illegal copies of games. At the same time, they can exercise the right conferred by an anti-circumvention provision against persons that traffic in circumventing tools.

**4.1 Preventing Illegal Copies of Games**

Given the speed and scope of diffusion of illegal copies, the most effective way to stop them is to apply for injunctions. In the US, one of the conditions for a preliminary injunction is that copyright owners must show the likelihood of success on the merit of

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152 For detailed explanation for torrent files, see, e.g., *EMI Record v British Skying Broadcasting* [2013] EWHC 379 (Ch)(UKHC), at [57] (‘the torrent files (and magnet links) which are so conveniently and helpfully indexed, arranged and presented by those sites constitute precisely the means necessary for users to infringe. It is the torrent files which provide the means by which users are able to download the ‘pieces’ of the content files and/or to make them available to others.’). See also, *Metro-Goldwyn-Mayer Studio v Grokster* 454 F Supp 2d 966, 979 (CD Cal 2006) (Grokster II).

the claim of secondary infringement or violation of anti-circumvention provisions. A secondary infringement claim cannot succeed against an intermediary which falls within safe-harbour rules as these in effect give immunity from copyright infringement.154 Copyright owners in the EU have more options than their US counterparts. In addition to applying for an injunction on the basis of a defendant’s secondary infringement or violation of anti-circumvention provisions, they can apply for an injunction against specific ISPs such as broadband providers which require them to block websites that infringe copyright even though these specific ISPs did not infringe or contribute to copyright infringement.

a. The US Approach

This part focuses on the US approach to secondary infringement and safe-harbour rules. Copyright holders in the EU and US can enforce their rights in a similar way to stop game piracy even though the way to determine secondary infringement varies between countries.

Safe Harbour Rules

Both in the US and EU, internet intermediary is immune from certain infringing acts conducted by their users.155 17 USC § 512 and Articles 12 to 15 of the EU Ecommerce Directive provide ISPs with a limited immunity from liability for copyright infringement. The US and EU safe harbour rules cover three types of functions – network transmission communication,156 caching157 and hosting.158 Safe harbour rules also expressly apply to information location tools (‘linking’) in the US while this exemption is implicitly interpreted as being included within the safe harbour rules for hosting in the EU, as in the CJEU in Google France which interprets ‘hosting’ to cover ‘an internet referencing

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155 For the safe harbour provision in the US law, see, 17 USC § 512. For the parallel provision in the EU, see, Ecommerce Directive), art 12.
156 Ecommerce Directive, art 12; 17 USC§ 512 (a).
158 Ecommerce Directive, art 14; 17 USC§ 512 (c).
service provider in the case where that service provider has not played an active role of such a kind as to give it knowledge of, or control over, the data stored’.159

In the US, to qualify for safe harbour treatment, an internet intermediary must fall into the definition of ISP under each safe harbour provision and only to the extent that the infringing activities are conducted by the users by utilising the abovementioned four functions. A common requirement for being an ISP is that all activities should be carried out on a system or network controlled by the intermediary.160 In other words, an intermediary has to have a central server in order to obtain safe harbour protection in the US. Accordingly, a website onto which users upload torrent files may meet this requirement under all safe harbour rules.161 In contrast, file-sharing software which does not have a central server fails this condition and thus cannot obtain safe harbour protection.

The EU Directive does not specifically require an intermediary to fall within the definition of an ISP. However, ISPs under both systems must be genuinely neutral to obtain safe harbour protection.162 This requirement not only requires an ISP’s technologies to be neutral in the sense that its activities are of a mere technical, automatic and passive nature but also requires an ISP’s purpose in providing these functional services to be neutral. The former aspect requires that all activities should be initiated by third parties other than ISPs and the four functions of ISPs must be carried out automatically without interference from ISPs. For instance, transmission service

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159 Case C-236/08 Google France v Louis Vuitton [2010] ECRI- 2417, at [120] and [125]-[131] (the meaning of ‘linking’ under 17 USC § 512(d) is equivalent to the function of search engines or so-called information referencing service providers in locating the information after searching being conducted by third parties.).

160 17 USC§ 512 (k)(1)(A) and (B) (these two provision define what a ISP is according to four specific functions respectively.). A&M Records v Napster 54 USPQ 2d 1746, 1751 (ND Cal 1998) (‘An internet intermediary is a transmission communication service provider only if the transmission has to take place ‘through a system or network controlled or operated by’ the intermediary.’).

161 Napster (n 160), 1751.

providers must be mere conduits during transmission activities.\textsuperscript{163} In contrast, a website that modifies torrent files that are uploaded by end-users is not eligible for safe harbour protection.\textsuperscript{164}

The requirement to be genuinely neutral is demonstrated by other necessary conditions of safe harbour protection for hosting and linking. First, an ISP must not have actual knowledge of illegal activity or information or not be aware of facts and circumstances that indicate illegal activity.\textsuperscript{165} Second, once it has actual knowledge of infringement, the ISP must act expeditiously to ‘take down’ illegal activities, for instance, by removing infringing copies or denying infringers access to the service.\textsuperscript{166} At the same time, ISPs are required to take reasonable measures to limit or filter infringing material.\textsuperscript{167} An ISP that fails these two conditions will not be protected under either hosting or linking safe harbour rules.\textsuperscript{168}

In the US, the courts have also considered whether an ISP benefits directly from the illegal activities conducted by its users.\textsuperscript{169} The answer will be inferred from all circumstances in which an ISP operates the business. Both the decision in \textit{Grokster} and the recent \textit{Columbia Picture Industry v Gary Fung} case suggest that an ISP will be perceived by the court to profit directly from illegal activities even though the ISP’s revenues are derived from selling advertising space if there are other factors which

\begin{itemize}
  \item \textsuperscript{163} For the EU Directive, see, e.g., Ecommerce Directive, art 12. For the US case law, see, e.g., \textit{Columbia Picture Industries v Gary Fung} 710 F 3d 1020, 1042 (9\textsuperscript{th} Cir 2013) (The Ninth Circuit held that § 512 (a) safe harbor is limited to service providers performing ‘conduit-only’ functions.).
  \item \textsuperscript{164} \textit{Columbia Picture} (n 163), 1042 (The website automatically modified the torrent files uploaded by users adding additional backup trackers on the, was not entitled safe harbour protection.).
  \item \textsuperscript{165} Ecommerce Directive, art 14 (a); 17 USC§ 512 (c)(1)(A)(i) and (ii).
  \item \textsuperscript{166} Ecommerce Directive, art 14 (b); 17 USC§ 512 (c)(1)(A)(iii) and 17 USC § 512 (c)(1)(C).
  \item \textsuperscript{167} For the US cases, see, e.g., \textit{Grokster II} (n 152) (Defendant’s denying of installing filtering systems implied its intention to induce users conduct infringing activities.). For the EU case, see, e.g., Case C-70/10 \textit{Scarlet Extended SA v SABAM} [2012] ECDR 4 (CJEU ruled that the injunction granted by the Belgian court requiring the ISP to install filtering system to monitor all the electronic communication copyright infringement did strike a balance between protection of IPRs and other fundamental rights.).
  \item \textsuperscript{168} \textit{Columbia Picture} (n 163).
  \item \textsuperscript{169} 17 USC § 512 (c)(1)(B).
\end{itemize}
indicate that the ISP intentionally manipulated users, inducing and abetting them to conduct illegal activities such as uploading torrent files.\(^{170}\)

In the console game industry, torrent websites or file-sharing software may be neutral in terms of the technologies they have adopted. However, they may not be neutral in terms of their purpose in providing functional services. They share the same business model as the defendants in *Grokster* and *Columbia Picture Industry v Gary Fung*. Although these websites generate revenues from advertising, the revenues depend on the number of users who view and click on the advertisements. Users use such websites and software because they can acquire illegal copies as quickly as they can by using official downloaders but they are free of charge. In other words, the majority of users will be primary infringers. Therefore, neither file-sharing software nor torrent websites are entitled to safe harbour protection.

**Secondary Infringement and Injunctive Relief**

17 USC § 502 states that copyright owners can be granted an injunction to restrain or prevent infringement of copyright. One of the conditions for an injunction against a third party is that the third party’s act is not under the protection of safe harbour rules. Courts in the US generally impose liabilities of secondary infringement on the above-mentioned websites and file-sharing software. There are many different theories of secondary infringement.\(^{171}\) The following analysis focuses on the approach of inducement liability adopted by the USSC in *Grokster*\(^ {172}\) – the USSC’s most recent decision regarding liability of ISPs regarding peer-to-peer (P2P) file sharing software. Inducement liability is chosen in this chapter for three major reasons. First, before the USSC’s decision in *Grokster*, the USSC arguably adopted both contributory liability and

\(^{170}\) *Grokster I* (n 153); *Columbia Picture* (n 163).

\(^{171}\) Boyle and Jenkins, *Intellectual Property: law and the information society cases and materials* (3rd edn, Centre for the Study of the Public Domain 2016), pp.527 (There are major three types of secondary liability under the US copyright law. They are contributory infringement, vicarious infringement and most recently, inducement infringement.).

\(^{172}\) *Grokster I* (n 153).
vicarious liability in *Sony*. Under vicarious liability, a third party is liable for secondary infringement if it has a right and ability to supervise the infringing activities and derive benefit directly from those activities. However, strictly applying the ‘under control and supervision’ requirement may indirectly encourage infringers to use technologies which makes it difficult if not impossible for them to control infringing activities, such as the latest P2P software which does not have centre server and thus has no ability to control infringing activities. Under contributory liability, a third party infringes copyright indirectly, if it, with knowledge of infringing activities, induces, causes or materially contributes to the infringing conduct of another. According to the Sony ruling substantial non-infringing use of a defendant’s product could exempt it from contributory liability for copyright infringement. In other words, a third party, even one which intentionally facilitates infringing activities, may not be liable for indirect infringement. Inducement liability is actually a mix of contributory and vicarious liabilities and provides a more balanced approach. Under this approach, a third party, who intentionally facilitates infringement activities, will be held to be liable for secondary infringement even it has difficult or even no control over these infringement activities. Although *Grokster’s* ruling represents the USSC expressly advocated inducement liability, versions of the inducement liability principle can be found in the decisions of other courts since section 512 was introduced. As pointed out by many scholars, the Seventh Circuit in *Aimster* ‘was really groping its way towards the doctrine

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173 *Sony v Universal* (n 106). Boyle and Jenkins (n 171), pp. 517 (The USSC did ‘not clarify delineate whether and when it is talking about contributory infringement, vicarious liability or both’.).

174 Ibid.

175 Ibid.


177 *Napster* (n 160), 1022-1023 (‘A true contributory infringer has no interest in this safeguard [removing infringing copies or take down illegal acts once it knows or has reason to know their existence.]; *In re Aimster* 334 F 3d 643, 648 (7th Cir 2003) (The service was capable of non-infringing uses was not enough. The force of speculation of substantial non-infringing use of technology and building burdensome obligations on infringement-inhabiting technologies is greatly been weakened by the doctrine of ‘active inducing infringement’.).
of active inducement that was recognised in *Grokster*.\(^{178}\) The second reason is that some courts have already followed USSC’s *Grokster* decision by adopting inducement liability in determining secondary infringement of ISPs.\(^{179}\) Lastly, VCR in Sony is different from P2P software in *Grokster, Napster or Aimster*. It is designed for recording TV for later viewing, which is a general purpose. It will not significantly affect the revenues of TV companies. P2P software is different in terms of the purpose for which it is designed. A pure, independent P2P software like Bittorrent is designed primarily to facilitate infringement unless they are provided by copyright owners such as music and game companies. On the one hand, they have the positive benefit of facilitating download speed. However, if it is in the wrong hands and uncontrolled, it could easily be used to infringe copyright works, and thus negatively affect revenues of copyright owners.

Nowadays, customers can use official services such as Netflix for movies, iTunes for music and Steam for games, all of which provide P2P high speed downloading or live streaming. The major reason for the existence of independent P2P software is to attract users who want to acquire illegal copies of copyright works for free. With regard to torrent websites, they intend to profit from illegal acts of users for the same reason. The website and P2P software are interdependent in terms of contributing to infringing acts conducted by end-users. As such, they are significantly different from inventions such as VCRs and computers the primary purpose of which was for non-infringing uses.

Four factors contribute to the establishment of secondary infringement by inducement: (1) the distribution of a device or product including copyright works; (2) an act of infringement; (3) an objective of promoting its use to infringe copyright; and (4) causation.\(^{180}\) Torrents and corresponding illegal copies of copyright work are the products that are distributed by the users through using websites and software respectively. In the case of torrent websites and P2P software, infringement can also be

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\(^{179}\) UMG v Shelter Venture Fund et al 667 F 3d 1022 (9th Cir 2011) (Denied plaintiff’s claim of inducement infringement.); *Columbia Picture* (n 163), 1033.  
\(^{180}\) *Columbia Picture* (n 163), 1032.
easily established as end-users’ uploading and downloading of torrent files corresponding to illegal copies amount to copyright infringement.¹⁸¹ Unlawful objectives can be inferred from many indicators including business models and messages of inducement, an assessment of which is also connected to evaluating issues of safe-harbour protection as discussed above. Failing to establish a filtering system and capturing revenues from illegal acts of users can be used by courts to corroborate other indicators in determining a defendant’s object.¹⁸² With regard to the condition of causation between an infringing act and a defendant’s service or products, a defendant’s unlawful object and the existence of users’ infringing uses of software are sufficient even for a permanent injunction to be granted, let alone a preliminary injunction.¹⁸³ As emphasised before, the primary reason torrent websites and independent P2P software is attractive to users is that they can acquire illegal copies of games free of charge by using torrents on the website and software. Otherwise, users can buy legal copies from online stores which provide similar or even higher speeds of downloading. Because of their illegal status, it is the only way for such ISPs to make profits, and, at the same time, arguably escape liability is to sell advertising space. It is easy for copyright holders to find indicators on such websites and software that can be used to indicate the illegal objective of the owner of these websites and software. Hence, it could be quite easy for copyright owners to obtain an injunction by proving such ISPs’ secondary liability in the court.

b. EU Approach

The main reason for imposing secondary liability on ISPs is because it is costly and ineffective to go after every primary infringer.¹⁸⁴ By cutting the means of dissemination, losses caused by infringing acts can be effectively reduced. Copyright owners in the EU can obtain injunctions in the same way as copyright holders in the US by proving a likelihood of success on the merit of a secondary infringement claim (for preliminary

¹⁸¹ 17 USC § 106 (1) and (3); Napster (n 160), 1014.
¹⁸² Grokster II (n 152), 983; Columbia Picture (n 163), 1036.
¹⁸³ Columbia Picture (n 163), 1039.
¹⁸⁴ Ibid.
injunction) or proving a defendant’s secondary liability (for permanent injunction). In addition to imposing secondary liability on ISPs, copyright owners in the EU have an extra option to prevent game piracy. They can apply for an injunction against broadband providers even when broadband providers are not liable either for primary or secondary infringement. Article 8(3) of the InfoSoc Directive and Article 11 of the Enforcement Directive give a copyright owner the ability to apply for an injunction against ISPs whose services are used by a third party to infringe a copyright or a related right. Copyright owners are not required to prove any fault made by ISPs. In L’Oreal v eBay, the CJEU held that a national court can order the operator of an online marketplace to take measures both to bring an infringement to an end and to ‘prevent further infringements of this kind’. However, injunctive relief ordered by the national court must be effective, proportionate, dissuasive and must not create barriers to legitimate trade. Accordingly, the CJEU pointed out that there is no obligation for an ISP to impose a general monitor on all the data of each of its users as this may not be proportionate under Article 8(1) of the InfoSoc Directive.

A representative case can be found in the UKHC decision in EMI Records v British Sky Broadcasting. Consistent with Article 8(3) of the InfoSoc Directive, section 97A of

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185 Detailed analysis of EU secondary liability is not conducted here because there are so many different approaches used by the member states. But the ultimate purpose of using secondary liability is similar to the purpose of using imposing secondary liability in the US – being more efficient in stopping dissemination of illegal copies by cutting the. For various approaches of secondary liability adopted by the member states, see, e.g., Christina Angelopoulos, ‘EU Copyright Reform: outside the safe harbour, intermediary liability capsizes into incoherence’ (Kluwer Copyright Blog, 6 October 2016) <http://kluwercopyrightblog.com/2016/10/06/eu-copyright-reform-outside-safe-harbours-intermediary-liability-capsizes-inoherence/> accessed 15 March 2017.
188 Case C- 324/09 L’Oreal v eBay [2011] ETMR 52, at [131].
189 Ibid, at [139]; Scarlet v SABAM (n 167), at [36].
190 EMI Record (n 153).
191 Enforcement Directive, art 11 (‘...Member States shall also ensure that rightholders are in a position to apply for an injunction against intermediaries whose services are used by a third party to infringe an intellectual property right, without prejudice to Article 8(3) of [InfoSoc Directive]’); L’Oreal v eBay (n 188), at [137] (Although the third sentence of Article 11 of Enforcement Directive is not implemented by the UK
the CDPA which empowers a court to grant an interim injunction against a service provider if the provider has actual knowledge of another person using its service to infringe copyright.\textsuperscript{193} In this case, the UKHC granted an injunction against internet broadband providers requiring them to block three torrent websites based on the argument that these broadband providers had actual knowledge of how their services were being used both by these websites and their end-users to infringe copyright.\textsuperscript{194} The UKHC also held that such an injunction was proportionate for the purpose of bringing an end the infringement and preventing further infringement of that kind.\textsuperscript{195} Arnold J in this case also explained the underlying rationale for granting an injunction, asserting that websites taking action to remove infringing content only when they received individual takedown notices was a wholly inadequate way to prevent such a large-scale and widespread copyright infringement by torrent websites.

Therefore, copyright confers on game companies and console firms the ability to obtain an injunction against ISPs to bring to an end infringement and prevent further infringement of this kind. Compared with the US approach, the EU’s approach may be more diverse and effective, at least in relation to preventing torrent websites and independent P2P software, both of which are deliberately profiting from illegal acts conducted by their users. As mentioned, sometimes even when such illegal copies are downloaded, end-users cannot play them unless they bypass the TPMs using circumventing tools. In this regard, the anti-circumvention provision may provide a more effective means than imposing secondary liability on ISPs.

### 4.2 Anti-Circumventing and Circumventing Tools

Both the EU Directive and US Copyright Act prohibit circumventing acts and acts of traffic in such tools. This means that a console firm or game company can prevent a third party from trafficking in tools, the primary purpose of which is to circumvent TPMs.

\textsuperscript{193} CDPA 1988, s 97A.
\textsuperscript{194} EMI Record (n 153), at [108].
\textsuperscript{195} Ibid, at [89], [90]-[107].
The anti-circumvention provision confers on holders the right to be protected by TPMs even when TPMs themselves are not protected under the copyright law. However, this right is not without limitations. Both in the US and EU, a common precondition for obtaining anti-circumvention protection is that the materials that are protected by TPMs must be copyrighted. In this industry, therefore, an access control measure must control the access to copyright protectable materials, games or computer programs embodied in hardware. The same principle applies to copyright control measures which are used by copyright owners to protect copyright works against infringement. Another important condition for obtaining anti-circumvention protection

196 For the US cases, see, e.g., The Chamberlain Group v Skylink Techs 292 F Supp 2d 1040 (ND ILL 2003); The Chamberlain Group v Skylink Technologies 381 F 3d 1178 (Fed Cir 2004) (Both the District Court and Federal Circuit held that the matter protected by the alleged access control measure is not copyrightable. Accordingly, they held that defendant did not violate 17 USC § 1201 (a)(2) because there was no connection between copyright infringement and circumvention devices. This decision was not followed by the Tenth Circuit in MDY v Blizzard (n 89). However, the Federal Circuit’s decision in Chamberlain v Skylink implies that anti-circumvention provision only protects TPMs when the TPMs control the access or protect copyrightable matters.); Lexmark International v Static Control Component 387F 3d 522 (6th Cir 2004) (In this case, the Federal Circuit rejected plaintiff’s claim because the Printer Engine Program which was protected by the access control measure – Lexmark’s authentication sequence, was not copyrightable [because of being functional]. The judge Sutton also distinguished between access control measures for video games and ones for program like Printer Engine Program. He asserted that the former was under protection of anti-circumvention provision because a video game was copyrightable expressions while the latter was not because these materials were not copyright protected. This idea was agreed by judge Merritt in his/her concurrent judgment); Storage Technology Corporation v Custom Hardware Engineering & Consulting 421 F 3d 1307, 1319 (Fed Cir 2005) (The Federal Circuit criticised District court on the failure to consider whether the circumvention of [plaintiff’s] system either infringed or facilitated infringing a right protected by the Copyright Act’. The former held that if an act infringes or facilitates infringing a right protected by the copyright Act, then copyright owner is protected under anti-circumvention protection.); Blizzard et al v Tim Jun et al 422 F 3d 630 (8th Cir 2005) (The Eighth Circuit held that the defendant’s circumventing tool ‘bnetd. Org’ was illegal under 17 USC § 1201 (a)(1) because it enabled users to circumvent access control measure and play the games – a copyrightable expression, without authorisation of Blizzard, the copyright owner.). For the EU and EU national cases, see, e.g., Case C-355/12 Nintendo v PC Box (n 96) (CJEU held it was the national court to decide whether or not to uphold copyright owners’ claim when a protection measure has multiple purposes other than protecting games against piracy and when circumventing tools have other legitimate uses other than enabling console users to play illegal copies. After CJEU gave its preliminary ruling, the Italian court held that it is proportionate for Nintendo to install such TPMs to protect video games, which are copyrightable. Accordingly, the Italian Court ruled in Nintendo’s favour.); Nintendo v Playables (n 92) (This case also involved multi-purpose mod-chips. The Justice Floyd ruled in favour of Nintendo under section 296ZD, the anti-circumvention protection for copyright work other than computer program. He held that liability for circumvention of TPMs was not precluded even if the device could be used for non-infringing purpose. He also held that the fact that the device could be used for other non-infringing purposes did not mean that the sole intended purpose of the device was not the unauthorised circumvention of TPMs under section 296 [the anti-circumvention protection for computer programs].).
is that the copyright owner has to establish that the primary purpose or sole purpose of
the defendant’s tool is to circumvent TPMs.\textsuperscript{197} As stated earlier, a video game is
copyrightable both in the EU and US. It is also true that circumvention tools that are
available nowadays are primarily used by individual players for the purpose of bypassing
the test and running illegal copies. This can be inferred from the fact that small and
medium-sized game developers can achieve interoperability either through conducting
reverse engineering or applying for a free development license. Even if game developers
choose to conduct reverse engineering, rarely will they distribute these tools to the
public since they may lose the protection of the reverse engineering exemption. The
hostile attitudes of national courts in the EU toward circumventing tools, the ones that
claim to have functions other than to circumvent TPMs, also implies that circumventing
tools can hardly be entitled to any exemption from liability for violation of anti-
circumvention protections.\textsuperscript{198} Hence, it would be quite easy to prove the illegal purpose
of a circumventing tool in front of the court. Copyright owners can enforce the right
under anti-circumvention to prevent the diffusion of circumventing tools.\textsuperscript{199} In other
words, anti-circumvention provisions give copyright owners additional protection
against game piracy.

5 Copyright, Parallel Importing and Used Game Reselling

The focus of the following analysis is on the issues of parallel importing and reselling of
second-hand games. A copyright owner has the exclusive right to first market their
works.\textsuperscript{200} Anyone that markets the work without a copyright owner’s consent infringes
their copyright. The first sale doctrine limits such exclusivity. Once a copy of a copyright

\textsuperscript{197} For the US case, See, e.g., \textit{Blizzard v Tim} (n 197) (The Eighth Court held that the sole purpose of ‘bnetd. Org’ is to circumvent Blizzard’s TPMs as this program has other limited commercial purposes.); For the EU case, see, e.g., \textit{Sony v Ball} (n 95); \textit{Nintendo v Playables} (n 92); see also, ‘Before You Circumvent, Circumspect? Nintendo TPM Triumphs in Italy’ (IPKat, 24 November 2015) (n 98)

\textsuperscript{198} \textit{Sony v Ball} (n 95); \textit{Nintendo v Playables} (n 92); ‘Before You Circumvent, Circumspect? Nintendo TPM Triumphs in Italy’ (IPKat, 24 November 2015) (n 97) (In all these cases, the court ruled in favour of console firms even though tools involved in these cases have other functions.).

\textsuperscript{199} Injunctive relief and monetary relief are both available. See 17 USC §1203; InfoSoc Directive, art 6 and art 8.

\textsuperscript{200} 17 USC § 106(3); InfoSoc Directive, art 4.1; Computer Program Directive, art 4.1(c).
work is put on the market by the copyright owner or with their consent, the copyright owner loses control over subsequent distribution of this particular copy. Buyers are free to further distribute the copy without obtaining authorisation from the copyright owner. In this industry, a person who lawfully acquires and owns a copy of a game can therefore sell the copy to others without the copyright owner’s consent. Both the scope and condition of this doctrine affect the ability of console firms and game companies to control game distribution.

The scope of this doctrine in the EU and US differs. The US adopts an international exhaustion rule, at least on physically distributed copyright works. According to the US law, a game company or a console firm exhausts its distribution right after its games are put on the market anywhere in the world. They cannot rely on copyright to prevent third parties from importing games into the US. Unlike the US, the EU adopts union exhaustion in terms of copyright works. Once a game is put on the market by a game company or a console firm, or with its consent, the owner’s right of distribution is exhausted. However, if a game is put on the market outside the EU, the game company or console firm can rely on copyright to prevent its importation into the EU countries.

However, the first sale doctrine applies both in the EU and US only if the ownership of a game copy is transferred from the copyright owner to the buyers. If games are deemed as being licensed to customers, the first sale doctrine would not apply and the distribution right of game companies or console firms is not exhausted even though games have been put on the market either digitally or physically. It is a common practice for game companies and console firms now to use a licensing agreement in the hope of licensing the copy to buyers instead of transferring the ownership. Therefore, courts have to interpret the license agreement to determine whether a buyer is an owner or

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201 17 USC § 109; Kirtsaeng v John Wiley 133 S Ct 1351 (2012) (The Supreme Court held that publishers cannot base on copyright to prevent third parties from importing books, which were manufactured and first put on the market outside the US with publisher’s consent, into the US. However, the US court’s attitude toward digitally distributed works is still not clear, especially when these works are distributed under the license agreement.).


203 17 USC § 109 (d) (It emphasises transferring of ownership is the prerequisite of applying first sale doctrine.); InfoSoc Directive, art 4.2.
licensee of a game copy. This question is determined on a case-by-case basis. If the buyer of a game copy is a licensee, the game company or console firm can still control subsequent distribution of the copy including reselling it as a used game or importing it. Unfortunately, neither case law development in the US nor that in the EU provides a clear rule in determining whether or not the ownership of a copy of a game is transferred when it is sold under a licensing agreement. In the US, a buyer of a game copy with a license agreement that explicitly treats the buyers as licensees and restricts them from transferring copies of games to others may be defined by some courts as a licensee rather than an owner of that copy. However, such a license agreement does not necessarily make a buyer a licensee. This causes confusion among the public, especially when similar provisions of licenses are interpreted differently by the same court. In the EU, selling software copies under a license which gives the buyer a right to use it perpetually but restricts the buyer’s right to transfer is deemed by the CJEU as a transfer of ownership of the software, especially when sellers are paid upfront instead of by subscription. However, the result may be different in other circumstances given the limited number of CJEU decisions – only one, in this respect.

205 Vernor v Autodesk 621 F 3d 1102 (9th Cir 2010) (Buyers of copies of plaintiff’s software under licenses were deemed as licensees of copies); Vernor v Autodesk 132 S Ct 105 (2011) (Petition for writ certiorari to the United States Court of Appeals for the Ninth Circuit was denied); MDY v Blizzard (n 89) (The defendant was held by the court as a licensee rather than an owner of a particular copy of World of Warcraft.).
206 UMG Recording v Augusto 628 F 3d 1175 (9th Cir 2011) (Although this case involves CD music, buyers of these copies were determined as owners of these copies by the Ninth Circuit.).
Although there are uncertainties in terms of the court’s interpretation of licensing agreements, there is no doubt that the majority of game companies and console firms will sell copies of games under licensing agreements using terms to restrict buyers from transferring games to others. This may increase the likelihood of a game company or console firm controlling subsequent distribution of games than if it sells copies of a game without such contractual restrictions.

Despite the possibility of buyers of copies of a game being seen as a licensee or an owner in the court, the preceding analysis, nonetheless, implies that copyright may not confer on a game company or console firm a right with certainty to prevent subsequent distribution of copies of games by lawful acquisition after the first sale. Accordingly, for game companies and console firms in the US, they may not be able to prevent other people from importing games from outside the US into US territory. However, as mentioned in Chapter I, this will not affect the returns of these game companies and console firms because the games are much cheaper than ones sold in the rest of the world. In contrast, copyright in the EU gives game companies the right to prevent others from importing games that have first been marketed outside the EU into EU countries. This is important as game companies or console firms may not capture returns that are equivalent to those in the US if parallel importing is permitted in the EU. The preceding analysis also implies that copyright may not be a reliable way to limit reselling of second-hand games. This may partly explain why high street stores or famous websites are still selling used games. As will be shown in chapter IV, controlling digital distribution channels may be a better solution rather than enforcing intellectual property legal rights to reduce losses caused by second-hand reselling.

6 Conclusion

*UsedSoft*, essentially all private EULAs were invalidated for game companies, even digital copies of games.).

209 Simon Stokes, ‘Some Current Legal Issues in Publishing’ (2013) Entertainment Law Review 241-244 (The author questions whether a license which does not give perpetual right and limits other users’ rights makes the buyer a licensee rather than an owner of ebook.); May Khoury, ‘Exhausted Yet? The First Sale Doctrin and the Second-hand Market for Software Licenses in the European Union’ (2014) 37 Coston College International & Competition Law Review 45-57 (This article discussed ways in which software developers can use to regain control of subsequent marketing of software.).
The preceding chapter showed that copyright only offers limited protection to a game company or a console firm to protect their works from being cloned by competitors. However, given the fact that the majority of game companies and console firms in this industry try hard to distinguish their own products from others’ due to the high development costs, the limited protection implies that companies are more free and have more resources that can be utilised to innovate. Likewise, this feature of copyright suggests that copyright does not give a firm a competitive advantage and bargaining power automatically through making a game rare and costly-to-imitate. This suggests that other strategies have to be taken by companies to translate a valuable game into sources of competitive advantage and bargaining power. The role of marketing strategies, branding in particular, is highlighted in this respect. The analysis shows that copyright gives a game company or a console firm absolute power to control the bottleneck of the e-sports industry, from which it can both capture returns on investment and, more importantly, build brand equity to gain competitive advantage and increase leverage. With regard to competition in the console software market, copyright does not automatically confer on a console firm, as a platform provider, market power to control game development. This suggests that it is the other factors such as strong marketing power and the internal anti-clone mechanism to prevent game clones that attract game companies to apply for licenses from console firms. The analysis in the fifth part showed that copyright can be used by game companies and console firms to prevent game piracy in more effective ways than merely chasing after primary infringers. Although differences exist between the US and EU in this respect, a game company or a console firm can enforce their copyright against ISPs and traffickers of circumventing tools to reduce the negative influence on their returns on investment caused by game piracy. The last part revealed that copyright can be tailored to control parallel importing according to the market environment. Copyright is also found to be unreliable in terms of preventing the reselling of second-hand games. This incapability suggests that a better solution may be required. As will be shown in Chapter IV, controlling a digital distribution platform can be a better alternative to enforcing IP
rights. Therefore, despite the effectiveness of copyright in preventing game piracy, copyright alone may not directly give a game company or a console firm competitive advantages to increase its returns. It must be used by a company with other factors to exploit the economic value of its games. As mentioned in section I, competition is fierce in the console software industry due to the large number of game developers. Developing a good game and protecting it with copyright are therefore not enough to guarantee returns to its owner. The next chapter will show how trademarks translate games and other efforts into sources of competitive advantage and leverage in competition and thus maximise returns that a console firm or game company can capture.
Chapter IV: Trademarks and the Home Console Game Industry

1. Introduction

This chapter aims to test how trademarks can complement the effects of patent and copyright in helping firms maximize the returns on their investments in the development of novel products. The cycle of product development is not complete unless and until products reach the final customers. It is revenue from customers that provides the returns on the investments made in developing the new products. Therefore, the commercialisation of new products is of paramount importance and trademarks play a crucial role in commercialisation.

What follows is divided into six parts. The second (next) part examines the relationships between brands, brand equity and trademarks. Both brand-equity assets and the major benefits of possessing a strong brand will be given after the analysis. The third part examines the key factor, which was identified in section I, for a console firm or a game company to capture customers in competition. The problem of information asymmetry and patterns of customer behaviour are examined in this part in order to illustrate ways in which a brand can be used to solve this problem. Trademarks are then analysed from a legal perspective in the fourth part to demonstrate the contributions of a trademark in reinforcing the function of a brand to reduce customers’ search costs. In particular, this part demonstrates the ways in which a trademark can be used by a console firm or a game company to build a strong brand from which it can gain advantages in competition and increase its leverage in streams. The fifth part will prove that it is difficult for trademarks in general to be used by either a console firm or a game company to distort competition in this industry. The sixth part will address the effects of trademarks in preventing three problems that reduce the overall returns of innovators – game piracy, parallel importing and second-hand games. The effectiveness of trademarks in resolving these three problems is tested in this part. A conclusion will be given at the end of this chapter.
2. Brands, Brand Equity and Trademarks

With regard to the relationship between a ‘brand’ and a ‘trademark’, a ‘brand’ is a business term widely used in the context of business and marketing while ‘trademark’ is a legal concept commonly used in the legal context. A brand is a ‘name, term, sign, symbol, or design, or a combination of them, intended to identify the goods and services of one seller or group of sellers and to differentiate them from those of competition’.  

It is also:

‘a promise, the totality of perceptions- everything you [customers] see, hear, read, know, feel, think, etc. - about a product, service, or business. It holds a distinctive position in customer’s minds based on past experiences, associations and future expectations. It is a short-cut of attributes, benefits, beliefs and values that differentiate, reduce complexity, and simplify the decision making process’.  

The legal definition of a trademark is a sign that is capable of ‘distinguishing the goods or services of one undertaking from those of other undertakings’. A trademark can be a name, logo, mark, symbol or any other kind of ‘sign’. The terms brand and trademark are not identical in terms of meaning but they may appear to overlap. This is because a brand, like a trademark, has at least one signifier functioning as the name and principal identifier of the brand. Compared with a trademark, a brand and what it signifies may change. Furthermore, a firm may use a combination of trademarks to signify a brand or may use identifiers that cannot be registered as trademarks. It is very complicated to

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5 Ibid.
draw a clear boundary between brands and trademarks, especially when there is no unanimous or official definition for both concepts. For ease of exposition, unless the context requires otherwise, this chapter will assume a trademark signifies one product-specific brand.\(^6\) This means that a trademark is the legal basis and central element of a brand that contains it. A brand may thus be perceived as a trademark with additional associations other than trade origin as the basic function of a trademark is to indicate the trade origin of marked/branded products.\(^7\)

Brand equity is defined as:

‘a set of brand assets (and liabilities) linked to a brand, its name and symbol, that add to (or subtract from) the value provided by a product or service to a firm and/or to that a firm’s customers’.\(^8\)

These assets (and liabilities) are linked to the trademark and other elements that a brand contains, and are divided into four major categories:\(^9\) (1) brand awareness; (2) perceived quality; (3) brand associations; and (4) brand loyalty.\(^10\) These assets are interdependent.

**Brand awareness** includes recognition of a brand and brand recall. Recognition of a brand is simply a customer’s ability to remember a past exposure to a brand.\(^11\) Recall happens when a brand comes to a customer’s mind when its product class is mentioned. For instance, a customer might recall *Call of Duty* when others mention first-person-shooting games. Brand awareness reflects the degree of familiarity of a brand. It is also a deciding factor for customers when they search and buy goods or services\(^12\) as customers are more likely to buy a product with a familiar brand than an unfamiliar one.

\(^6\) Ibid, p. 48.
\(^7\) Jeff Van Hoosear and Jason Evans, ‘Pursuing Strong Brand’ (Knobbe Marten Olsen & Bear LLP, 2004) <https://assethub.fso.fullsail.edu/assethub/pursuing_strong_brand_44d7b1e0-c987-4869-914f-528815ea8dde.pdf> accessed 15 March 2017 (The trademark is the heart of the brand.).
\(^10\) Ibid.
\(^11\) Ibid.
\(^12\) Keller (2008), pp. 54-55.
This is the basis for developing other categories of brand-equity assets such as brand association and cultivating brand loyalty.\textsuperscript{13}

Perceived quality is another major and fundamental factor in customers’ purchasing decisions\textsuperscript{14} but it does not necessarily equate to actual quality.\textsuperscript{15} In other words, it is a perception of overall quality among customers and not necessarily based on knowledge of detailed specifications.\textsuperscript{16} In general, customers are more likely to buy branded goods with a high perceived quality than ones with lower perceived quality even though two branded goods are of the same actual quality.

Brand association refers to other tangible and intangible attributes other than perceived quality that can be associated with a brand among customers. Such associations can be product attributes, an image or reputation, a particular symbol, an endorsed celebrity, etc. They are ‘generally everything that connects customers to the brand’.\textsuperscript{17} These associations can be built and maintained by using brands in various ways. Building brand associations involve both an effort from brand owners and a response by customers.\textsuperscript{18} This can be indicated from the definition of ‘brand identity’, which drives the association-building. Such a definition includes what the brand owners want the brands to stand for in the customer’s mind and what they actually stand for in the customer’s mind.\textsuperscript{19} Positive associations increase the value of a brand.

Brand loyalty is one dimension of brand equity while at the same time it is affected by other brand-equity assets. In other words, brand loyalty may be the result of building a strong brand while it in turn increases the value of the brand. Strong customer awareness, high perceived quality and clear and positive brand identity/associations enhance brand loyalty.

\textsuperscript{13} Ibid, p. 64. 
\textsuperscript{15} Ibid, p. 85. 
\textsuperscript{16} Ibid, p. 19. 
\textsuperscript{17} Kotler and Pfoertsch (2006), p. 70. 
\textsuperscript{18} Keller (2008), pp. 64-71. 
\textsuperscript{19} Ibid; Aaker (2010), p. 25.
These assets benefit both customers and firms. They can help customers to interpret, process and store a large amount of information about products and even the firms behind marked products. They also increase customers’ confidence in making purchasing decisions due to perceived quality and positive associations. At the same time, these assets benefit brand owners (firms) in many ways. Among them are three types of benefits which are highlighted here. Firstly, a strong brand allows higher profits by permitting premium prices. The perceived quality, reputation and other positive associations justify the premium prices because they reduce customers’ search costs when they lack information to make purchasing decisions. Secondly, it allows the owner to increase its leverage with other parties in the stream. The above-mentioned assets suggest that brand equity reflects the marketing power of a brand and its owners among customers. The term ‘marketing power’ refers to the capabilities of a trademark owner to attract customers to marked products.\(^{20}\) It reflects customers’ recognition, awareness, associations of and even loyalty to certain brands. Marketing power signified by a brand in turn will affect the brand owner’s bargaining power with other parties in a stream. Lastly, a strong brand is of itself a valuable, rare and costly-to-imitate asset from which the owner can gain competitive advantages. Perceived quality and positive associations provide customers with reasons to buy marked products.\(^{21}\) Even if they are not the main determinants of a purchasing decision, they may reassure customers to the point of reducing the incentive to try others. Brand loyalty, enhances other brand-equity assets and further extends competitive advantages. The larger the loyal customer base that a firm has, the more likely it is to generate a more predictable profit stream. In contrast, a brand with a small loyal customer base may be more vulnerable to competitors.

3. **Trademarks and the Home Console Game Industry**

As was pointed out in section I, firms in this industry, game companies in particular, have to differentiate themselves from others. Given that thousands of companies are

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\(^{20}\) This term is different from the term ‘market power’.

competing for consumers in the console software market, letting customers know about a game and persuading them to buy it are two urgent objectives for a game company to accomplish. Although there are only three console firms in the console hardware market, a console firm should nevertheless inform customers about the differences of its products from others. Otherwise, customers may not buy the products due to lack of information and a console firm or a game company may not gain returns on investment even when its products are better than those of competitors.

3.1 Information Asymmetry and Concept of Quality

The problem of information asymmetry has been referred to before. In Chapter II, patents were shown to be an effective means of reducing information asymmetry between parties in the stream of hardware production in a B2B market. The very same problem also exists in the B2C market as well. Game players have less information about both consoles and console games than their producers. Economists have divided the characteristics of products into three major types according to the degree to which their presence or absence can be discerned or verified at the point of purchase, or at least prior to use.\(^{22}\) They are: ‘search’, ‘experience’ and ‘credence’.\(^{23}\) The ‘search’ characteristics can be verified by inspection at the point of purchase or use. A ‘search’ characteristic is thus an observable characteristic. The experience and credence characteristics are unobservable to customers. The experience characteristics of a product are difficult to verify unless they are used by consumers. A product containing such characteristics can be packaged food or drink. The credence characteristics are the most difficult to verify among these three types even after the products are used, as this consumes both time and money.\(^{24}\) For instance, the quality of a car cannot be verified until it has been used for a long time. To obtain information regarding such


\(^{23}\) Ibid.

characteristics, a customer may have to rely on third-party information sources such as word-of-mouth or third-party experts. Alternatively, the customer may have to take on trust from sellers if they buy a product containing such characteristics. The existence of information asymmetry gives rise to search costs, i.e. the costs of verifying unobservable characteristics. Faced with products with credence characteristics, search costs also include risks of choosing disappointing products or making a so-called ‘adverse selection’.  

Consoles and games all have credence characteristics. Quality is one of these types of characteristics. As defined in the literature on quality management, there are eight dimensions of product quality. They are: performance, features, reliability, conformance, durability, serviceability, aesthetics and perceived quality. The former six dimensions are either functional or material characteristics to which customers may attach value when they are looking for products and making purchasing decisions. The performance of a console has to be determined after it is used by players. Reliability and durability can only be known after a long period of use. Conformance, whether the design of a console platform meets establish standards can only be concluded when all console platforms have been launched. The quality of games also has similar problems. It is normal that a game may crash an operating system or have bugs, both of which affect the game experience. These characteristics, nonetheless, cannot be verified by players until the game has been played through. With regard to serviceability, how quickly and effectively a console firm fixes hardware malfunctions or a game company releases patches to fix game bugs can only be known after making the purchase.

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27 Ibid (It asks whether a product’s design and operating characteristics meet established standards.).
The last two dimensions are beyond the functional and material quality of products. They are the most subjective. Although no statistic shows that the looks of console platforms are important factors in customers’ decision, design and presentation in a game such as in-game virtual environment, character controllability and music may be considered by customers when they purchase games. However, these factors are abstract and hard to describe precisely using words. For instance, to some players, a weapon in *Battlefield* might be more difficult to control than the same weapon in *Call of Duty*. Likewise, perceived quality highlights the importance of translating other dimensions from what they actual are to what they are perceived to be by customers.²⁹ It is about the overall feeling of a trademark or a marked product.³⁰ As indicated above, due to information asymmetry, customers do not always have complete information about a console or a game. Customers either do not have resources to obtain such information or are not willing to obtain them.³¹ They may purchase a console or game without obtaining complete information, which involves the risk of adverse selection or the risk of a reduction in quality. In such a case, perceived quality thus becomes the focus of the purchasing decision.³² A product with higher perceived quality is more likely to be bought by customers because in the eyes of a customer it gives more credible assurance against the risks incurred when the customer makes a purchase decision without obtaining complete information. These two subjective dimensions of quality also imply that even subjective and abstract feelings may affect customers’ behaviour. This may also partly explain why associations other than the quality built by brand owners can be the customers’ reason-to-buy.³³ For example, some brand owners may build brand identities by associating some intangible valuables to marked products to increase their attractiveness and influence customers’ decision-making.³⁴

³⁰ Ibid, p. 86.
³¹ Ibid, p. 87.
³² Ibid, p. 87.
³⁴ See, e.g., Ed Howker, *Jilted Generation: how Britain has bankrupted its youth* (Icon Books 2010), pp. 164-172 (The author showed how ‘value, attitudes and lifestyle’ (VALs) marketing was used by firms to...
The complexity of consoles and games and the long distance between producers and target customers increase customers’ search costs. They normally have two major ways to combat information asymmetry. One way is to relate past experience of using a particular branded console or game to new ones which bear that brand. For instance, a player may relate his past experience of using Xbox to Xbox-related brands and use such associations when he makes a choice between PS3 and Xbox 360. Another type of source is from third parties, ranging from user reviews to expert tests. Consoles are very difficult to verify in terms of unobservable characteristics at the point of purchase even though verifying unobservable characteristics are becoming less costly than in the past due to the internet. Consumers can now verify a game in three major ways. Firstly, a consumer can watch trial videos. Secondly, some game companies may provide demonstration (demo) editions of a new game for consumers to play. Finally, a potential purchaser can find expert or amateur reviews of a game on websites or forums such as GameSpot.

However, trial videos and demos normally provide the best demonstration of a game to players even though some games may not be the same as presented in trial videos, and demos may only demonstrate some characteristics of a game such as controllability. Important characteristics, such as quality, may only be revealed when the player plays the game through. With regard to third-party sources, these reviews are also not without weaknesses. Firstly, they may be manipulated by interested parties. Secondly, online reviews might only represent reviewers’ personal taste. Lastly, reviews might only reflect partial opinions because of their limited numbers.

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37 Different individuals have different tastes for a same game.

indicated by Anderson, extremely satisfied and extremely dissatisfied consumers more frequently express their opinions to others online.\textsuperscript{39} Information from third parties still cannot eliminate information asymmetry. Furthermore, even if the final customers can obtain such information, they may not understand it due to its complexity which may require specific expertise. Besides, such understandings may not affect the satisfaction of game players which is a very abstract concept as it is an impression of an overall evaluation of all characteristics of consoles and games. In the case of selecting consoles, the only thing that a customer needs to be sure of is that the console he wants to buy is durable, reliable and powerful, or the game is fun, exciting and free from bugs. He does not need to know why this particular console is powerful or reliable or a game is beautiful because it uses a particular game engine. For all these reasons, customers base their decisions on incomplete information and thus face the risk of adverse selection. Accordingly, console firms and game companies have to deliver the necessary information to customers while at the same time give assurances to customers against risks due to lack of information.

\textbf{3.2 Trademarks, Brands and Search Costs Reduction}

Brands can be used both by console firms and game companies and their customers to combat information asymmetry. They help customers reduce search costs while at the same time make branded games or consoles stand out among competing products. A brand in theory is a unique reference point or market identity to which customers can associate all relevant information. Such information ranges from product-related attributes, organisation attributes to other personal feelings about the brand and branded goods.\textsuperscript{40} When a customer buys a game or a console, a brand such as Xbox or Microsoft may remind the customer of his past experience of using branded products, which could be an Xbox or Windows Operating System or \textit{Halo} games. If he has not used any branded products before, the brand attached to the console or the game can

\textsuperscript{40} Aaker (2010), p. 78.
nonetheless be used by customers as a shortcut to search relevant information about the brand, branded products and even the owner of the brand. Furthermore, brands can signify likely consistency in terms of quality. Although perceived quality may not be the actual quality of a console or a game, customers will use it to make decisions as perceived quality gives an assurance to customers against risks.\textsuperscript{41} Reputation can also provide assurance to customers. This can be indicated from the fact that game companies like to develop game sequels if a game title had a good marketing performance in the past. There are many ways to increase the value of brand-equity assets. The most basic way is through acquiring a good track record from customers’ past experience in using branded products. At the same time, using a brand in other scenarios such as advertising and promotion activities or to sponsor events can simultaneously provide information and develop other types of brand assets. In return, these brand-equity assets increase the efficiency of a customer’s processing of relevant information and facilitates decision-making.\textsuperscript{42}

As will be shown below, a trademark on the one hand ensures that a brand owner, a console firm or a game company has the exclusive use of a brand as a unique market identity. On the other hand, it enables the owner to control the actual quality of branded goods while preventing third party interference that may impair the perceived quality and reputation of the brand. In these ways, the owner can exclusively control the track record of branded goods which ensures that the brand can convey the necessary information that reflects the efforts that the owner made to maintain the actual quality of branded goods to customers as objectively as possible. The very features of a trademark also contribute to building other brand-equity assets including reputation, which in turn will provide an assurance to customers to facilitate their decision-making.

4. The Legal Nature of Trademarks

\textsuperscript{42} Ibid.
Unlike patent and copyright law, which are artificially created premised on the basis that the subject matter of the rights is less likely to be brought into existence without legal protection, trademark law is at least partly premised on a pre-existing social phenomenon and aims to secure its benefits sustainably and effectively.\textsuperscript{43} The initial and conventional function of a trademark is to indicate the person, legal or natural, that produces marked goods or provides marked services. Such a trade origin has now been extended to a party that has the ultimate control over the production of marked goods. This function is called essential function in the EU and source function in the US. Legal protection for this function of a trademark can be found both in international treaties such as TRIPs and in domestic laws.\textsuperscript{44} The following analysis will be conducted using both the new EU Trademark Directive (TMD) and US trademark law and case law. Since EU member states are required to implement the Directive into their domestic laws and interpret the law in compliance with the CJEU’s interpretation of the Directive,\textsuperscript{45} decisions made by the UK courts before Brexit will be used to complement cases decided by the CJEU in the analysis conducted below.

The last part showed that customers need both necessary information and an assurance to make purchasing decisions. They use brands as reference points to distinguish products, obtain necessary information and acquire assurance against the risks in their decision-making. On the other hand, brand owners invest in building and maintaining perceived quality and other associations to increase the capability of brands to provide information and assurance. However, in order for both parties to benefit from a brand, three conditions have to be satisfied. Firstly, a brand in general must be exclusively used by the owner. Secondly, a brand owner must put effort into building and maintaining quality. This requires the owner to possess exclusive control over the quality of branded products until the products reach the final customers. Finally, the owner needs to translate actual consistency of quality into perceived quality. In other words,

\textsuperscript{44} TRIPs, art 15 and art 16.
information that the owner wants its customers to know should be delivered as accurately as possible to customers. Legal protection of a trademark ensures that a brand containing it can function properly in terms of reducing customers’ search costs and can benefit the owner in the ways described above.

4.1 Trademark Registration, Trademarks as Unique Reference Points and Market Identity

Trademark registration confirms and reinforces a brand’s role as a unique and distinctive reference point and market identity. In general, a sign has to be registered in order to obtain legal protection as a trademark.\(^{46}\) Article 3 of the New TMD states that trademarks exist: ‘provided that such signs are capable of ... (a) distinguishing the goods or services of one undertaking from those of other undertakings ...’.\(^{47}\) Article 4(1) (b) states that: ‘the following shall not be registered or, if registered, shall be liable to be declared invalid ... (b) trade marks which are devoid of any distinctive character’.\(^{48}\)

A similar requirement can be found in 15 USC §1052 which states that:

‘no trademark by which the goods of the applicant may be distinguished from the goods of others shall be refused registration on the principal register on account of its nature ... (f) ... nothing herein shall prevent the registration of a mark used by the applicant which has become distinctive of the applicant’s goods in commerce’.\(^{49}\)

Section 9 of The US Restatement (Third) of Unfair Competition defines a trademark as:

‘... a word, name, symbol, device, or other designation, or a combination of such designations, that is distinctive of a person’s goods or services and that is used in a manner that identifies those goods or services and distinguishes them from the

\(^{46}\) There are other ways to protect a mark. In the UK, the tort of passing off can be used to protect marks with goodwill. In the US, 15 USC §1125 also provides protection for unregistered marks.

\(^{47}\) New TMD, art 3 (TMD, art 2).

\(^{48}\) Ibid, art 4.1 (b).

\(^{49}\) 15 USC §1052.
goods or services of others. A service mark is a trademark that is used in connection with services.\(^5\)

Even though 15 USC §1125 protects both registered and unregistered trademark rights, an implied condition for obtaining protection under §1125 (a) is that such a ‘word, name, symbol, or device, or any combination thereof’ must be distinctive.\(^5\) This means the US trademark law protects a sign only if it is distinctive, no matter whether it is registered or unregistered.\(^5\)

Therefore, it is unanimously required by laws both in the EU and US that a registered trademark is distinctive.\(^5\) In being distinctive, consumers are able to use it as an exclusive marketing identity to distinguish marked goods of one undertaking from those of other undertakings.\(^5\) Trademark law reinforces the status of a brand as a unique reference point and unique market identity, the basis on which further investment can be made by owners to combat information asymmetry and develop and maintain the attractive power of their brands.

4.2 The Legal Guarantee of Trade Origin and Unitary Control of Actual Quality

Legal protection of a trademark also confers on the owner the right to exercise continuing control over the actual quality of marked goods.

This exclusivity is presented as a trademark’s legal guarantee of its trade origin – the only undertaking that controls the quality of marked goods. It is worth mentioning that the term ‘quality’ used by the court has a much wider meaning than the term ‘quality’ described above. For instance, the CJEU interpreted the term ‘quality’ to include not only physical, functional and material quality such as perceived quality but also...

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\(^5\) The US Restatement (Third) of Unfair Competition § 9.
\(^5\) 15 USC §1125(a).
\(^5\) New TMD, art 4.1 (b) and art 4.4 (Acquiring distinctiveness during the period of using marks) (TMD, art 3.3); 15 USC § 1052 (f).
\(^\) For the EU cases, Case C-353/03 Nestle v Mars UK [2005] 3 CMLR 12 (CJEU), at [22]. For the US case, see In Re Oppedahl & Larson LLP 373 F3d 1171 (Fed Cir 2004) (The Federal Circuit ruled that ‘patent.com’ cannot be registered as trademarks because ‘patents.com’ as a whole did not acquire distinctiveness.).
immaterial characteristics which should be classified as [brand] associations such as reputation, allure and prestigious images.\textsuperscript{55} Therefore, the exclusive right to control the ‘quality’ of a marked product conferred by a trademark may contribute to its owner’s efforts in building and maintaining perceived quality and other associations.

Article 10.2 of the New TMD lists three types of rights of a trademark owner. Article 10.2(a) states that a trademark owner can prohibit unauthorised third parties from using signs that are identical to its trademark on products that are identical to the products for which the trademark is registered in the course of trade (‘double identity’).\textsuperscript{56} This means that a trademark owner is entitled to prohibit third parties from using its trademark to refer to or identify products without the owner’s consent, even if such products have the same quality as the owner’s products.\textsuperscript{57} In Major Bros, the UKHC held that the defendant infringed the plaintiff’s trademark because the defendant sold the nine baskets of vegetables which bore the plaintiff’s trademark without the plaintiff’s consent.\textsuperscript{58} A similar judgment can be found in Primark where the defendant’s sale of jeans supplied by the same suppliers of the plaintiff without the plaintiff’s consent was found to infringe the plaintiff’s trademark.\textsuperscript{59}

15 USC §1114(1) (a) and (b) give a trademark owner the right to prohibit third parties from using a sign in commerce that is a ‘reproduction, counterfeit, copy, or colourable imitation of’ the owner’s trademark if such use ‘is likely to cause confusion, or to cause mistake, or to deceive’.\textsuperscript{60} 15 USC § 1125(a) (1) and (b) state that the owner of an unregistered trademark can prevent another person using its trademark without its authorisation if such use is likely to cause confusion.\textsuperscript{61}

\textsuperscript{56} New TMD, art 10.2 (a) ((TMD, art 5.1).
\textsuperscript{57} Major Bros v Franklin & Son [1908] 1 KBKB 712 (UKHC); Primark v Lollypop Clothing [2001] ETMR 30 (UKHC).
\textsuperscript{58} Major Bros (n 57).
\textsuperscript{59} Primark (n 57).
\textsuperscript{60} 15 USC § 1114(1) (a) and (b).
\textsuperscript{61} 15 USC § 1125(a) (1) and (b).
Hence, a trademark owner is the only person that can authorise others to use its mark to market its products. The owner can thus exercise his capabilities to control the actual quality of marked goods before they are first marketed either by the owner himself or with his consent.

When marked products move downstream after the initial marketing, the owner generally cannot prohibit third party use of his mark as market identity. The US applies international exhaustion regarding the trademark right while the EU applies only union-wide exhaustion. Therefore, if marked products are put into any member state of the EU under the trademark owner’s authorisation, the owner loses control over the further distribution of marked products and the use of the trademark. The trademark right is exhausted when a US trademark owner puts marked products anywhere in this world. However, third parties may use trademarks in ways that may affect or even impair the actual quality or the quality perceived by final customers. A trademark ensures that the owner can still exercise his control over the quality of branded goods if the further marketing of third parties affects the actual quality or the quality perceived by final customers.

Article 15(2) of the New TMD states that the exhaustion doctrine does not prevent trademark owners from opposing further commercialisation of marked goods, ‘especially where the condition of the goods is changed or impaired after they have been put on the market’. The CJEU has ruled that a trademark owner has the right to prohibit another person’s use of its trademark after first marketing if such use causes

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62 For the US case, *Tiffany (NJ) v eBay* 600 F 3d 93, 103 (2d Cir 2010) (The court cited the decision in *Polymer Technology Corp v Mimran* in which the court held that ‘a distributor who resells trademarked goods without change is not liable for trademark infringement’). See also, *Polymer Technology Corp v Mimran* 975 F 2d 58, 61-62 (2d Cir 1992). For exhaustion of trademark rights in the EU, see, the New TMD art 15.1 (TMD, art 7.1).


64 New TMD 15.2 (TMD, art 7.2).
unauthorised interference with the marked goods.65 Normally, such acts include but are not limited to repackaging and relabelling.66 In the EU, third parties can use trademarks after first marketing without the consent of a mark owner if their acts satisfy five conditions.67 One of these conditions requires that a third party’s adaptation of marked goods must not affect the original condition of the goods, which includes the quality of the goods.68

Although the US applies an international exhaustion policy, a US trademark owner can prohibit other persons from further commercialisation/importing of marked goods if such goods are ‘materially different’ from the goods marketed on the market in the US.69 The absence of a domestic language translation of instructions;70 differences in service for US products and imported products;71 different functional characteristics;72 and interference in original mark owners’ quality control procedures73 may all amount to imposing material differences.

66 Ibid.
68 Ibid.
69 Gamut Trading (n 63), 778 (The court held that the prevailing rule in the United States before the Supreme Court’s decision in Bourjois & Co v Katzel 260 US 689 (1923) was that ‘the authorised sale of a validly trademarked product, anywhere in the world, exhausted the trademark’s exclusionary right’. In Bourjois, the foreign-origin goods were produced by an unrelated entity and imported by a third person. Although the US trademark owner bought material from the foreign entity that produced the imported goods, the court held that the US trademark owner had no quality control over imported goods and it thus can bar importation of these goods.).
70 Original Application Artworks v Granada Electronics 816 F 2d 68, 73 (2d Cir 1987) (Cabbage Patch Kids dolls that initially were sold to Spain were imported and sold in the US without providing English instructions and adoption papers, which were provided in the dolls that were authorised by the trademark owner to sell in the US. The court held that the foreign dolls were materially different from the dolls authorised for sale in the US.).
71 Lever Brothers v United States 981 F 2d 1330 (DC Cir 1993) (The customer services of ‘sunlight’ dishwashing liquid sold in the Britain and the same marked goods authorised for sale in the US were different. The court held that differences in customer service amounted to material difference.).
72 Gamut Trading (n 63), 780 (The imported tractors had different functional specs than the US version. The courts confirmed the findings by ITC in terms of differences in functional traits and differences in labelling, service and parts held that these differences are material.).
73 Zino Davidoff v CVS 571 F 3d 238, 245 (2d Cir 2009) (The CVS removed the unique production code (UPC) from Davidoff fragrances that was used by Davidoff to protect genuine products against counterfeiting,
In the context of the console game industry, console firms and game companies can use their trademarks to protect the actual quality of consoles and games from being changed before reaching final customers. However, building and maintaining the actual quality of products is only a first step to increasing brand equity. Third parties may use signs that are either identical or similar to brands in ways that affect perception of customers towards the brand and branded products. For instance, in the case of the parallel importing of a console, a third party may input a voltage transformer that is not produced by the console firm. If the transformer is of low quality and there is no notice indicating the origin of this transformer, the perceived quality of the console firm’s goods may be changed among customers. Alternatively, a third party may use a similar or identical sign in connection with products that are not produced by console firms or game companies. Under such circumstances, customers may also relate both positive and negative information about the former to the brands of console firms or game companies if they do not know the truth. In all these cases, confusion as to source is caused by third party unauthorised use of signs, either similar or identical to brands held by console firms and game companies. In Nitro v Acushnet, the US Federal Circuit cited McCarthy’s explanation of the relationship between the function of a trademark to indicate trade origin and the function it has to provide quality assurance:

‘However, the quality function [of a trademark] does not replace the source function: it stands alongside it. In fact, one could accurately state that the quality theory is merely a facet of the older source theory. That is, the source theory has been broadened to include not only manufacturing source but also the source of standards of quality of goods bearing the mark: ‘[A] mark primarily functions to indicate a single quality control source of the goods or services.’ Under both the
source and quality rationales, unity of source of manufacture or control appears essential’.74

Hence, confusion about the source of goods caused by a third party’s use of a sign that is identical or similar to a brand owned by a console firm or a game company may affect the perceived quality associated with the console firm’s brand among customers. As highlighted before, perceived quality is of significant importance due to its capability to provide assurance against risks. If the perceived quality is negatively affected, investment made by a console firm or a game company in building and maintaining the actual quality of branded goods will be wasted. A trademark enables the brand owner to protect perceived quality from being negatively affected by a third party’s use of identical or similar signs.

4.3 Trademark Legal Protection, Perceived Quality and Reputation (association)

Building

As analysed above, Article 10.2(a) of the New TMD gives a trademark owner the right to prohibit a third party from using a sign identical to the trademark in connection with goods that are identical to goods for which the trademark is registered. Article 10.2(b) of the new EU TM Directive expands a trademark owner’s right further so that it can prohibit unauthorised third parties from using a sign if its use causes a likelihood of confusion or if it is similar or identical to its trademark in relation to products that are similar to the product for which the trademark is registered as far as the sign is used in the course of trade.75 To establish liability on either ground, one of the conditions is that the essential function of a trademark which indicates trade origin is affected. In other words, customers must be confused about the origin of the third party’s goods. Such confusion includes direct confusion where the average consumer may assume that a defendant’s products share the same trade origin as the trademark owner’s products.76

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74 Nitro Leisure Product v Acushnet 341 F 3d 1356, 1367 (Fed Cir 2003); J Thomas McCarty, McCarty on Trademarks and Unfair Competition (4th edn, Clark Boardman Callaghan 2002).
75 New TMD, art 10.2 (b) (TMD, art 5.1 (b)).
76 Wagamama v City Centre Restaurants [1996] ETMR 23 (UKHC) (The court divided likelihood of confusion into non-origin association and confusion as to the source or origin.); Lloyds TSB Bank
It also includes indirect confusion such as the likelihood of association or so-called economic link.  

Likewise, according to 15 USC § 1127, ‘colorable imitation’ in 15 USC § 1114(1)(a) is defined as ‘any mark which so resembles a registered mark as to be likely to cause confusion or mistake or to deceive purchasers’.  

Hence, a US trademark owner can prevent third parties from using either similar or identical marks without consent in connection with goods or services that are identical or similar to the owner’s goods or services. In *Fleischmann*, the Ninth Circuit held that using a sign that is identical to the trademark ‘Black & White’ on different but related products were likely to cause confusion as to the source of origin. In *Rescuecom v Google*, the Second Circuit held that the gist of a Lanham Act [contained in 15 USC] violation was an unauthorised use which ‘is likely to cause confusion, or to cause mistake, or to deceive as to the affiliation, ... or as to the origin, sponsorship, or approval of ... goods [or] services’. This means that violation of 15 USC also includes acts that cause both direct confusion and indirect confusion.

The above-mentioned view by McCarthy on the relationship between the ‘quality guarantee’ function and the essential function of trademarks suggests that customers may relate brands/trademarks to their owners. This is because branded goods are actually the result of a particular undertaking’s application of its organisational capabilities and resources such as processes, skills and knowledge. Aaker divided brand associations into brand as product and brand as organisation, asserting that customers sometimes like to associate a brand with both the attributes of marked products and services.

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*Trademark Application* [2005] ETMR 84 (The UK trademark officer refused application and held that there was a likelihood of confusion between TSB’s mark and a previous registered trademark.).

*Case C-206/01 Arsenal FC v Matthew Reed* [2003] ETMR 19, at [56] (The CJEU held that use of sign ‘Arsenal’ created an impression that there is a material link between the defendant’s goods and the trademark owner.); *Case C-533/06 O2 v Hutchison 3G* [2008] ETMR 55, at [63] (In this case, the CJEU held that use of bubble in comparative advertising by H3G did not give rise to a likelihood of confusion as to H3G was economically linked to O2.).

15 USC § 1127.

*Fleischmann Distilling v Maier Brewing* 314 F 2d 149, 159 (9th Cir 1963).

*Rescuecom v Google* 562 F3d 123, 130 (2d Cir 2009).
the attributes of the organisation that owns that brand.\textsuperscript{81} He explained that attributes of an organisation are more consistent than product attributes since they ‘are more enduring and more resistant to competitive claims’.\textsuperscript{82} Therefore, assurances provided by a trademark may be derived from customers’ trust about capabilities or consistency of capabilities of the organisation – the brand owner. Hence, a customer that lacks information may make a decision based on the assurance provided by a brand because the customer trusts the organisation’s capabilities. Under such circumstances, a customer may buy a third party’s goods if the third party uses a sign in ways that cause a customer to assume that the third party has an economic link to the owners of a famous brand. The perceived quality of the brand owner may be impaired since it has no control over the actual quality of the third party’s products.

A trademark enables the brand owner to reduce such risks by prohibiting third parties from using a sign to cause both direct confusion and indirect confusion. In Virgin,\textsuperscript{83} the Second Circuit held that a defendant’s use of the mark ‘virgin wireless’ on wireless communication products ‘was likely to cause substantial consumer confusion’ even though at that time Virgin had not entered the field of wireless communication in the US.\textsuperscript{84} This was because Virgin has a brand family and the essential part of each brand is ‘virgin’, which is a registered trademark. As asserted by this court, if the defendant’s products were of poor quality, the assurance of the virgin mark might be harmed.\textsuperscript{85} A trademark thus protects the perceived quality of a brand by enabling the owner to prohibit a third party from using signs in connection with goods the quality of which are not under the owner’s control.

Trademark protection against confusion can also be indicated from cases involving further marketing of marked goods. One of the above-mentioned five conditions that restrain a third party’s right to further marketing in the EU is that the third party must

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\textsuperscript{81} Aaker (2010), pp. 82-83. \\
\textsuperscript{82} Ibid. \\
\textsuperscript{83} Virgin Enterprises v Nawab 335 F 3d 141 (2d Cir 2003). \\
\textsuperscript{84} Ibid, 152. \\
\textsuperscript{85} Ibid (‘The issue of the quality of the secondary user’s product goes more to the harm that confusion can cause the plaintiff’s mark and reputation than to the likelihood of confusion’.).
\end{flushright}
state the name of the person that made the adaptations to the marked goods and the original source of these goods.\textsuperscript{86} In this way, if adaptations or ways in which adaptations are made are not consistent with the perceived quality intended by the original brand owner or affect the actual quality of goods, customers will attribute these negative effects to the person that made the adaptations. By failing to comply with this requirement, the trademark owner can prohibit the further marketing of marked products. In \textit{Sony v Tesco}, Tesco sold PS2 consoles that had been imported from France into the UK. It added an extra power plug and radio frequency modulator unit (RFMUs) which were not made by Sony into the original packaging of PS2.\textsuperscript{87} Tesco failed to affix a notice or disclaimer to the RFMUs to indicate that they were not made or been approved by Sony. The UKHC thus granted Sony an interim injunction to prevent Tesco selling imported consoles. Although the US has adopted international exhaustion, affixing a notice or disclaimer to deny any association between the person that further commercialised a marked product and the original owner of the trademark which is one necessary condition to avoid liability for infringing trademarks.\textsuperscript{88}

Therefore, trademarks help console firms and game companies maintain the perceived quality of their products by shielding negative influences caused by third party’s use of a sign in connection with goods the quality of which are not under the control of the former.

The exclusivity in controlling actual quality and maintaining perceived quality of marked goods enables a trademark owner to possess exclusive control over the track record of marked goods.\textsuperscript{89} A brand may acquire its reputation through maintaining a consistently good track record, which is one type of brand association in the minds of customers.

\textsuperscript{86} \textit{Bristol-Myers Squibb} (n 65), at [79].
\textsuperscript{87} \textit{Sony Computer Entertainment v Tesco} [2000] ETMR 102.
\textsuperscript{88} \textit{Nitro Leisure} (n 74) (Defendant sold refurbished golf ball originated from plaintiff. It used disclaimer to deny any association between itself and the plaintiff); \textit{Toyota Motor Sales v Tabari} 610 F3d 1171 (9\textsuperscript{th} Cir 2010) (Tabari, the defendant, was an automobile brokers selling Lexus car. Its domain name contained ‘lexus’. However, Tabari used other words in the domain name and disclaimer to deny any association with TOYATA.).
Reputation increases the capabilities of a trademark to provide assurance.\textsuperscript{90} Trademark law also gives brand owners additional protection if trademarks acquire a reputation.

4.4 Trademark Legal Protection and Maintaining Reputation

Article 10.2(c) of the New TMD confers on a trademark owner the right to prohibit others from using similar or identical marks in relation to goods or services even if they are different from the goods or services for which the trademark is registered\textsuperscript{91} as long as the trademark acquires a reputation and such use causes one of the following effects on the trademark: (1) creating an unfair advantage; (2) being detrimental to distinctive character (‘dilution by blurring’);\textsuperscript{92} and (3) being detrimental to the repute of the trademark (dilution by tarnishing).\textsuperscript{93}

Similar protection can be found in 15 USC §1125.\textsuperscript{94} §1125(c) gives the owner of a ‘famous’ trademark the right to prohibit third party use of a similar or identical mark if such use is likely to impair the distinctiveness of or harms the reputation of the owner’s trademark, ‘regardless of the presence or absence of actual or likely confusion’.\textsuperscript{95} These two forms of dilution are called ‘dilution by blurring’ and ‘dilution by tarnishing’ respectively.\textsuperscript{96}

As will be shown later, although it is difficult to establish trademark infringement on the grounds of dilution by blurring and free-riding, a brand which has acquired reputation or fame may be protected by trademark law from any detriment to its reputation that is associated with the trademark that the brand contains. Such legal protection may in turn encourage trademark owners to invest in building and maintaining reputation, and thus improve the capabilities of brands to provide assurance.

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\textsuperscript{90} Ibid.
\textsuperscript{91} New TMD, art 10.2 (c) (TMD, art 5.3); Case C-292/00 Davidoff & Cie v Gofkid [2003] ETMR 42, at [20]-[21]; Case C-408/01 Adidas-Salomon v Fitnessworld [2004] ETMR 10, at [15].
\textsuperscript{92} Case C-252/07 Intel v CPM [2009] ETMR 13, at [29].
\textsuperscript{93} Case C-487/07 L’Oreal v Bellure [2010] Bus LR 303 (L’Oreal v Bellure II), at [40].
\textsuperscript{94} 15 USC §1125 (c); Ty Inc v Perryman 306 F 3d 509, 511 (7th Cir 2002).
\textsuperscript{95} 15 USC §1125 (c) (1).
\textsuperscript{96} Ibid.
4.5 Trademark, Brand Equity and Competitive Advantage and Leverage

The analysis above shows that trademark law contributes to increasing the capabilities of a brand to provide necessary information and assurance by (1) confirming and reinforcing the role of a brand as a reference point and market identity; (2) conferring on the owner exclusive control over actual overall quality of the marked goods or services; (3) conferring on a brand owner rights to prevent third parties’ unauthorised interferences that may affect the perceived quality of marked goods or services; and (4) conferring on the owner exclusive rights that allow it to control the acquisition of reputation and that done, allow it to protect the acquired reputation. A brand owner that uses a trademark as a core part of a brand thus benefits from trademark legal protection by obtaining exclusivity to exploit the value of a brand, ranging from developing perceived quality, and acquiring and maintaining positive associations such as reputation to ultimately enhance customer loyalty. In these ways, trademark protects the investment a brand owner has made in building a strong brand.

Thousands of game companies are competing for customers on the software market. To capture sufficient returns, a game company must both differentiate its game from others and let customers know the differences. There are various ways to achieve this goal. A game company or a console firm can adopt different marketing strategies such as advertising campaigns, promotional activities and event marketing. All information that the game company has communicated to customers in these ways will be associated by customers with the brand. Customers rely on game titles to associate all information they know about a game and differentiate one game from another. They can then compare the game with other games using the information associated with these games. Although relying on large multinational publishers may increase the recognition and customer awareness of the games, it is the game titles or the fame of the developers of the games that have a determinative influence on customers’ decision-making. As mentioned above, a trial video or a promotional activity may communicate incorrect information about a game to customers so they still need assurance to lower the risk of making a wrong selection. It was also stated earlier that a
A brand that acquires high perceived quality and reputation can provide such assurance to customers. Likewise, brands provide necessary information and assurance to customers when they select console hardware which is too complex for them to verify every aspect of. A strong brand thus increases the likelihood of the owner, either a console firm or a game company, possessing a large installed base and thus capturing more returns on investment.

A strong brand is a valuable asset for its owner. A console firm or a game company which possesses a brand with strong customer awareness, high perceived quality and other positive associations is more likely to transform its innovations into profits. Such a firm is also less vulnerable to competition especially when competitors bring out more powerful consoles or games which offer a better gaming experience. This provides a period during which the owner can make a response to the environmental change. Trademarks not only confirm and reinforce the uniqueness of brands but also protect investment the owner made in building brand-equity assets that may make a brand not only rare but also valuable and costly-to-imitate and a clear source of competitive advantage. Even more so, a strong brand for a console firm may increase the likelihood of it securing more second-party games. This is because a console firm with a strong brand is in general more likely to possess a large installed base when other conditions are equal, and thus generate more predictable profits. As pointed out in section I, compared with third-party games, a console firm is more likely to gain a competitive advantage from second-party games. Hence, a trademark may help a console firm gain advantages in competition in such indirect ways.

Brand equity represents the owner’s marketing power among customers. By increasing the value of brand-equity assets, a trademark can be used by the owner to improve its marketing power which in turn can increase its leverage with parties in the streams. By only using its own trademarks on consoles, a console firm shields itself against the influence of the hardware supplier on customers. This increases its leverage with hardware suppliers which already possess much stronger bargaining power than console firms. In this way, console firms may be able to reduce hardware costs or obtain better
services from suppliers. A game company can register game titles and names of studios as trademarks and invest in them to increase leverage with console firms, which in turn may result in reducing royalties it pays to console firms or obtaining better technical support. The benefits of possessing strong leverage cannot be explained in detail here. Nevertheless, the returns that a console firm or game company can capture may increase as a result of possessing a strong leverage with other parties if other factors remain equal.

The original question not only asked how IPRs affect the ability of a console firm or game company to capture returns on investment but also required us to answer this question in a context where competition exists. Therefore, it is also necessary to analyse whether or not trademarks confer excessive market power automatically on the owners and whether this can be used to impair competition. It is important to distinguish between the concepts of ‘market power’ and ‘marketing power’. The term ‘marketing power’ refers to the capabilities of a trademark owner to attract customers to marked products. It reflects customer recognition, awareness, associations of and even loyalty to certain trademarks or brands. Marketing power then can contribute to a firm’s market power though it may not. The term ‘market power’ is used in the legal and economic analysis of competition to refer to the anti-competitive power of a firm operating in a market. So for instance, in *United Brands v Commission*, the CJEU referred to this kind of power as ‘a position of economic strength enjoyed by an undertaking which enables it to prevent effective competition being maintained on the relevant market’. The next section will analyse whether a trademark can be used by console firms or game companies to impair competition on the software market as it is the main market from which both console firms and game companies capture profits.

Competition in the console hardware market will not be analysed given the fact that there are only three mainstream console firms, each of them using distinctive and totally different trademarks and brands.

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97 Case C-27/76 *United Brands v Commission* [1978] 1 CMLR 429, at [65]. See also, Griffiths (2011), p. 106 (The author cited different resources to distinguish the term ‘market power’ from the term ‘marketing power’.)
5. Trademarks and Competition in Console Software Industry

Competition is fierce in the console software market due to the great number of game companies. The analysis above shows that trademarks can be used by both console firms and game companies to generate competitive advantages by protecting their investment in building perceived quality and reputation. As developers of first-party games, console firms also compete with game companies. As has been shown above, a trademark confers on the owner the right to prohibit third party use of a sign identical to the trademark in connection with similar or identical goods for which the trademark is registered. If such a right is unlimited, trademarks owned by a console firm may automatically confer on it the power to control game companies. In other words, if a console firm can force every game company to apply for a license from it by exercising its trademark rights, console firms’ bargaining power with game companies will increase as a result. Accordingly, as has already been indicated in Chapter III, game companies may not capture sufficient returns on investment which decrease their incentive to innovate. A more detailed analysis is given in the following paragraphs through the use of case law to find out whether or not trademarks can be used by console firms to affect competition in the console software market.

The preceding analysis has shown that a trademark owner can prohibit other parties from using identical or similar marks in relation to goods on two grounds – confusion based and non-confusion based liability. In order to establish confusion-based infringement, two fundamental conditions must be satisfied – ‘use in commerce (US)/in the course of trade (EU)’ and ‘a likelihood of confusion’. To establish non-confusion based infringement, a trademark must have reputation (EU) or fame (US) in addition to meeting the requirement of ‘use in commerce/in the course of trade’.

5.1 Use in the Course of Trade (actionable use)

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98 New TMD, art 10.2 (a) and (b) (TMD, art 5.1 (a) and (b)); 15 USC § 1114.
99 New TMD, art 10.2 (c) (TMD, art 5.2); 15 USC § 1125 (c).
Article 10.3 of the New TMD lists the scenarios in which using a mark amounts to using it in the course of trade. They are:

‘(a) affixing the sign to the goods or to the packaging thereof;
(b) offering the goods or putting them on the market, or stocking them for those purposes, under the sign, or offering or supplying services thereunder;
(c) importing or exporting the goods under the sign;
(d) using the sign as a trade or company name or part of a trade or company name;
(e) using the sign on business papers and in advertising;
(f) using the sign in comparative advertising in a manner that is contrary to Directive 2006/114/EC’. 100

This is a non-exhaustive list. 101 The CJEU in Arsenal FC ruled that a defendant’s use of its sign is ‘in the course of trade’ where ‘it takes place in the context of commercial activity with a view to economic advantage and not as a private matter’. 102 In Google France, the CJEU added that the defendant’s use of a sign should be ‘in its own commercial communication’. 103 It is the CJEU’s view that selling or offering for sale ‘AdWords’ by ISPs such as Google does not amount to ‘use in the course of trade’. 104 Nevertheless, buyers’ use of these Adwords may satisfy the requirement of ‘use in the course of trade’. 105 For instance, the CJEU held that a buyer’s selection and use of the keyword

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100 New TMD, art 10.3 (TMD, art 5.3).
101 Arsenal FC (n 77), at [38]; Case C-228/03 Gillette Co v LA-Laboratories Ltd [2005] ECRI-2337, at [28]; Case C-48/05 Adam Opel v Autec AG [2007] ETMR 33, at [16]; Google France (n 159) in Chapter III, at [65].
102 Arsenal FC (n 77), at [40]; Adam Opel (n 101), at [18]; Case C-17/06 Celine Sarl v Celine SA [2007] ETMR 80, at [17].
103 See Google France (n 159) in Chapter III, at [56].
105 Interflora I (n 104).
‘interflora’ in the context of an internet reference service to trigger its advertisement and in relation to its goods and services was using marks ‘in the course of trade’.

15 USC § 1127 defines ‘use in commerce’ as:

‘[being] placed in any manner on the goods or their containers or the displays associated there with or on the tags or label affixed thereto, or if the nature of the goods makes such placement impracticable, then on documents associated with the goods or their sale; and (B) the goods are sold or transported in commerce, and (2) on services when it is used or displayed in the sale of advertising of services and the services are rendered in commerce, or the services are rendered in more than one State or in the United States and a foreign country and the person rendering the services is engaged in commerce in connection with the services’.

The US courts interpreted this definition in a slightly different way, which can be indicated from cases that involved the use of AdWords by ISPs. In Rescuecom v Google, the Second Circuit ruled that Google used signs in commerce as it displayed and recommended Rescuecom’s mark when it sold its advertising service to buyers.

However, despite the difference in relation to AdWords, US courts’ interpretation of ‘use in commerce’ is not much different from the CJEU’s interpretation of ‘use in the course of trade’.

Game companies normally affix the trademarks of console firms to the packaging of games or use them on websites where games are sold. Licensed game companies may not worry about infringing the trademarks of console firms. Unlicensed game companies nonetheless may be liable for infringing the trademarks of console firms since they use these without the latter’s consent. It is arguable that using the trademarks of console firms on unlicensed games is an actionable use, especially when such use is for the

106 Ibid, at [30]-[31].
107 15 USC § 1127.
108 Rescuecom (n 80).
purpose of indicating the compatibility between games and consoles. This purpose is also relevant to the defense of trademark infringement which will be examined later.

5.2 Likelihood of Confusion

The CJEU has ruled that it is the role of national courts to decide whether or not there is a likelihood of confusion. Therefore, the assessment adopted by the UK courts will be used to complement CJEU decisions to illustrate how courts in EU countries assess the likelihood of confusion.

Despite a few differences between the approaches adopted by the US and UK courts, they all consider the following factors when they conduct the assessment: (1) the strength or distinctiveness of a plaintiff’s trademark; (2) the degree of similarity between the plaintiff’s trademark and defendant’s sign; (3) the degree of similarity between the respective goods or services; (4) the level of recognition that the plaintiff’s trademark has among average consumers; and (5) the attentiveness of average consumers.109 In addition, the US courts will also consider the quality of a defendant’s goods;110 the likelihood that the prior owner bridges the gap;111 evidence of actual confusion factor;112 defendant’s intent;113 and similarity between the plaintiff and defendant in terms of the distribution channel and advertising media.114

For the EU case, see, e.g., Case C-251/95 Sabel v Puma [1998] ETMR 1, at [22] (‘The likelihood of confusion must therefore be appreciated globally, taking into account all factors relevant to the circumstances of the case’); Case C-39/97 Canon v MGM [1999] ETMR 1; Case C-342/97 Lloyd Schuhfabrik Meyer v Klijzen Handel [2000] FSR 77. For the US case, see below n 111 (There is no national multi-factor test for trademark infringement in the US.). See also, Barton Beeb, ‘An Empirical Study of the Multifactor Tests for Trademark Infringement’ (2006) 94 California Law Review 1581-1654.


110 See e.g., Polaroid v Polarad Electronics (n 110); Playtex Products v Georgia-Pacific (n110); AutoZone v Tandy 373 F3d 786 (6th Cir 2004) (6th circuit’s Frisch factor analysis); AMF v Sleekcraft 599 F 2d 341 (9th Cir 1979) (The 9th Circuit’s sleekcraft-Factors-Analysis); Partido Revolucionario Dominicano (PRD) Seccional Metropolitana de Washington-DC, Maryland y Virginia v Partido Revolucionario Dominicano Seccional Metropolitana de Maryland y Virginia 321 F Supp 2d 1 (DC Cir 2004) (Washington-DC Circuit’s Factors Analysis).

111 Ibid (All circuits of the US Federal Court of Appeal considers actual confusion when they assess likelihood of confusion caused by defendant’s use of marks.).

112 Ibid.

113 Interpace v Lapp 721 F 2d 460 (3d Cir 1983); KOS Pharmaceuticals v Andrx 369 F 3d 700 (3d Cir 2004) (the 3rd circuit’s Lapp-Factors-Analysis).
Automation v Advanced System Concepts, the Ninth Circuit noted that these factors are ‘intended as an adaptable proxy for consumer confusion, not a rote checklist’.\textsuperscript{115} It further held that, ‘we [Ninth Circuit] adhere to two long-standing principles: the ... factors ... are non-exhaustive ... and ... should be applied flexibly’.\textsuperscript{116} The Fourth Circuit also held the same view noting that ‘[t]his judicially created list of factors is not intended to be exhaustive or mandatory’.\textsuperscript{117}

In the EU, the parallel view can be found in Sabel v Puma in which the CJEU stated that ‘the likelihood of confusion must therefore be appreciated globally, taking into account all factors relevant to the circumstances of the case’.\textsuperscript{118} It is therefore possible that the CJEU and other national courts in the EU may consider all the abovementioned factors if they think they are relevant to decide the likelihood of confusion in a case. Accordingly, this part will consider the following factors:

a. The strength and distinctiveness of a console firm’s trademark;
b. The degree of similarities between the plaintiff’s trademark and defendant’s sign;
c. The proximity of the goods;
d. Marketing channels used;
e. The likelihood of [console firms’] expansion of the product lines;
f. The degree of care and sophistication of buyers;
g. The intent of the game company.

Arguably, the use of the marks of console firms on the packaging of unlicensed games or websites may cause there to be a likelihood of confusion if the trademark is used by the game companies inappropriately. A strong and very distinctive trademark in general is

\textsuperscript{115} Network Automation v Advanced System Concepts 638 F 3d 1137, 1145 (9th Cir 2011).
\textsuperscript{116} Ibid, 1149.
\textsuperscript{117} Rosetta Stone v Google 678 F 3d 114 (4th Cir 2012).
\textsuperscript{118} Sabel (n 109), at [22]; Case C-425/98 Marca Mode v Adidas AG [2000] ETMR 723, at [40].
entitled to a wider scope of protection. Trademarks used by console firms are definitely strong, at least among game players.

As to the similarity between defendant’s sign and the claimant’s trademark, this is assessed on a case-by-case basis. The court will assess visual, aural and conceptual similarities between the sign and the trademark. The higher the degree of similarity, the more likely that a likelihood of confusion will be found. For instance, in Zynga I, the UKHC held that defendant’s use of ‘scramble’ on its video game ‘prima facie’ infringed plaintiff’s trademark ‘scramble’, which was registered by the claimant under the same category of goods. The UKCA in Zynga II upheld this view adding that the defendant’s use of ‘scramble with friend’ on the same video game would also inevitably cause confusion.

With regard to the proximity of the goods, both the US courts and the CJEU agreed that ‘less similarity will be required to [establish the likelihood of confusion] when goods are complementary’. Therefore, the fact that console games and consoles are complementary increases the possibility of establishing likelihood of confusion.

Regarding the nature of marked goods, the intended purpose and function both of consoles and games are overlapping. They have to be used together to achieve the common goal – that of playing games. Therefore, the factor ‘proximity of the goods’ weighs in favour of console firms.

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119 For the EU cases, Marca Mode (n 118), at [38]. Reed Executive v Reed [2004] ETMR 56, at [78] (Lord Jacob summarised the CJEU’s decisions on likelihood of confusion and commented that ‘there is greater likelihood of confusion with very distinctive marks (sabel, Lloyd)...I have difficulty understanding how it can affect the similarity of goods, but that is the law.’). Maier v ASOS [2015] ETMR 26, at [75] (Kitchin LJ). For the US cases, AMF v Sleekcraft (n 111), 349 (‘A strong mark is inherently distinctive, for example, an arbitrary or fanciful mark; it will be afforded the widest ambit of protection from infringing uses.’).

120 Sabel (n 109), at [23]. For the interpretation by the English Court, see, JW Spear & Sons v Zynga [2015] EWCA Civ 290 (CA) (Zynga II), at [33].

121 JW Spear & Sons [2013] EWHC 3348 (Ch) (UKHC) (Zynga I), at [148] (Although this decision was later partially reversed by the UKCA in Zynga II, the UKCA did uphold HC’s view on this point.). See also, Zynga II (n 120), at [152].

122 Zynga II (n 120), at [152].

123 For the US case, see e.g., AMF v Sleekcraft (n 111), 350 (9th Cir. 1979); Death Tobacco v Black Death USA 31 USPQ 2d 1899, 1903 (CD Cal 1993). Similar view can be found in the CJEU’s judgment in Canon v MGM (n 109).
With regard to market channel, consoles and disc-based games are normally sold together in the same section of a store. Such convergent marketing channels may increase the likelihood of confusion. The fact that console firms such as Nintendo and Sega have already expanded their businesses to video games, and console firms such as Microsoft have expanded their business to console production, will also lead courts to weigh the fourth factor in favour of console firms. However, digital distribution may provide opportunities for a game company to distribute unlicensed games separately from consoles or from first-party games. If unlicensed games can be distributed in this way, then the likelihood of confusion can be reduced.

The degree of care paid by average consumers might be a tricky factor. According to the survey, although it is possible that the majority of players of console games are youths who have plenty of time, it is the parents that purchase games because the former group lacks an independent income. This can also be inferred from the survey which shows that about 90% of children have to obtain their parents’ permission to buy games. Compared with youths, parents are less familiar with games. The likelihood of confusion may be more likely to arise when parents buy games for their children. Therefore, average consumers must include adults who may not be as familiar with games as youths. Furthermore, parents may be concerned about the impacts of games on their children’s mental health instead of game experience which is something that concerns players the most. It is also realistic that they have heard of trademarks such as Nintendo, Sony and Microsoft but do not know specific game titles. Using a console firm’s trademark in connection with an unlicensed game by a game company may cause confusion as to the source of games among customers. Such use may leave them with the impression that there is an economic link of some kind between the game company and the console firm.

124 AMF v Sleekcraft (n 111), 353 (9th Cir. 1979); KOS Pharmaceuticals (n 114), 722; Network Automation (n 115), 1151.
A game company’s use of the console firm’s trademark in connection with its unlicensed game may be for the purpose of informing customers that their game can be played on that console platform. It is necessary for the game company to give such information to customers because a customer will not buy a game that cannot be run on his/her console. Unless there is evidence that can prove the game company chose a mark with the intention of causing confusion, the court will rule this factor in the game company’s favour.

Therefore, among the six factors analysed above, three of them weigh in the console firm’s favour. The other three can be argued either in favour of the game company or of console firms. However, even if there is a likelihood of confusion, the court will also consider other factors before coming to their final decision. In addition to bringing confusion-based claims, a trademark owner may sue a defendant for trademark infringement on the ground of dilution if the trademark possesses fame or reputation as there is also no doubt that the trademarks of the three major console firms have a reputation or fame in the US and in EU countries.

5.3 Non-confusion Based Liability

a. Dilution by Free-riding

As mentioned earlier, a trademark owner in the EU may sue a third party for free-riding in addition to dilution by blurring and tarnishing, which are arguably the only two forms of dilution under the US Lanham Act. The term ‘free-riding’ is defined by the CJEU as:

‘[an alleged infringer’s] use of a sign similar [or identical] to a mark with a reputation, to ride on the coat-tails of that mark in order to benefit from its power of attraction, its reputation and its prestige, and to exploit, without

127 For the EU criterion on reputation under art 10.2(c) of New TMD, see, Case C-375/97 General Motors v Yplon SA [1999] ETMR 950, at [18] and [26] (Although a trademark may not need to be well known as defined under Paris Convention, it must be known by a significant part of the public in the country where it registered.). For the US criterion, see, Coach Service v Triumph Learning 668 F 3d 1356, 1373 (Fed Cir 2012) (It should be widely recognised by general public. A famous mark is one that has become a ‘household name’.).
128 Ty Inc v Perryman (n 94) (Judge Posner discussed dilution of free-riding and denied it.).
paying any financial compensation and without being required to make efforts of his own in that regard, the marketing effort expended by the proprietor of that mark in order to create and maintain the image of that mark ‘.’

In *Interflora I*, the CJEU gave some guidance on how to establish a defendant’s liability for free-riding. ‘Due cause’ is an important factor in addition to other factors such as ‘without the trademark owner’s consent’, ‘without paying any financial compensation’, and ‘without making own efforts’. In *Adidas v Fitnessworld*, AG Jacob argued that:

‘the concept of taking unfair advantage of distinctive character or repute of the mark ... must encompass instances where there is clear exploiting and free-riding on the coattails of a famous mark or an attempt to trade upon its reputation’.

It is quite difficult to establish the risk of free-riding. There are two steps to establish liability for taking unfair advantage. First, it must be shown that the defendant’s mark causes the relevant public to establish a ‘link’ with the prior mark. This step is also required in establishing liability for tarnishing and blurring in the EU. This requires the court to conduct a global assessment, taking all circumstances into account. Factors that are considered in this test are much like factors which are considered in determining likelihood of confusion. As the CJEU summarised, the following are the factors to be considered:

a. the degree of similarity between the conflicting marks;

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129 *L’Oreal v Bellure II* (n 93), at [49]; *Interflora I* (n 104), at [89].
130 *Interflora I* (n 104).
131 Ibid, at [89].
132 *Adidas-Salomon* (n 91), at [36]-[39]. See also, *Intel v CPM* (n 92), at AG [33] (AG Sharpston in *Intel v CPM* cited AG Jacob’s description on free-riding in *Adidas-Salomon* (n 91).).
133 *Adidas-Salomon* (n 91), at [29].
134 *Intel v CPM* (n 92), at [31].
135 *Adidas-Salomon* (n 91), at [30] (Cited by CJEU in *Intel v CPM*); *Intel v CPM* (n 92), at [5] (‘The existence of such a link must, just like a likelihood of confusion in the context of Article 5(1)(b) of Directive [89/104], be appreciated globally, taking into account all factors relevant to the circumstances of the case’).
b. the nature of the goods or services for which the conflicting marks were registered, including the degree of closeness or dissimilarity between those goods or services, and the relevant section of the public;

c. the strength of the earlier mark's reputation;

d. the degree of the earlier mark's distinctive character, whether inherent or acquired through use;

e. the existence of the likelihood of confusion on the part of the public.\textsuperscript{136}

The CJEU also held that each factor (a-d) does not necessarily imply a link\textsuperscript{137} although a link between two conflicting marks is necessarily established when there is a likelihood of confusion.\textsuperscript{138} However, ‘a link’ is not a sufficient condition to establish the risk of free-riding.\textsuperscript{139} The plaintiff must also prove that a real unfair advantage or a serious likelihood of such an advantage will be taken by a defendant in case of free-riding.

There is no doubt that the trademarks of console firms have an enormous reputation and are highly distinctive both in the console hardware and software market. The products of console firms and game companies overlap. If the game company uses a console firm’s trademark in connection with its unlicensed game, this trademark will create a link in the minds of customers. However, as mentioned above, the intention of the game company in using this trademark may be limited to informing customers that the game is compatible with the consoles of console firms. This definitely decreases the likelihood of a court finding that game companies are liable for taking unfair advantage of the distinctiveness or reputation of the trademarks of console firms.\textsuperscript{140}

\textsuperscript{136} Intel v CPM (n 92), at [42].
\textsuperscript{137} Ibid, at [64].
\textsuperscript{138} Ibid, at [57]. See also, Lloyd Scuhfabrik Meyer (n 109), at [17].
\textsuperscript{139} Intel v CPM (n 92), at [31]-[32], [71].
\textsuperscript{140} L’Oreal v Bellure II (n 93), at [48] (The CJEU held that it was the national court that should take account of the fact that the ways of using a mark or packaging that is identical or similar to the trademark and packaging of marked goods to indicate whether the user had intention to taking unfair advantage of distinctiveness or reputation of the trademark.).
In the US, pure free-riding is permitted if using identical or similar marks that neither tarnish or blur the distinctiveness or reputation of trademarks nor cause consumer confusion. As argued both by judges and academics, not protecting trademarks against pure free-riding acts will not affect the capabilities of trademarks to provide necessary information and assurance.141 On the contrary, permitting a certain degree of free-riding can intensify competition and thus benefit the public.142 A parallel view can be indicated from the Preamble 6 of the EU Comparative Advertising Directive which states that permitting the use of identical signs in comparative advertising can stimulate competition as long as the use satisfies conditions listed in Article 4.143 However, what can be considered an unfair advantage is nonetheless an issue of degree. Although the UKCA ruled in favour of L’Oreal after the CJEU made the preliminary rulings regarding comparative advertising and taking unfair advantage, the court’s rationale may not apply to cases that involve unlicensed games. The UKCA stated the CJEU’s rulings as follows:

‘... an advertiser who states explicitly or implicitly in comparative advertising that the product marketed by him is an imitation of a product bearing a well-known trademark presents ‘goods or service as imitations or replicas’ within the meaning of [Article 4 (g)]. The advantage gained by the advertiser as a result of such unlawful comparative advertising must be considered to be an advantage taken unfairly of reputation of that mark within the meaning of [Article 4(f)]’.144

The court obviously listed preventing imitations or replicas as an important reason for its decision.

b. Dilution by Blurring

142 Ibid.
144 L’Oreal v Bellure II (n 93), at [80]; L’Oreal v Bellure [2010] ETMR 47, at [35] (CA) (L’Oreal v Bellure III).
To establish dilution by blurring in the EU, the CJEU requires a plaintiff to provide evidence of a change in the economic behaviour of average consumers of the goods for which a plaintiff’s trademark was registered.\(^{145}\) In 32Red, the UKHC held that the defendant’s use of ‘32Vegas’ in connection with its online casino service caused average consumers to switch from the plaintiff’s 32Red online casino to the defendant’s 32Vegas.\(^{146}\) Some scholars have asserted that this requirement was quite difficult to satisfy as it requires economic proof of a change of customers’ preferences.\(^{147}\) The same view can be inferred from the CJEU’s ruling in *Environmental Manufacturing v OHIM*, in which it stated that the

> “change in the economic behaviour of the average consumers’ lay down an objective condition … [which] cannot be deduced solely from subjective elements such as consumers’ perceptions … [but allows] the use of logical deductions”.\(^{148}\)

In other words, the CJEU did not expressly reject the possibility of using economic analysis and surveys to measure the change of economic behaviour of customers.

In the US, 15 USC §1125(c)(2)(B) lists six non-exhaustive factors for the court to consider in determining whether there is dilution by blurring. They are as follows:

1. The degree of similarity between the mark or trade name and the famous mark;
2. The degree of inherent or acquired distinctiveness of the famous mark;
3. The extent to which the owner of the famous mark is engaging in substantially exclusive use of the mark;

\(^{145}\) *Intel v CPM* (n 92), at [81].

\(^{146}\) 32Red v WHG [2011] ETMR 21, at [134] (UKHC) (Part of this judgment has been overruled by the UKCA. However, the ruling on this part is not denied by the UKCA.).


(iv) The degree of recognition of the famous mark;

(v) Whether the user of the mark or trade name intended to create an association with the famous mark;

(vi) Any actual association between the mark or trade name and the famous mark.¹⁴⁹

Unlike the CJEU’s approach which divides the analysis into two stages, US courts mix the two stages together. However, like the CJEU’s approach, the US courts also ruled that all relevant factors in a case should be considered.¹⁵⁰ In *Starbucks v Wolfe’s Borough Coffee (Starbucks I)*, the Second Circuit partly vacated the District Court’s decision in which the latter did not consider other factors after finding the defendant’s ‘Charbucks’ substantially different from the plaintiff’s ‘Starbucks’.¹⁵¹ Hence, the factors that are considered by the US courts in determining dilution by blurring are essentially the same as the factors in the CJEU’s global assessment.

As shown before, factors (i), (ii), (iii) and (iv) will be found by the court in favour of the console firms.¹⁵² However, the last two factors may be disputed in the court. These two factors are actually similar to the second stage of the CJEU’s global assessment in finding changes of economic behaviour of customers. With regard to the ‘intent to associate’ factor, the US courts held subjective ‘good faith’ or ‘bad faith’ as not relevant here.¹⁵³ The US courts presume that the game company intended to create an association with console firms as there is no other possible means to inform customers about the compatibility between unlicensed games and consoles other than using the trademarks of console firms. The US courts normally refer to surveys or expert testimonies to measure the factor of ‘actual association’.¹⁵⁴ Like the US courts, the CJEU also allows

¹⁴⁹ 15 USC §1125(c)(2)(B).
¹⁵⁰ *Starbucks v Wolfe’s Borough Coffee* 588 F 3d 97, 107 (2d Cir 2009) (*Starbucks I*).
¹⁵² See above analysis regarding likelihood of confusion.
¹⁵³ *Starbucks I* (n 150), 109.
¹⁵⁴ Ibid; *Starbucks v Wolfe’s Borough Coffee* 101 USPQ 2D (BNA) 1212 (SD NY 2011) (*Starbucks II*); *Starbucks v Wolfe’s Borough Coffee* 736 F 3d 198 (2d Cir 2013) (*Starbucks III*) (Both District Court and the Second
parties to use surveys or expert testimony in determining the average consumers from whose perspective many questions in European trademark law are assessed. For instance, the CJEU in *Gut Springenheide v Oberkreisdirektor* interpreted the concept of ‘average consumer’ by holding that in the absence of any community provision on this point, it is for the national court to rely on surveys to determine that a certain percentage of consumers being misled by a promotion or statement is appropriate to ban its use.\(^{155}\) In the UK, the use of surveys in trademark litigation has to be permitted by the court.\(^{156}\) In *Interflora II*, the UKCA held that the judge should not admit survey evidence unless (1) it is valuable and (2) the likely utility of the evidence justifies the cost involved.\(^{157}\) Accordingly, even though theoretically survey evidence may still be used in the UK even in a case that determines dilution by blurring, it seems that they are less likely to be accepted by courts unless courts are convinced the survey is valuable.\(^{158}\) Even if surveys can be used to support an argument, a survey of itself may not be capable of objectively and comprehensively reflecting either a change of economic behaviour of average consumers or the percentage of customers that associate a defendant’s sign with a famous trademark in the actual world because the criteria to determine the persuasiveness of a consumer survey are subjective and unpredictable.\(^{159}\)

All of these create obstacles for the plaintiff, both in the EU and US, to prove dilution by blurring. In the present case, the fact that almost all console game companies are using

\(^{155}\) Case C-210/96 *Gut Springenheide v Oberkreisdirektor des Kreises Steinfurt* [1999] 1 CMLR 1383, at [36].

\(^{156}\) *Imperial Group v Philip Morris* [1984] RPC 293.

\(^{157}\) *Interflora v Marks & Spencer* [2012] EWCA Civ 1501 (CA) (*Interflora II*), at [149] (Lewison LJ).

\(^{158}\) *Interflora v Marks & Spencer* [2013] EWCA Civ 319 (CA) (*Interflora III*), at [33] (Sir Robin Jacob held that ‘this decision [*Interflora II*] does not mean that the days of survey evidence are over’.).

the trademarks of console firms in connection with their games may also decrease the likelihood of proving dilution by blurring as customers may already know that the primary purpose of using such trademarks is to indicate compatibility information about games.

c. Dilution by Tarnishing

With regard to dilution by tarnishing, this kind of detriment is caused when a third party uses a mark that is identical or similar to a trademark in a way that the trademark’s pulling power is reduced. The CJEU thus requires a plaintiff to provide evidence which shows that a defendant’s mark actually impairs or has a serious risk of damaging the attractive power of its mark, which includes reputation or intangible pulling power like the prestigious image of luxury brands. This kind of detriment may happen when a trademark is associated, used ‘in an unpleasant, obscene or degrading context or, alternatively, in a context which is not inherently unpleasant but which proves to be incompatible with the [trademark’s] image’.

15 USC §1125(c)(2)(C) defines ‘tarnishment’ as association arising from the similarity between a mark or trade name and a famous mark that harms the reputation of the famous mark. Like the description of tarnishment in the EU, classic cases involving dilution by tarnishing in the US normally involve defendants’ use of a trademark in connection with unsavoury goods such as sex-related products.

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160 L’Oreal v Bellure II (n 93), at [40]; Interflora I (n 104), at [73]
161 Ibid, at [40]
163 15 USC §1125 (c)(2)(C).
164 For the US case, see, Victoria Secret Catalogue v Moseley 605 F 3d 382 (6th Cir 2010) (The court held that the defendant’s use of ‘Victor’s Little Secret’ in connection with sex toys tarnished repute of Victoria Secret.); Toys ‘R’ Us v Akkaoui 40 USPQ 2d 1836 (ND Cal 1996) (where the court held that defendant’s use of ‘Adults R Us’ on the internet in connection with adult toys tarnished the plaintiff’s ‘R US’ trademark, which was used by the plaintiff in connection with toys.). For the EU (UK) cases, see CA Sheimer’s TM Application [2000] RPC 484 (The court held that application of ‘visa’ as a trademark in connection with condoms was detrimental to the distinctive characteristics and reputation of ‘VISA’ trademark.); Ever Ready Trade Mark Application [1998] RPC 631 (Objection was raised of the mark Ever Ready for condoms by the owner of the trademark ‘Ever Ready’).
Therefore, unless unlicensed games use the trademarks of console firms in ways that may affect reputation and other association with console firms, console firms cannot prohibit the marketing of unlicensed games on this ground. For instance, a game containing an extremely violent plot or pornographic content may be an actionable cause for console firms to prohibit the game company from marketing the game on this ground. As a result, dilution claims are less likely to be established in such cases. Even if an unauthorised use is actionable, the court will still consider whether such use is permissible as a matter of law.

5.4 Defences

Articles 14 and 15 of the New TMD list several types of defence against trademark infringement claims in the EU. ‘Referential use’ is one of these permissible uses.\(^{165}\) Article 14.1(c) states that a trademark owner is not entitled to prohibit a third party from using in part, in the course of trade:

‘the [trademark] for the purpose of identifying or referring to goods or services as those of the proprietor of that trade mark, in particular, where the use of the trade mark is necessary to indicate the intended purpose of a product or service, in particular as accessories or spare parts... [only if] the use made by the third party is in accordance with honest practices in industrial or commercial matters.’\(^{166}\)

In *BMW v Deenik*, the CJEU held that the trademark owner (BMW) could not prohibit a third party (Deenik) from using the trademark for the purpose of informing the public that Deenik carried out the repair and maintenance of goods covered by BMW’s trademark.\(^{167}\) The court also held that BMW was not entitled to prevent Deenik using the trademark for the purpose of fair advertising and marketing itself as a specialist in the sale, repair and maintenance of such goods.\(^{168}\) However, the CJEU pointed out that

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\(^{165}\) New TMD, art 14.1 (c) (TMD, art 6.1(c)).

\(^{166}\) New TMD, art 14.1 (c) and 14.2 (TMD, art 6.1(c)).

\(^{167}\) Case C-63/97 BMW v Deenik [1999] 1 CMLR 1099.

\(^{168}\) Ibid, at [54].
the defendant must satisfy two preconditions in order to use this defence. First, use of a trademark must be ‘necessary’ to indicate the intended purpose of the service or goods.  

Second, the defendant must not use the mark in ways that create the impression that there is a commercial connection between the owner of the trademark and the defendant. In *Gillette*, the CJEU illustrated the term ‘honest practices’ further. In addition to requiring a defendant not to create an impression of a commercial connection, the CJEU required that the ways of using a trademark must not (1) take advantage of the distinctive character or repute of the mark; (2) discredit or denigrate the mark; or (3) present an imitation or replica of the marked goods. 

In the US, the conditions of fair use of a trademark are stated under 15 USC §1115 (b)(4). Section 15 USC §1125 (c)(3)(A) also states that fair use can be asserted by defendants as a defence against dilution claims. Both sections list ‘referential use’ or ‘normative use’ as a defence against infringement claims.

In *KP Permanent v Lasting*, the USSC held that a certain degree of likelihood of confusion may be permitted in the fair use of a trademark. Hence, in *Century 21*, the Third Circuit adopted an abbreviated approach to test the likelihood of confusion by excluding two factors – the similarity of the mark and the distinctiveness and strength of the mark, which are usually considered in normal multi-factor tests of likelihood of confusion as indicated above. By applying a two-stage approach, the Third Circuit held that after the plaintiff proved there was a likelihood of confusion, it was up to the defendant to prove that such use was fair. The Ninth Circuit, on the contrary, mixed the test of likelihood of confusion and the test of ‘fair’ together. Despite the different approaches adopted by the courts in the US in determining whether an unauthorised

169 Ibid, at [60].
170 Ibid, at [64].
171 *Gillette* (n 101), at [48].
172 15 USC §1115 (b)(4).
174 Ibid, 121-125.
175 *Century 21 Real Estate v Lengingtree* 425 F 3d 211, 225 (3d Cir 2005).
176 *New Kids v News America Publishing* 971 Fed 302, 308 (9th Cir 1992); *Playboy Enters v Welles* 279 F 3d 796, 801(9th Cir 2002); *Toyota Motor Sales* (n 88), 1176 (9th Cir 2010).
use is a normative use, all the courts will consider three factors – likelihood of confusion, necessity of using trademarks, and whether the defendant reflects the true relationship with the trademark owner.

It is, therefore, plausible to argue that both ‘necessity’ and ‘not creating an impression of a commercial connection’ are two conditions in the US and EU to obtain a normative use defence. In general, the primary purpose of using a console firm’s trademark is to indicate compatibility between marked games and the console firm’s consoles. Without using the console firm’s mark, it is almost impossible to inform the public about such information. Furthermore, using disclaimers or notices that inform customers that there is no association between games and console firms will decrease the likelihood of confusion and the liability of game companies for taking unfair advantage of the reputation of console firms. Consequently, unlicensed game companies can establish a normative use defence quite easily against the claims of console firms. Hence, trademarks do not automatically confer on console firms the power to prevent game companies from developing games without their consent.

In sum, after systematically considering the general grounds that a console firm may use to exercise trademark rights against an unlicensed game producer and the defence the game producer can use, the preceding analysis shows that trademarks do not confer on a console firm market power automatically to distort the competition on the software market.

6. Trademarks, Game Piracy and Control over Distribution

177 See, e.g., Century 21 Real Estate (n 175); Toyota Motor Sales (n 88); Swarovski Aktiengesellschaft v Building 704 F3d 44 (1st Cir 2013); Rosetta Stone (n 117) (The relevant approaches can be roughly divided into two types. The Ninth Circuit includes test of ‘likelihood of confusion’ with in its three-prong test. The other Circuits such as the Third Circuit test the likelihood of confusion first and then test whether the use is necessary, a two-stage test. The Third Circuit further divides the second stage into three prongs. However, factors considered by these approaches are the same. In particular, all Circuits asserted to use abbreviated likelihood of confusion test.).
178 BMW (n 167), at [54] (‘Such an informative use of the BMW mark... does not take unfair advantage of the distinctive character or repute of the trade mark’).
The above analysis has only answered three sub-questions. As has been shown, game piracy, parallel importing and second-hand game reselling are three major factors that affect the total returns captured by the real innovators in this industry. The following section will test the extent to which trademarks can be used by console firms or game companies to resolve these problems.

6.1 Trademarks and Game Piracy

Compared with copyright, the effect of trademarks in preventing game piracy are limited. Normally, third parties will use marks that are identical to trademarks owned by game companies or console firms in relation to illegal copies when they distribute illegal copies to the public. However, an unauthorised use of a mark is actionable only if the mark is used by a person in commerce. Many illegal copies of games or hack tools are distributed online free of charge. These illegal copies cannot be stopped on the ground of trademark infringement because such use does not amount to ‘using in commerce’. However, if trademarks are used by third parties in connection with illegal copies in commerce such as selling or trafficking them online or physically, trademark owners can prevent such infringing acts on the ground of trademark infringement.

6.2 Trademarks and Right of Distribution

As mentioned before, the EU has adopted union exhaustion while the US has adopted international exhaustion. The CJEU in Zino Davidoff held that a trademark owner’s authorisation to market goods in the EU cannot be inferred from the fact that mark owners had not expressly prohibited the exporting of goods from a place outside the EU in order to further market them in the EEA (now the European Union).\(^{179}\) In other words, if the marked goods are initially sold with the mark owner’s consent or under its authorisation outside the EU, the owner’s right to first market the goods in the EU is not exhausted. Sony v Pacific Game involves a defendant’s online marketing and distribution to the UK of genuine PlayStation Portable (PSP) that were made by Sony for sale only

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within the Japanese market.\textsuperscript{180} The UKHC held that the defendant’s acts amounted to trademark infringement.\textsuperscript{181} This case shows that a trademark owner in the EU, either a console firm or a game company, can prohibit a third party from importing consoles or games from countries or regions outside the EU into any EU countries without Sony’s authorisation. In the US, unless there are material differences between local games or consoles and foreign games or consoles, a trademark does not confer on a console firm or game company the right to prevent a third party from importing foreign games or consoles into the US.\textsuperscript{182}

However, if marked goods are first marketed in an EU country by the trademark owner or with its authorisation, the owner’s right of distribution is no longer valid unless further distribution affects the overall quality of the marked goods. Therefore, a trademark does not confer on a game company the right to control the resale of second-hand games in the EU. Likewise, neither does a trademark confer on the owner the right to control subsequent marketing of used games in the US. Court decisions in cases involving further marketing of second-hand goods may give some insights into the reasons behind this. The Ninth Circuit in \textit{Nitro Leisure v Acushnet} distinguished the further marketing of used golf balls from the further marketing of new golf balls.\textsuperscript{183} The court cited the USSC in \textit{Champion}, holding that customers had a different expectation of used or refurbished golf balls and thus did not expect their condition to be the same.\textsuperscript{184} The court then argued that ‘material differences’ may not be necessary or have a less determinative effect in measuring confusion due to such different expectations.\textsuperscript{185} In considering the defendant’s affixed notice indicating the ‘used’ condition of the balls and the disclaimer denying any association between the defendant and original

\begin{footnotesize}
\begin{enumerate}
\item \textsuperscript{180} \textit{Sony v Pacific Game Technology} [2006] EWHC 2509 (Ch) (UKHC).
\item \textsuperscript{181} Ibid, at [27]. See also, \textit{Sony v Nuplayer} [2005] EWHC 1522 (Ch); \textit{Sony v Electricbirdland} [2005] EWHC 2296 (Ch) (UKHC) (The UK courts in these cases reached a same decision regarding parallel importing of PSP.).
\item \textsuperscript{182} \textit{Gamut Trading} (n 63), 779 (The Federal Circuits summarised the courts’ attitude towards parallel importing foreign goods bearing identical trademarks.).
\item \textsuperscript{183} \textit{Nitro Leisure} (n 74).
\item \textsuperscript{184} Ibid, 1363.
\item \textsuperscript{185} Ibid, 1365.
\end{enumerate}
\end{footnotesize}
manufacturer of the golf balls, the court held that there was no likelihood of confusion and the plaintiff was therefore not entitled to object to a defendant’s unauthorised marketing of used and refurbished golf balls bearing the plaintiff’s trademark.\textsuperscript{186} Likewise, a customer that buys used games or consoles may assume they are not the same as new ones. For instance, he may know he can only play the offline content of a used game or that a used console’s warranty may expire. The customer may also assume that a refurbished console once had some problems. If there is no confusion as to source of origin, it is the resellers who bear the risk if the quality and other characteristics of the used games or consoles do not meet buyers’ expectations. Given the fact that used games and consoles are much cheaper than new ones, and resellers normally affix a notice and disclaimer to used or refurbished games and consoles in a position that can be perceived by customers, console firms and game companies are not entitled to object to the trade of used games and consoles on the ground of trademark infringement.

\textbf{6.3 Digital Distribution – One Solution Fixes All}

Parallel importation of home consoles is costly and less profitable for two reasons. One factor is the physical size. A home console is much bigger than a PSP. This means that they are more likely to be taxed.\textsuperscript{187} A related factor is the transportation cost of consoles. These two factors will offset the price advantage of imported consoles. However, games, which are much smaller even than hand-held consoles like the PSP, are much easier and less costly to import. Internet distribution also makes parallel importing much easier as customers in one region can buy a game sold in another region by using a credit card. Therefore, console firms and game companies are much more concerned about the parallel importing of games.

The preceding analysis shows that neither copyright nor trademarks can be used by a console firm or a game company to prevent parallel importing of games into the US

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\textsuperscript{186} Ibid.

\textsuperscript{187} For instance, importer has to pay about 20% VAT if a console is imported into the UK from countries outside the EU.
from other countries. But in any event, traders do not have the economic incentives to import games and consoles into the US from other countries because these are sold much cheaper there than in other countries. Besides, the majority of games are also launched earlier than their counterparts in other countries. Hence, there is no need for console firms and game companies to prevent parallel importing of games into the US. In the EU, due to union exhaustion, console firms and game companies are still able to prevent parallel importing of games from regions outside the EU. This ensures that they can capture profits equivalent to the profits they can capture in the US.

As to the reselling of used games, Chapter III shows that copyright is not a reliable means for game companies and console firms to object to a third party’s reselling of used disc-based games. Neither does the analysis above show that trademarks are effective in preventing second-hand game reselling. Hence, IPRs do not confer on console firms and game companies the right to prevent reselling of second-hand games and consoles. This partly explains why console firms and game companies today accept the existence of the second-hand console and game market.188

However, digital distribution creates a good opportunity for console firms and game companies to reclaim their control over the subsequent distribution of games, given that they can control the distribution platform. Digital distribution can resolve all three problems.

With regard to parallel importing, a console user can now buy games from online stores in regions other than his/her country of residence. However, such a price advantage may be offset by other factors such as exchange rate and credit card service fees. Hence, digital distribution strengthens the existing power of console firms and game companies in preventing parallel importing that is given by trademarks and copyright under the EU exhaustion doctrine.

188 ‘You Feedback Matters, update on Xbox One’ (Microsoft, 2013) <http://news.xbox.com/2013/06/19/update/> accessed 15 March 2017 (Microsoft had to change policy on banning trade of second-handed game because of customers’ complain.)
Furthermore, digitally-distributed games are generally linked to customers’ accounts. If a person wants to sell a used game which was distributed digitally, he must sell his/her account together with other games that are associated with the account. At the same time, he may have to delete all personal information including friend list and bank card information. Hence, digitally-distributed games make reselling much more difficult. Furthermore, new DLCs and add-ons nowadays are only available online. This new marketing strategy means that even if a person buys a second-hand disc-based game, he may still have to buy DLCs and add-ons online and link them to his/her account. Likewise, a person who buys a new disc-based game ultimately has to link the game with his/her account if he wants to buy DLCs and add-ons. That person can sell the original disc-based game alone but DLCs and add-ons he bought will become unplayable. Digital distribution thus overcomes the incapacity both of copyright and trademarks to reduce the trade in second-hand games.

Digital distribution also complements the efforts of copyright to reduce game piracy problems. The current setting of both PS4 and Xbox One is that a buyer can play a game offline after linking the game to his/her account. This may create a chance for players to play illegal copies if consoles are hacked. Nevertheless, the content they can play is limited to offline content. Without online interaction and new downloadable content, the game experience will be significantly compromised. This will discourage customers from buying or playing illegal copies.

7. **Conclusion**

The preceding analysis found that a trademark not only confirms and reinforces the role of a brand, which contains the mark, as a unique market identity and reference point but also protects any investment made by the brand owner in building and maintaining the perceived quality and reputation of branded goods. In these ways, a trademark helps the brand owner, a console firm or a game company, build a strong brand from which the owner can gain competitive advantage and increase its leverage with other parties in streams.
In addition, a detailed analysis of trademark law both in the US and EU was conducted to further explore the impacts of trademarks on competition in the console software industry. The examination showed that a trademark does not automatically confer on console firms the market power to control game companies and distort competition on the software market.

Lastly, issues of game piracy, parallel importing and second-hand games were addressed at the end of this chapter. Trademarks were found to have a limited effect in stopping game piracy. The analysis did not find that trademarks confer on console firms and game companies the right to prevent third parties from trading second-hand games. With regard to parallel importing, the analysis showed that trademarks can be used by the game companies and console firms, at least in the EU, to prevent third parties from importing cheaper games and consoles into any EU countries from a place outside the EU. After taking into account the results of the analysis of the effect of copyright in resolving these three issues, I concluded that losses caused by the second-hand game trade cannot be reduced by game companies and/or console firms enforcing IPRs. Digital distribution is likely to be a better solution for dealing with these three problems.
Section III

Chapter V: IPRs and the Home Console Game Industry in China

1. Introduction
The main purpose of this chapter is to explore the role of intellectual property rights in the Chinese home console industry, which is an emerging market. The chapter will set out to show that despite the fact that this is a highly-regulated economy, intellectual property rights have a significant and important function. It is organised as follows. The second (next) part of this chapter will examine this videogame industry in China and compare it with its counterparts in the EU and the US with a view to highlighting the key differences. Severe game piracy and the lucrative grey market will be identified as two major differences. This means that the priority of both foreign investors and local firms is to establish the local official market instead of competing with each other. The third part examines the actual and potential use of intellectual property rights in the local industry and how their exercise can work to solve these two particular problems with the Chinese market. Copyright and trademarks in particular are identified as having a crucial role in this respect. The fourth part focuses on the problem of game piracy. It shows the ways in which the PRC Copyright Law can be used by right holders to fight against game piracy despite it not being as comprehensive as its counterparts in the US and EU. The fifth part addresses the issue of parallel importing. Justifications for preventing parallel importing in China will be given in the first place. The section will then go on to explore ways in which copyright and trademarks can be enforced by game companies and console firms in ways that work to prevent the unauthorised importing of games and consoles. The sixth part examines the impact of copyright and trademarks on the relationship between foreign investors and local parties. The analysis will underscore the importance of trademarks and copyright with respect to both foreign investors and local parties in this industry. A conclusion will be given at the end of this chapter.

2. The Status Quo of the Console Game Market in China

2.1 Pre-Ban
It is not clear whether China has a market economy. The video game market in China is mainly directed by government policies. Therefore, issues other than legal factors will be addressed in this chapter.

The PRC central government banned the whole home console game industry more than a decade ago. This ban led to three consequences. Firstly, it led to the rise of the (PC) online game industry. The government then appreciated the economic value of video games and thus supported building a local online game industry after console games were banned. As a result, the total revenue generated by domestically-developed online games has surpassed that generated by imported online games which once dominated the local market. Immunity from game piracy is another crucial contributory factor to the success of online games in China. The local PC game industry only accounts for about one percent of the total revenues of the Chinese video game industry because game piracy has significantly reduced domestic firms’ incentives to develop PC games.

Secondly, the ban isolated China from the global home console gaming market. Although nowadays the majority of components and consoles are manufactured and assembled in China, as they are all outsourced by the three mainstream console firms, these consoles were exported to other countries after being assembled in China. Console firms have tried to enter the Chinese market several times but almost all attempts have ended in failure. Local console game developers could hardly be found in China due to the government ban. Without an official market, developing console games was drastically less lucrative than developing online games or mobile games.

Lastly, the console ban also created a large grey market of consoles and a black market of illegal copies of games (pirated games). Despite the ban, Chinese game

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players still demanded console games for their entertainment. According to statistics, at least 1.2 million units were sold illegally per year in China before the ban was lifted.\textsuperscript{4} However, unlike the western market, customers in this grey market have become accustomed to playing pirated games. Consoles sold on this grey market were modified to play pirated games.\textsuperscript{5}

\textbf{2.2 Post-Ban}

In 2015, the console ban was totally removed by the PRC government. Despite the removal, administrative regulations still limit foreign investors who wish to engage with console game businesses in China. These regulations partly determine the organisational structure of the local industry.

With regard to software, government regulations require that all games including imported games should be published and operated only by domestic entities which have Internet Publishing Service Licenses granted by the PRC General Administration of Press and Publication (GAPP), a department of the State Council.\textsuperscript{6} If a game goes online, the entity that operates this game must be an Internet Cultural Operation Entity owned by Chinese companies.\textsuperscript{7} In addition, this entity is required to obtain an Internet Cultural Operation License from the PRC Ministry of Culture (MOC), another department of the State Council. In addition to meeting all three of these conditions, all games must pass content approval before publication and operation.\textsuperscript{8} In short, an imported game must pass both GAPP’s and MOC’s censorship so that it can be published and operated in China. However, imported games are \textit{de facto} treated differently from local games in two ways. First, the number of imported games that


\textsuperscript{6} For the definition of 'Internet Publication', see \textit{Interim Measures of Administration of Internet Publication} (the PRC GAPP and the Ministry of Information Industry (MOII), 1 August 2002), art 5.

\textsuperscript{7} \textit{Interim Provisions on the Administration of Internet Culture} (the PRC MOC, 1 April 2011), art 2.

\textsuperscript{8} \textit{Interim Measures on the Administration of Online Games} (the PRC MOC, 1 August 2010), art 9, art 10 and art 11.
are approved is far smaller than the number of local games. Second, a recent MOC administrative regulation only required local government to facilitate content censorship of domestically-developed games. Imported games are still examined in Beijing, by the central government. Even if MOC’s content censorship becomes easier, GAPP's censorship is still a problem for imported games.

With the removal of the console ban, console firms are now required by central government to form partnerships with local firms so that they can legally sell consoles in China. Besides this, foreign investors are not allowed de facto control of such partnerships. Hence, console firms have to share the income with their local partners. For example, Microsoft founded the firm E-Home Entertainment Development with BesTV in 2014. E-Home is responsible for the sale of both console hardware and games. Sony, on the other hand, formed two joint ventures with Shanghai Oriental Pearl Group (SOPG) in China. One venture focuses on the distribution of hardware and the other specialises in software development and distribution. Recently, BesTV acquired SOPG and created Shanghai Media Group, a

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10 Notice of the Ministry of Culture Allowing Foreign-funded Enterprises to Engage in Game Entertainment Equipment Production and Sales (The PRC MOC, WEN HUA HAN [2015] 576).


12 This can be indicated from the number of games that passed the censorship. See above n 11.

13 Catalogue of Industries for Guiding Foreign Investment - Catalogue of Industries in Which Foreign Investment is Prohibited (The PRC National Development and Reform Commission and Ministry of Commerce, 2015), Catalogue 27 (Publishing and production of audio-visual products and electronic publications are prohibited areas.).


subsidiary of the state-affiliated Shanghai Media and Entertainment Group (SMEG).\textsuperscript{16} This means that both consoles will be distributed under the same organisation which is closely tied to the government.\textsuperscript{17}

Three implications can be drawn from the analysis above. First, competition between Microsoft and Sony may not be as fierce as in developed markets. Such an arrangement also suggests that the PRC government now has an economic interest in this industry. As will be proposed below, the government now has the incentive to enforce laws against game piracy and other factors that may reduce its profits from this industry. Thirdly, local companies will share incomes with foreign investors, even if the latter may not choose to form such a partnership.

\textbf{2.3 Identifying Challenges in Establishing the Official Market}

Console firms and game companies entered the Chinese market due to its incredible number of game players. Console firms and their Chinese partners must meet two objectives in order to achieve their goal given the present environment. Firstly, they have to destroy the grey market so that existing customers return to the official market. In other words, consoles sold in China will have to compete with their counterparts that are marketed outside China if the grey market is not eliminated. Likewise, console firms and game companies must retain existing customers and attract them to the official market. Secondly, console games have to compete with PC online games in order to attract more new customers. This is because, unlike western markets, the Chinese game market is dominated by PC online games. Although the above analysis implies that the abilities of console firms to control the value chain are weakened by the compulsory requirement of a partnership, this arrangement brings the interests of government, local companies and foreign investors together. If the grey market is not destroyed, none of them will be able to


benefit from their businesses. Hence, a joint effort should be made to eliminate this grey market.

a. Retaining Existing Customers

Consoles that are sold on the grey market are normally imported from other countries or regions where they are sold at a lower price than those in China.\(^{18}\) Such countries or regions include Japan and Hong Kong because of the close distance and relatively low transportation costs.\(^ {19}\) Consoles sold in the US are less likely to be imported due to high transportation costs which offset importers’ profits. Importers are also less willing to import consoles sold in Europe given the fact that consoles are sold at an equal or higher price there.\(^ {20}\) Among these consoles, some are modified in order to run illegal copies of games. Customers of the remaining consoles will buy authentic games that are initially marketed in other regions. The very existence of the grey market in the past fifteen years suggests that customers may continue to rely on the grey market to play console games even when the official market emerges in China. This market has to be eliminated before the official one can be formed.

There are three major ways to destroy the grey market: the first is to stop game piracy and console modification; the second solution relates to preventing the parallel importing of consoles and games; the third is that console firms and their partners could compete against the grey market by providing cheaper consoles and the same number of games as found in the overseas market. However, due to the fact that consoles are sold at a higher price in China than in the US and Japan, the last suggested means is not practically feasible. The analysis below will, therefore, focus on the former two ways.


\(^{19}\) North (Venturebeat, 22 January 2015).

\(^{20}\) For instance, on 1 February 2016, Xbox One 500 GB with Kinect Bundle is sold in $390 in the US (amazon.com), £389 in the UK (amazon.co.uk), ¥47,800 in the Japan (amazon.co.jp) and ¥ 3799 CN in China (Taobao, Microsoft Official Store). Measured by US dollar (www.xe.com on 1 February 2016), the same bundle sold in $561.690 in the UK (1GBP=1.44386 USD), $394.752 (1JPY= 0.00825774) in Japan and $577.395 in China (1USD = 6.57955CNY).
b. Attracting Potential Customers

Regarding the goal of further exploiting the Chinese market, customers who play PC online games would be a better target group than mobile game users despite the increasing number of the latter. PC online games share an important characteristic with the majority of console games. They all require players to invest significant time in playing them. Users of mobile games do not need to spend such a long time on gaming. According to CNNIC’s statistics, the main purpose of playing mobile games in China is to kill time.\textsuperscript{21} Hardcore gamers are far less common among mobile game players than among PC online game players. People who play console games should be ones who have enough time and sufficient interest in these games. In addition, this survey also pointed out that online game players are more willing to pay than users of mobile games.\textsuperscript{22} Therefore, console firms and game companies are more likely to attract new users from players of PC online games.

The preceding analysis examined the external environment of the PRC home console game industry. In Chapter I, Porter’s Five Forces was adopted to examine the external environment of this industry in developed countries. The five forces ((1) entry barrier, (2) supplier, (3) buyers, (4) substitutes, and (5) rivalry competition) affect the returns of a console firm or game company in this industry.\textsuperscript{23} It was also shown that the PRC market is different from the developed markets in the following aspects. Firstly, the entry barrier to this industry is controlled by the government. Foreign investors have to form a partnership with local companies. However, this brings together the interests of foreign investors, local companies and the government. Secondly, the hardware market in China is the same as in other countries given that it is dominated by three multinational console firms. With regard to buyers and substitutes, local customers in China are accustomed to playing illegal copies which means illegal copies of authentic games are the substitutes for authentic games which are legally published in China. As mentioned, rivalry competition in China will not be as fierce as in other developed markets because of

\textsuperscript{22} Ibid.
\textsuperscript{23} See Porter’s Five Forces framework in Chapter I.
the special organisation structure of joint ventures. The real competition in the console hardware market is between PRC version consoles and imported consoles. Likewise, PRC version games also compete with imported games and pirated games. Accordingly, the priority for the government, local companies and foreign investors is to eliminate the grey market and build an official market in China.

3. **Intellectual Property Matters**

As has been shown in Chapter II, patents strongly affect console firms and their upstream hardware suppliers. Both console firms and their hardware suppliers outsource product manufacturing to China to reduce labour costs which will in turn reduce the production costs of consoles. This business practice cannot be conceived without patents. If consoles are sold locally in China, transportation costs can be reduced. *Ceteris paribus*, consoles sold in China could be much cheaper than those sold in other countries which may bring a price advantage of consoles officially sold in China over imported ones. In such a way, patents could contribute to the establishment of the official market by lowering the price of official consoles. However, it seems that other factors have offset the advantage that local consoles might have in terms of transportation and production costs; otherwise, the price of consoles sold in China would not be more expensive than in the US and Japan. Consoles have been manufactured in China for a long time, even before the removal of the ban. Given that it is not the local firms that own the patents in consoles, the functions of patents in China will not change for a certain period after the ban is removed as long as the position of Chinese manufacturers in the stream of console production does not change. Therefore, the following paragraphs will not examine the relationship between patents and the local industry.

Unlike patents, copyright and trademarks continue to play significant roles in building the official market in China. Chapter III and Chapter IV have respectively demonstrated ways in which copyright and trademark can be used by console firms and game companies in the US and EU to maximise their returns. This chapter aims to explore how to tailor the relevant laws in the PRC to establish a Chinese market by eliminating the grey market and attracting more new customers. It suggests that the
Chinese console game market should be isolated from the global market for a period in order to establish a healthy and mature ecosystem. Once this ecosystem is established, the local market can become a part of the global market. As will be shown below, copyright and trademarks can be used by their owners to supplement government regulations to achieve this goal.

Chapter III showed the ways in which copyright is enforced by console firms and game companies to prevent game piracy. Copyright is one of the main means to prevent game piracy through imposing liabilities both on primary infringers and ISPs. In Chapter IV, a trademark has been shown to be useful in terms of building brand equity, through which a console firm or a game company can gain competitive advantages and increase its leverage with other non-competitive parties. These two types of IPRs may have the same effects in China if they can be used in the same way as they are in the US and EU.

The next part will examine the PRC Copyright Law to find out whether or not and to what extent it can be used by right holders to prevent game piracy in China. With regard to parallel importing, analysis in previous chapters has shown that there is no urgent need for console firms and game companies in the US to enforce IPRs to prevent parallel importing of games and consoles. Unlike the US, their counterparts in the EU nonetheless need such rights that are given by copyright and trademarks to prevent the parallel importing of games from outside Europe into European countries because games are sold at a much higher price than they are in the US. This contrast implies that copyright and trademark laws can be tailored according to the actual market environment. China, like the EU, does not have this price advantage. However, unlike the EU, importing consoles is in practice possible given the short distance between mainland China and Hong Kong or Japan. Permitting parallel importing would be devastating to local businesses in China. With regard to statutory laws, there is no express provision that regulates parallel importing in the PRC Copyright Law and Trademark Law. Therefore, it would be at the court’s discretion to decide whether importing genuine games or consoles into China is legal as the EU Directive and CJEU do in the EU. This chapter suggests that China should adopt a national exhaustion doctrine instead of embracing the international
exhaustion doctrine. Prohibiting the importation of consoles and games benefits foreign investors, local firms and the government in this local industry. The analysis in the fifth part will provide a justification for prohibiting parallel importation in detail and the ways to use trademarks to support the ban.

4. **Copyright Law and Chinese Console Game Industry**

As has been shown in Chapter III, copyright holders in the US and EU can use copyright to prevent game piracy in three main ways. Firstly, right holders can choose to chase primary infringers. Secondly, they can aim to stop the dissemination of illegal copies by imposing secondary liabilities on ISPs. In addition, copyright holders in the EU can apply for injunctive relief against innocent broadband providers to block the activities of torrent websites that infringe copyright. Lastly, right holders can prevent people from circumventing TPMs or trafficking in circumventing tools. Three types of liabilities support copyright holders’ rights. They are: liability for primary infringement, liability for secondary infringement and liability for circumventing TPMs. In the US and the EU, the concept of ‘reproduction’ includes both perpetual copying and intermediate copying. Therefore, intermediate copying which happens during reverse engineering or circumvention might infringe copyright if its purpose is not to achieve interoperability or identify ideas or principles of copyright work.²⁴ If the PRC Copyright Law possesses the above-mentioned grounds, right holders would be able to use the same copyright tools to prevent game piracy as are used in the US and EU.

As will be shown later, unlike the US Copyright Act and copyright-relevant directives in the EU, the PRC Copyright Law does not expressly address the issues of reverse engineering and intermediate copying in detail; nor can liability for secondary infringement be found in the PRC Copyright Law. The analysis below will nonetheless show that copyright in China can serve the purpose of preventing game piracy but in different ways.

²⁴ See the comparative analysis in Chapter III (Difference exists between the US and EU with respect to defend against anti-circumvention provisions. Otherwise, reverse engineering for these two purposes are exempted from violation of conventional copyright infringement both in the EU and the US.)

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4.1 Intermediate Copying and Reverse Engineering under the PRC Copyright Law

The legal status of intermediate copying is not clear under the PRC Copyright Law. This is clear both from the statutory law and court interpretations of the term ‘reproduce’ and ‘reproduction’.

Mod-chips or modification software (mods) are commonly seen in China. They help users either to bypass a security system or cheat. In China, the term ‘WAIGUA’ is used to refer to cheating programs: a particular type of modification (or ‘mod’). A WAIGUA could be used by players to gain unfair advantages in game play. Developing such programs sometimes requires reverse engineering games to identify specific codes and bypass the security system if the games are protected by TPMs. There is no doubt intermediate copies would be made during such processes.

‘SIFU’, the so-called ‘private server’, was another creation of the fast developing online game industry in China. Like the development of cheating programs, to establish a private server of an online game, for instance, World of Warcraft, people have to reverse-engineer both clients and servers to identify the codes so that they can make the game available to the public.25 Reverse-engineering of games servers and clients creates an intermediate copy. Given the fact that the majority of codes in a private server are the same as those in the original game, there is no question that loading and running a private server amounts to copyright infringement since wholesale copying, whichever type it is, is made without the copyright holders’ authorisation.

Therefore, a WAIGUA is sometimes different from a SIFU. A final product of a cheating program might not copy any code that is contained in an original game while a private server would copy a substantial part of a game. If the concept of intermediate copy is recognised by the PRC Copyright Law, both developing WAIGUA and SIFU amount to copyright infringement. On the contrary, if this concept is not recognised, only running a private server will undoubtedly infringe copyright. In the US and EU, the user of a cheating program is liable for copyright infringement only

25 Normally, they will develop a log-in program to connect genuine clients to their private servers.
when source codes of a cheating program are substantially similar to the source codes of the game for which it is developed as long as copied source codes are copyrightable. Furthermore, if TPMs are protected under anti-circumvention provisions, developers of cheating programs and private servers would violate copyright protection for TPMs. In China, the PRC Copyright Law does not expressly prohibit intermediate copies nor does it contain detailed provisions prohibiting the circumvention of TPMs. However, such matters are potentially covered by a regulation published by departments of the State Council.\textsuperscript{26} This regulation prohibits cheating programs and private servers for the purpose of protecting copyright.\textsuperscript{27} More specifically, the regulation provides that illegal acts in relation to cheating programs and private servers are:

‘acts to damage TPMs; modifying copyright works; establishing private servers; manufacturing top-up cards of games; operating or connecting legitimated published online games in order to make profit and thus damage interests of legitimated owners of this works’.\textsuperscript{28}

However, this does not address the differences between two types of infringing acts. In other words, this regulation does not give the underlying reasons why they amount to copyright infringement. Cases involving WAIGUA and SIFU also imply that intermediate copying does not fall within the meaning of ‘reproduction’ under the PRC Copyright Law.

\textit{QQ}\textsuperscript{29} and \textit{CQ}\textsuperscript{30} are two cases in which defendants developed cheating programs and sold them for profit. These two cases are repeatedly used by researchers to analyse

\textsuperscript{26} The \textit{Notice on Special Work of Prohibiting Private Server and Plug-in Program (Notice on Prohibiting Private Server and Plug-in Program)} (GAPP, MOII, State Administration of Industry and Commerce, National Copyright Administration of PRC (NCAC), and the Office of the National Work Group for Eliminating Pornography and Illegal Publications, 18 December 2003) XINCHULIAN [2003] No 19.

\textsuperscript{27} Ibid.

\textsuperscript{28} Ibid.

\textsuperscript{29} \textit{JIA x, ZHENG x and MA x Illegal Operation} (2014) ShengNanFaXingChuZi No.582 (Shenzhen City Nanshan District People’s Court) (Among these defendants, ZHENG X developed and sold the cheating program for Tencent’s Online Game - \textit{Free Fantasy}. The court held that ZHENG X violated Article 225 of the PRC Criminal Law.).

\textsuperscript{30} \textit{CHEN 1, CHEN2, etc Illegal Operation} (2013) PuXingChuZi No 0046 (Jiang SU Province HuaiAn City QingPu District People’s Court) (First Instance Criminal Judgment) (Two of defendants in this case developed the cheating program. They were all convicted as illegal operation by the court.).
the influence of WAIGUA on the game industry.\textsuperscript{31} Defendants in both cases were prosecuted for copyright infringement under Article 217 of the PRC Criminal Law (criminal liability for copyright infringement).\textsuperscript{32} Article 217(1) states that:

‘whoever, for the purpose of making profits, commits ... reproducing or distributing a written work, musical work, motion picture, television programme or other visual works, computer software or other works without permission of the copyright owner ...’.\textsuperscript{33}

In the Supreme People’s Court’s (SPC) Interpretation on Illegal Publication Criminal Case, the SPC emphasised that whoever violates Article 217 shall be convicted only on this ground.\textsuperscript{34} Therefore, in QQ and CQ, if the acts of defendants fall within this category, they should have been convicted of the same crime that they were being prosecuted for. Nevertheless, courts in both cases held that the defendants are guilty under Article 225 – Illegal Operation.\textsuperscript{35} The only plausible explanation here is that developing and trafficking in cheating programs does not fall within Article 217, which implies that ‘reproducing’ does not include an intermediate copy made when the defendants developed the programs. Otherwise, these defendants should have been convicted of copyright infringement since the copying of an original game does not happen by loading and running the programs.

\textsuperscript{31} See, e.g., Bu SHOU, Yifeng HUANG, Jingfen ZHANG, and Lin ZHU, ‘Legal Analysis of Online Gaming Cheating Program II: definition and category of cheating programs’ (2005) 8 Electronic Intellectual Property 14-17 (In these articles, authors either defined cheating programs or recommend using copyright law to regulate acts of publishing and selling cheating programs to the public. However, they did not explore the fundamental factor that leaded court to change prosecutors’ accusation.); Bu SHOU, Yifeng HUANG, Jingfen ZHANG, and Lin ZHU, ‘Legal Analysis of Online Gaming Cheating Program I: origin and mechanism of Cheating Program’ (2005) 8 Electronic Intellectual Property 10-13; Jie SHAO, ‘Opinions on Online Game Cheating Programs’ (2012) 22 Knowledge Economy 22-22.

\textsuperscript{32} The PRC Criminal Law, art 217 (‘Whoever, for the purpose of making profits, commits any of the following acts of infringement on copyright shall, if the amount of illegal gains is relatively large, or if there are other serious circumstances, be sentenced to fixed-term imprisonment of not more than three years or criminal detention and shall also, or shall only, be fined; if the amount of illegal gains is huge or if there are other especially serious circumstances, he shall be sentenced to fixed-term imprisonment of not less than three years but not more than seven years and shall also be fined : (1) reproducing or distributing [emphasised] a written work, musical work, motion picture, television programme or other visual works, computer software or other works without permission of the copyright owner...’)

\textsuperscript{33} Ibid.

\textsuperscript{34} Interpretation of the Supreme People’s Court on Certain Issues concerning Specific Application of the Law in Handling Criminal Cases Involving Illegal Publication (Interpretation on Illegal Publication Criminal Case) (The PRC Supreme People’s Court, 23 December 1998) FASHI [1998] No 30, art 5.

\textsuperscript{35} See above n 29-30.
A recent case involving a private server has similar facts.\textsuperscript{36} The defendants in this case obtained the \textit{World of Warcraft} (WOW) private server, client, and log-in program by downloading them from an overseas website. They then built a private server running these programs make profits. They did not provide a game downloading service. Instead, customers could download WOW from the official website and use the log-in program developed by the defendants to connect to the private server. Initially, they hacked the log-in program developed by others and changed the IP address to the server. They then began to develop their own log-in program. Unlike \textit{QQ} and \textit{CQ}, the defendants in this case were convicted of infringing copyright under Article 217.

If intermediate copying was recognised by the courts, the defendants in these three cases should all have been convicted of copyright infringement rather than an illegal operation. The only difference between the third case and the two other cases is that in that case the defendants downloaded the World of Warcraft server and ran it. In other words, a perpetual copy was made when the defendants downloaded the source codes onto the server’s hard-drives. This case suggests that the courts are gradually starting to recognise intermediate copying as a type of reproduction. However, a better explanation would be that intermediate copying is not recognised under the PRC Copyright Law given the fact that the criminal suspect Yongdan WU who was responsible for developing the log-in program was not convicted of infringing copyright.\textsuperscript{37} This inference can be corroborated by the fact that the developers of cheating programs in two other subsequent cases were all convicted of an illegal operation rather than copyright infringement by the Intermediate People’s Court which gave the final judgment.\textsuperscript{38}

\textsuperscript{36} Yuqian CHI and others crime of copyright infringement (2014) HaiXingChu No 1633 (Beijing Hai Dian District People’s Court).

\textsuperscript{37} Ibid.

\textsuperscript{38} See e.g., Xiao HAN and others Illegal Operation (2015) YiZhongXingZhongZi No 539 (Beijing Intermediate People’s Court) (Defendants developed WAIGUA for the game ‘Qian Nv You Hun Online’ and sold them online. They were convicted of illegal operation under art 225 of the PRC Criminal Law.); LI X, YANG X Illegal Operation (2015) XuXingErZhong No 48 (Jiangsu Province XuZhou City Intermediate People’s Court) (Li X and other defendants developed WAIGUA for the game ‘Tian Long Ba Bu’. They were convicted of illegal operation.).
Therefore, the concept of ‘intermediate copying’ is not present in the meaning of ‘reproducing’ or ‘reproduction’ under the PRC Copyright Law. A person who merely develops WAIGUA, even if an intermediate copy is made during reverse-engineering, is not liable for copyright infringement. Compared with copyright owners in the US and EU, copyright holders in China, therefore, have fewer ways to prevent game piracy, especially when such programs or mod-chips are distributed by developers for free on the internet. Liability for secondary infringement and damage or bypassing TPMs may be the last two weapons that copyright owners can use against game piracy.

4.2 Secondary Infringement of Copyright Works in China

The PRC Copyright Law does not have provisions regarding the liability for the secondary infringement of copyright. However, such liability can be found in legal cases where courts have normally cited the PRC Tort Liability Law. Article 9 of this law states that ‘a person who aids or abets another person to commit a tortious act shall bear joint and several liabilities with the actor’. Although digital distribution is increasingly popular, the PRC Copyright Law does not address computer programs and internet distribution in detail. Given the fact that Article 59 of the PRC Copyright Law rules that ‘measures for the protection of computer software and of the right of communication through information network shall be formulated separately by the State Council’, Regulation for Computer Software Protection and Regulation on the Regulations on Dissemination Right were created to deal with copyright protection of computer programs. The SPC also provides some guidance on issues related to the application of the law with regard to infringement of the right of dissemination through an information network. According to Article 8 of the Regulation for the

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39 The PRC Tort Liability Law, art 9.
40 Regulation for the Protection of Computer Software (State Council, 3 January 2013).
41 Regulation on Protection of Right of Dissemination via Information Network (State Council, 3 January 2013).
42 Provisions of the Supreme People’s Court on Certain Issues Related to the Application of Law in the Trial of Civil Cases Involving Disputes Over Infringement of the Right of Dissemination through Information Networks (Supreme People’s Court 2013) FaShi [2012] No 20 (The phrase ‘dissemination’ has the similar meaning as ‘communication to the public’ under s 20 and ‘issue of copies to the public under s 18 of the UK CDPA 1988 given the fact that phrases ‘communication through information network’ are used in art 59 of The PRC Copyright Law. All translation of legislation come from Westlaw China.).
Protection of Computer Software, a copyright owner of a computer program is entitled to this right of dissemination. Hence, games which contain computer programs are regulated by the abovementioned regulations.

Given the fact that the PRC Copyright Law and related regulations do not address safe harbour rules as those in the EU and US do, it is up to courts to decide whether ISPs are liable for copyright infringement. In general, a website providing a copyright work to the public without its owner’s consent amounts to infringement of the right of dissemination in China. In Xunlei v Wanglong, the SPC dismissed Xunlei’s appeal which argued that Wanglong should be the primary infringer rather than secondary infringer as it provided a link to a third-party website on which an alleged infringing movie was available.43 However, the SPC reasoned that it was the third-party website which provided the movie, and so was the primary infringer as its act was not with the owner’s consent. The court then ruled against Xunlei’s application for retrial, holding that Wanglong did not infringe Xunlei’s right of dissemination because a third-party website had obtained the license for the alleged movie and Wanglong only provided a link to this website.44 In Ruan Xin Ke Ji v Ningbo GongZhong Xin Xi Chan Ye Co. Ltd, the Zhejiang Province Higher Court confirmed the decisions of the Ningbo Intermediate People’s Court and Yinzhou District Court regarding infringement of the dissemination right of a video game.45 All three courts held that the defendant Gong Zhong Xin Xi Chan Ye Company infringed the plaintiff’s right of dissemination of a video game because, although the defendant did not upload the game, it not only provided the link to the third-party website where the uploaded game was stored but also misrepresented itself as the download source of the game.

ISPs that provide links to illegal copies may be guilty of contributory infringement in China. In Kuaibo v LeTV, ShenZhen Intermediate People’s Court held that Kuaibo was liable for contributory infringement because it deliberately provided links to third

43 Xunlei v Wanglong (2013) MinShenZi No 1910 (The PRC Supreme People’s Court).
44 Ibid.
45 Ruan Xin Ke Ji v Ningbo GongZhong Xin Xi Chan Ye Co. Ltd (2013) ZheMinShenZi No 519 (Zhejiang Province Higher People’s Court). See also, Ruan Xin Ke Ji v Ningbo GongZhong Xin Xi Chan Ye Co. Ltd (2013) ZheYongZhiZhongZi No 1 (Zhejiang Province Ningbo City Intermediate People’s Court).
party websites which distributed the movie ‘Love is not blind’ without authorisation from Letv which had the exclusive right of network dissemination. However, as shown before, providing a link is not sufficient per se to constitute infringement.

Kuaibo is a P2P stream video player. It combines searching, downloading and online watching functions within one software program. A user can search a film or TV series either in Kuaibo or on search engines such as ‘baidu.com’. If a user searches a movie in Kuaibo, the software will direct the user to numerous websites that provide this movie which can be played online with Kuaibo software. The software will download this movie onto the local computer so that the user can watch the movie. Furthermore, if the user pays for membership, he can use a speed-up service during the movie. Unlike Napster, Kuaibo has central servers. These central servers generally store popular copies of videos which can only be accessed with a membership. If a user has a membership, his client will connect to the central servers if the internet connection is not fast enough. For website operators, Kuaibo provides them with Kuaibo server programs which enable them to provide movies that can be viewed by users using Kuaibo clients. At the same time, websites can use Kuaibo server programs to publish ads, which generate revenues both for the websites and Kuaibo.

Technically, Kuaibo infringed copyright holders’ right of reproduction by deliberately making copies in central servers and making profits from selling membership and advertising space. However, in this case, Letv accused Kuaibo of contributory infringement by intentionally directing users searching the internet to third party websites in which illegal copies of movies could be viewed in a format that could only be opened with the Kuaibo Player.46 In another case involving Kuaibo, it was accused on the same ground in front of the same court.47 The court made the same decision, i.e. that Kuaibo’s abovementioned acts amounted to contributory infringement.

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46 Kuaibo v Tencent (2015) ZhenZhongFaZhiMinZhongZi No 424 (Guang Dong Province Shenzhen City Intermediate People’s Court).
47 See also, Kuaibo v Shanghai JiDong WangLuo Ltd (2015) ZhenZhongFaZhiMinZhongZi No 954 (Guang Dong Province Shenzhen City Intermediate People’s Court).
These cases give some insights into the liabilities of a person who disseminates or contributes to the dissemination of illegal copies of games by either using third-party websites or providing downloading tools. 3DMGames and Ali123.com are two major websites that provide a downloading service of both legal and illegal copies of games in China. In the past, people could download illegal copies easily on these two websites. This is because these websites, 3DMGames in particular, possess the capabilities to bypass the security system of games and translate a foreign language into Chinese. 

Recently, 3DMGames announced that it planned to abandon the cracking of games and instead would only provide links to downloaded cracked games or circumventing tools provided by third-parties. In the past, these websites would direct users to forums owned by the websites on which users were able to find torrent files or links to cloud services. Users could then use various types of P2P file-sharing software to download these games. In such cases, the websites were liable for infringing the right of reproduction and right of dissemination as they uploaded cracked copies on their own servers. After the reform, the software and websites may be liable for contributory infringement if they know or have reason to believe that their services are used by people to infringe copyright but fail to take expeditious measures. This can easily be proved because typically the operators of these websites advertise the fact that they provide links to illegal copies.

Therefore, the PRC Copyright Law confers on copyright owners or exclusive licensors the ability to stop game piracy by imposing liability of direct infringement on ISPs that provide illegal copies of games and liability of contributory infringement on ISPs which deliberately provide the means to access such illegal copies respectively. However, this is of no use if the law is not enforced in China. Notably in this respect, the PRC government rarely took action when imported games were illegally copied and distributed to the public in the past. Having said that, this was because, even though these imported games were authentic, they were not published by

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49 Ibid.
government-recognised publishers and did not pass censorship, which means they were illegal in the first place.\textsuperscript{50} As a WTO member state, China has the duty to open its internal markets including the console game market. This trend can be indicated by recent changes in the film industry where China and the US have signed a memorandum regarding imported films.\textsuperscript{51} In this memo, China has agreed that it will import thirty-four US films per year where previously the figure had been in the twenties. Furthermore, both parties agreed to have further negotiations in 2017.\textsuperscript{52} It is foreseeable that China will eventually open its film market completely. The same trend can also be inferred from the fact that it is no longer possible to stream or download music in China free of charge.\textsuperscript{53} As a culture-related industry, the console game industry is closely-related to the music and film market. It is possible that the number of imported games will increase exponentially in the near future. More importantly, the government now has an interest in this industry where they did not have one in the past. This will help copyright holders to enforce their copyright.

4.3 Anti-Circumvention Provisions and Console Games in China

Anti-circumvention protection is a useful tool against game piracy given that TPMs are widely used by copyright holders to protect games. If a person bypasses or damages a TPM to achieve more than interoperability or other limited legitimate causes, then in the US and EU he/she will be liable for circumventing the TPM. However, the contemporary PRC Copyright Law and other relevant regulations do not address this issue as comprehensively.\textsuperscript{54} The latest draft of amendments to the PRC Copyright Law, nonetheless, gives some insights into what anti-circumvention

\textsuperscript{50} Regulations on Publication Administration (State Council, 29 July 2014) (Computer programs and other works that are published without obtaining government consent is deemed as illegal publications.).
\textsuperscript{52} Ibid.
\textsuperscript{54} The PRC Copyright Law, art 48 (6) (Only art 48 (6) states that ‘intentional circumventing or sabotaging the TPMs is illegal’.)
provisions might be like in China in the near future. The most recent draft adds a whole chapter on TPMs and Right Management Information to the PRC Copyright Law. It defines TPMs as effective technologies, devices or parts used by copyright holders to restrain copyright works from being copied, viewed, watched, operated, modified or distributed via the internet. It integrates both Article 4 of the Regulations on Dissemination Right and Article 24(3) of Regulation for Computer Software Protection into the Copyright Law as Article 69. This article explicitly prohibits acts that circumvent or damage TPMs and acts of traffic in circumventing tools. It also prohibits intentional acts of providing services or technologies to help others circumvent or damage TPMs. As mentioned in Chapter III, cracking TPMs is beyond the ability of an ordinary person. That is why research groups such as 3DMGames were welcomed by game players. Websites such as 3DMGames not only disseminated illegal copies of games but were also engaged in cracking TPMs. They then disseminated tools or computer programs in the form of patches to the public that could be used to crack TPMs. Although it is quite difficult to prove the intention of such groups in cracking the TPMs of a game, it is quite easy for the court to find out that the primary purpose of such acts is beyond legitimate exceptions such as achieving interoperability if websites such as 3DMGames distribute these tools to the public. Therefore, if the law targets such ISPs by stopping the circulation of circumventing tools, game piracy can be more effectively restrained in China.

This means that, in theory, copyright can be used by console firms and game companies to achieve the same goal, i.e. of preventing game piracy in China. Although the ways of achieving this goal are fewer than in the US and EU, it still provides at least one of three means to prevent game piracy. By targeting ISPs such as 3DMGame, individual game players may have more difficulty finding and playing illegal copies. However, limiting game piracy is not enough to establish an official market in China. As pointed out above, the grey market must also be eliminated. This

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55 The PRC Copyright Law (Revised Draft for Examination) (Legislative Affairs Office of the State Council, 06 June 2014).
56 Ibid.
57 Ibid, art 68.
58 Ibid, art 69.
means that parallel importing must be stopped. The next section will address this issue in detail.

5. **Parallel Importation and Chinese Console Game Industry**

Since console gaming has become a global business, technologies have been developed by console firms and game companies both to support the market segmentation strategy of firms (e.g. by way of a geographic price discrimination policy) and to fight against game piracy. Console firms and game companies ubiquitously installed region locks on consoles and games for the past five generations. However, two of the three mainstream console firms removed the region locks from the current generation of consoles except for ones sold in China. It is now up to game companies to decide whether or not to install region locks software on games.

In the past, there were five main reasons for installing region locks on a console in addition to the purpose of preventing game piracy. First, different TV standards were in place in different regions.\(^{59}\) This required console firms to release different versions of consoles corresponding to different TV standards.\(^{60}\) The second factor concerns publishers. In the past, the same title may be published by different publishers in different regional markets. A region lock was used by console firms to protect the interests of these publishers as the same title imported from another region may affect the revenues of local publishers. Thirdly, there was no better substitute for a region lock for improving the ability of console firms and publishers to control the distribution channel of games. Region locks could strengthen the ability of right holders to control the distribution channels as they could be protected under copyright law as long as it merged with TPMs. The fourth and fifth factors concerned local cultural differences and legal restrictions.\(^{61}\)

\(^{59}\) The EU and some part of Asia used PAL while the US used NTSC. PAL and NTSC are different. See, Bevis King, ‘Why Do Different TV Standards Exist?’ (Surrey University, 18 September 1995) <http://personal.ee.surrey.ac.uk/Contrib/WorldTV/why.html> accessed 15 March 2017.

\(^{60}\) There were converters sold in the past. But the effect is not as good as when a console and TV share the same standard.

The first three reasons no longer exist today. TV standards do not matter as HDTV is widely used by consumers. Most games released in different regions are actually published by the same publishers so there is no need to install a general region lock on consoles. The standards on the legal protection of TPMs have become stricter by requiring TPMs specifically to protect copyrightable matters which means that TPMs installed on consoles may not be entitled to protection. More importantly, digital distribution could be a better alternative to region lock for controlling the distribution of games. With regard to the cultural differences and local legal restrictions, it is difficult to measure those objectively. It is plausible that the contents of some games may be offensive in one culture but not offensive in another. However, game companies rather than console manufacturers may be in a better position than console firms to decide whether this is so and to install appropriate game specific region locks.

However, the above-mentioned reasons for removing region locks may not be applied in China. The Chinese market is significantly different from other major markets. Firstly, the console game market has only just emerged. It is not as mature as its counterparts in other regions. Allowing parallel importing of games only intensifies intra-brand competition in China. There is no point in foreign investors entering the Chinese market officially if they can still capture the same level of revenues through imported games and consoles. Secondly, there is no other place with such a large grey market and widespread game piracy than China. It is impossible for this official market to survive without eliminating game piracy and the grey market, let alone becoming mature. Thirdly, unlike other developed markets, the console game market in China is highly regulated. Content censorship means that some games that are marketed outside China may not be allowed to be published in China by the government. The compulsory joint venture may also erode both the profits of foreign investors and their interest in exploiting this market. These differences justify segmenting the Chinese market from the global market.

In addition, there is no explicit expression regarding parallel importing in statutory laws in China; neither has the PRC Supreme People’s Court (SPC) addressed this issue.

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62 See Chapter IV.
so far. Therefore, it is legitimate and feasible for courts to decide whether or not parallel importing and region lock is supported on a case-by-case basis. Some academics in China argue that permitting parallel importation of copyright works benefits the Chinese economy since the high tariff and low labour costs of China would prevent copyright works from being imported from other countries and sold in China. In their opinion, the high import tariff will increase the price of imported goods making these unattractive to consumers compared with local counterparts. Likewise, the China Council for the Promotion of International Trade (CCPIT), a central government organisation, listed three reasons for encouraging parallel importation in China.

The CCPIT argued that parallel importation should be permitted because it would (1) benefit the Chinese public by introducing competition; (2) prevent copyright owners’ market monopoly and monopolism of high prices; and (3) facilitate the global trade. It also argued that the difficulty in controlling the parallel importation of digital products was also a reason for permitting parallel importing.

However, these reasons are arguably not valid in the emerging local console game industry. In this industry, there was no competition in the official market until 2013. All imported games and consoles were illegally smuggled in without paying tariffs. These imported consoles and games are sold at a much lower price than local products. The big grey market was the creation of parallel importation. Furthermore, parallel importing of consoles or games will not facilitate competition. As mentioned, one of main reason of encouraging parallel importing is to prevent IP owners’ market monopoly directly conferred by IPRs. However, parallel imports will have at best a negligible impact on competition in a market in which Microsoft and Sony are the only operators. It is the government ban that should be blamed for this rather than a

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63 See e.g., Ren Ran, ‘Parallel Importation in relation to the Copyright’ (Chinalawinfo) <http://www.chinalawinfo.com/news/NewsFullText.aspx?NewsId=63680&NewsType=0> accessed 15 March 2017 (Some Chinese scholars argued that lack of relevant provisions provides flexibility so that government is able to change the policy corresponding to changing environment.).

64 Ibid.


66 Ibid.
monopoly by foreign investors. Furthermore, neither will permitting parallel importing in China facilitate the global trade. If parallel importing is permitted, the only two things the foreign investors will compete with are their own goods that are marked outside China and illegal copies of games. In contrast, permitting parallel importing will devastate global business as it will ruin the official market. The analysis in Chapter IV implies that it is possible to control the distribution channels even if the internet has no national boundary as long as the game companies and console firms control the distribution platforms. Hence, the abovementioned reasons that justify permitting parallel imports into China are not valid so far as the local industry is concerned.

Furthermore, prohibiting parallel importing benefits foreign investors and the domestic economy.\(^7\) For foreign investors, instead of seeing their profits eroded by illegal importers and illegal copies of games, they can control the value chain more effectively and efficiently as long as they adopt digital distribution in China. For Chinese partners, they will benefit from the joint-venture not only by sharing a slice of their incomes but also by learning the ways of doing business in this emerging industry from their partners. The latter would be important to the growth of the local home console game companies in the long run. The government will also benefit from prohibiting parallel importing. In the past, it has been difficult for the PRC government to regulate this grey market because imported games were classified as illegal publications which are arguably not protected under IP laws. The lifting of the ban and other relevant reforms has legitimised their existence. If an official market is established, the government can evaluate this market more precisely and make relevant policies more efficiently and effectively in ways that will benefit the national economy. The government in turn will benefit from controlling taxes and tariffs on these goods by regulating the official market. Therefore, parallel importing of consoles and games must be prohibited. The following paragraphs will

\(^7\) Fenglin YIN, ‘Building PRC Exhaustion Doctrine’ (Chinese Social Science Today, 4 January 2012) <http://www.csstoday.net/Item/9615.aspx> accessed 15 March 2017 (The author suggested to apply national exhaustion doctrine to protect national interest and local right-holders including foreign investors.).
show the possible ways of changing copyright and trademarks law and practice to so as to prevent parallel importing in China.

As already stated, courts in China are free to decide whether or not parallel importing is permitted in each individual case by balancing the first-sale doctrine and IP owners’ distribution right.

5.1 Copyright and Parallel Importation

Courts in China have already applied the first-sale doctrine in their decisions. In *Xunlei v Beijing HuaLu Beifang Dian Zi Ltd*, Xunlei accused the defendant of copyright infringement by providing links to other third-party websites on which a movie was available. The First Beijing Intermediate People’s Court held that there was no infringement because Xunlei’s right of dissemination was exhausted by the fact that third-party websites had obtained licenses for the movie.\(^68\) This principle was also used by defendants against claimants’ claims in many other copyright cases and they were supported by the courts.\(^69\) Although there is no published case regarding application of the exhaustion doctrine on imported copyright goods, there is no explicit or implicit rule against a court using its discretion to apply this principle in the scenario of parallel importing of games. In theory, courts can apply first-sale doctrine in cases involving the importation of copyright goods.

Although it is impossible to gain access to license agreements between foreign investors and their Chinese partners, some court decisions show that the local partners of foreign investors can enforce IPRs on behalf of the latter in China.\(^70\) As seen above, importing games and consoles conflicts with the common interests of

\(^{68}\) *Xunlei v Beijing HuaLu Beifang Dian Zi Ltd* (2014) YiZhongMinZhongZi No 4870 (Beijing First Intermediate People’s Court).

\(^{69}\) *Lihong LIU v Wanjuan Publishing Ltd etc* (2015) ZheHangZhiChuZi No 220 (Zhejiang Province Hangzhou Intermediate People’s Court); *China Audio-video Copyright Association v WuXi YiHaoGongGuan Ltd* (2015) XinZhiMinChuZi No 0052 (Jiangsu Province WuXi City High Tech Industry Development District People’s Court); *Shenzhen Shengying WangLuoKeJi Ltd v Fujian BaoLiHeng Ltd* (2015) SuZhiMinZhongZi No 00142 (Jiangsu Province Higher People’s Court).

\(^{70}\) *Beijing BeiDa FangZheng DianZi Ltd v Blizzard Entertainment and The9 Ltd* (2010) MinSanZhongZi No 6 (SPC) (This case concerns copyright infringement. In this case, both Blizzard Entertainment and its Chinese partner The 9 Ltd are listed as defendants.); *Blizzard Entertainment Inc and others v Shanghai Yiyou WangLuo Ltd* (2014) HuYiZhongMinWu(Zhi)ChuZi No 22 (Shanghai First Intermediate People’s Court) (This case concerns unfair competition. Both Blizzard Entertainment and its Chinese partner Shanghai NetE Ltd are presented in this case as plaintiffs.).
the government, foreign investors and local partners. They will, therefore, actively enforce their rights to prevent parallel importing.

As such, importing these games and consoles without the authorisation of right-holders may amount to infringing copyright holders’ right of distribution in China. This is consistent with the fact that the console firms removed region locks from consoles sold in other places besides China. Console firms and game companies can prevent parallel importing of consoles and games that are sold outside China on the ground of copyright infringement.

5.2 Trademarks and Parallel Importation

In addition to copyright, trademarks can be used by right holders to prevent both consoles and games from being imported into China. Although the PRC Trademark Law does not address parallel importing explicitly, Article 57 of the PRC Trademark Law was used by the court in recent cases regarding parallel imports.\(^1\) In *Michelin v TAN Guoqiang and OU Can*, the defendants sold imported Japanese-made tyres without Michelin (CN)’s authorisation.\(^2\) These tyres were made for sale in the Brazilian market, and thus did not obtain a Chinese Compulsory Product Certification (3C Certificate).\(^3\) The court ruled in favour of the plaintiff under Article 57 of the PRC Trademark Law. Article 57(2) lists one type of act that amounts to trademark infringement. It states that the ‘sale of any goods that have infringed the exclusive right to use any registered trademark’ amounts to trademark infringement.\(^4\) The decision demonstrated the way a court can interpret this provision in the context of parallel importation. In this case, the court argued that imported tyres were manufactured in compliance with the relevant speed requirement, and geographical and climatic features of the Brazilian market instead of the Chinese market, which may raise quality and safety issues if they were used by customers in China. The court further argued that the 3C Certificate on Michelin tyres sold in the Chinese

\(^{\text{1}}\) The PRC Trademark Law, art 57.


\(^{\text{3}}\) ‘3C’ is regulated under the Mandatory Certificating System in China. For more information, see China Compulsory Certification Online Service Centre <http://www.ccc-cn.org/> accessed 15 March 2017.

\(^{\text{4}}\) The PRC Trademark Law, art 57 (3). The PRC Trademark Law (Before 2013), art 52 (2).
market indicated that they were manufactured according to Chinese government requirements and thus free of quality and safety problems. Customers could, therefore, attribute traffic accidents or any other civil dispute to Michelin, which would result in damage to Michelin’s reputation. This decision implies that a trademark’s quality guarantee function and the function signifying reputation are also protected under the PRC Trademark Law. This decision was then cited by Michelin (CN) in other cases regarding imported Michelin tyres.\textsuperscript{75} In all these cases, Jiangxi Province Jiu Jiang City Intermediate People’s Court held in favour of Michelin by interpreting Article 57 in the same way as the court in \textit{Michelin v TAN Guoqiang and OU Can}.\textsuperscript{76}

The essential rationale applied by these courts in the above-mentioned cases is similar to the CJEU’s ‘BMS Five Conditions’ and the US courts’ ‘Materially Different’ approach, both of which are adopted to deal with cases involving first-sale doctrine.\textsuperscript{77} They all focus on the quality control function of a trademark and the potential influence of inconsistent quality of marked products on trademark owners’ goodwill and reputation.\textsuperscript{78}

Consoles released in China are materially different from the consoles marketed in the rest of the world. They are manufactured specifically according to Chinese regulations. For instance, Xbox One and PS4 sold in China are equipped with region locks. Chinese console users are therefore locked into the Chinese online store. Apps for the Chinese official consoles are significantly different from those sold overseas due to administrative regulations. Games for Chinese version consoles must pass content censorship to make sure there are no negative factors that may harm the mental health of young people or are otherwise contrary to social morality. The concept of ‘family-friendly’ is highlighted both by Microsoft and Sony when they


\textsuperscript{76} Ibid.

\textsuperscript{77} See Chapter IV.

target the Chinese market. In contrast, the ‘grey’ nature of the market for imported consoles and games has meant that imported games have bypassed official scrutiny. The reputation in China of the major console firms, such as Microsoft and Sony, is coloured by the consumer experience of imported products. The image that consumers have of these brands then does not necessarily accord with the new ‘official’ image that Microsoft and Sony have adopted in order to lawfully sell in the Chinese market. Foreign investors entered the Chinese market to achieve much more than merely attract existing users who played imported console games to an official market. They aimed at a much bigger market. In addition, they aimed to create new customers for their products: a potentially much larger market. The brand image is important given that consoles and console games have been described as devils in the past fourteen years in China. Before there is a uniform game content rating system like PEGI (Europe) and ESRB (the United States), imported games containing violent or pornographic content may damage the brand association that console firms and game companies desire to build in China. As has been shown before, players of online games in China are the target group of console firms and game companies. According to a survey, more than a third of PC online gamers have incomes below £50 a month. The same survey also shows that 72.5% of players of PC online games are below 29 years old. Consider the fact that PC online games require players to spend a large amount of time online, it is plausible to infer that young people are the biggest group playing online games in China. Therefore, it is extremely important for console firms and game companies to give parents, who pay for consoles and games, a good impression in order to attract potential customers. The long period of propaganda against console and console games as harmful to children’s growth has left a bad impression on parents. Console firms and game companies have to change this view among the general public in China. Hence, it is extremely important for console firms and game companies to control the quality and distribution channels of consoles and games in China.

79 See, e.g., ‘FGF2015 Hiroyuki Oda, CEO of SCE (Asia)’s Speech on Chinese Console Gaming’ (tgbus, 26 November 2015) <http://spec.tgbus.com/event/3799/hiroyuki-oda-the-game-rating-system-can-be-a-reference/> accessed 15 March 2017 (In Family Game Forum 2015, the CEO of Sony Computer Entertainment (Asia) also suggested that China should have its own rating system.).

80 See above n 21 (36% of gamers who played PC online games have incomes below £50 a month. 92.9% of gamers who played PC online games have incomes below £500 a month.).
Accordingly, Article 57 of the PRC Trademark Law can be a ground on which console firms and game companies rely to prevent third parties from importing both consoles and console games.

6. Copyright, Trademarks and the Relationships between Foreign Investors and Local Parties

In addition to importers and game hackers, translation groups played an active role in the era before the ban was lifted in China. Unlike the other parties which must be dispensed with, it was the only party in China that contributed its own intellectual creation when the ban was in place. Although their acts were illegal, the positive effects of their efforts need to be recognised and indeed harnessed by foreign investors to improve competitive capabilities.

6.1 Local Translation Groups – Transition

Language is an obstacle faced by Chinese players who are eager to play imported games. Even when an imported game is cracked, players still find it difficult to play it because most of them do not know the language used in the game. In the past, one important reason for widespread illegal copies of video games in China was that these copies were translated by local translation groups. The majority of translation teams work voluntarily. Many members of translation groups are students who treat translation as an opportunity to explore their interests and improve their language skills. Others have professional jobs in order to maintain themselves or make some money by selling advertising space. However, this does not mean that they can rely on game translation as a business. There are two reasons for this. First, people who have become used to playing illegal copies for free are not willing to pay

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for translation fees. Secondly, the act of translating a game is illegal which means translation groups have no legal basis on which to claim compensation for their work. According to the PRC Copyright Law, if a person wants to translate a work into another language, he/she must obtain the right holder’s consent. Translating a game without this thus infringes copyright.

Game translation is time-consuming and requires technical support. Therefore, it may be a better idea for foreign game companies to attract these groups to work for them. As Valve’s Steam and Microsoft’s Xbox did with regard to consumer-created content and independently developed games, a new business model can be created from which both parties can benefit. Game companies, small and medium-sized game companies in particular, can limit dissemination of illegal copies and sell more authentic copies to the public by recruiting members of local translation groups. Local translation groups can also help these companies localise their products, a capability possessed only by large game companies. Due to their limited budget, small and medium-sized companies in general either use machine translation or contract out translation to third parties which may contract the task out further. Poor translation degrades the quality of a game. Therefore, it is better for such companies, i.e. those with limited budgets, to collaborate with the domestic translation groups that already possess extensive experience in carrying out high-quality translation. Such a business model also benefits local translation groups. Not only can they obtain fair and legitimate compensation while continuing to explore

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83 The PRC Copyright Law, art 10 (15) (‘Right of Translation’), art 12 (‘Where a work is produced through adaptation, translation, annotation, or arrangement of a pre-existing work, the copyright in the work shall vest in the adaptor, translator, annotator, or arranger, provided that the exercise of such right shall not infringe the copyright in the original work’), art 47 (6) (‘Using a work, without the copyright owner’s authorization, through exhibition or by means of cinematography or similar thereto, or in ways such as adaptation, translation, or annotation, unless otherwise specified in this Law’).
85 See, e.g., ‘Chinese players’ comments on Armello’ (Chinese version) <http://steamcommunity.com/app/290340/reviews/?filterLanguage=schinese&p=1&browsefilter=toprated> accessed 15 March 2017 (Players are unanimously pointed out they are disappointed on the translation which the developer google translate games.).

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their interests by collaborating with game developers but they can also receive official technical support to optimize the translation within a game. In the past, technical support was generally provided by people who were responsible for cracking games. There is no one better than the copyright owner of a game to provide such support. For example, QinYu Studio, an independent translation team, recently collaborated with Numantian Games, the developer of the game *Lords of Xulima*, to release the Chinese version of the game on Valve’s Steam. The long-standing presence of these translation groups in China may have brought them some degree of market influence among local game players. By introducing these groups, foreign game companies may improve players’ awareness of their brands and branded games, which may increase their local brand equities, thus securing competitive advantages in the future.

### 6.2 Leverage of Foreign Investors

The analysis above shows that it is compulsory for foreign investors to form partnerships with Chinese local firms in order to run console gaming businesses. Foreign console firms are not able to fully own digital distribution platforms because games must be operated by Chinese partners. Therefore, they are forced to publish their games via local publishers even though some of them such as Blizzard and Activision have already internalised the game publishing business in other developed markets. This means that the capabilities of these foreign investors to appropriate profits in China are not as strong as they are in the western markets. Under such circumstances, foreign investors may have more leverage with Chinese partners in

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87 This can be indicated from information regarding games passed GAPP’s censorship. See above n 11 (For instance, the game ‘Minecraft’ is developed by 4 J Studios and published by Microsoft and Sony Computer Entertainment outside China. However, it is published by Shanghai Electronic Publishing Company and operated by BesTv in China. NBA 2K15 is published and operated by 2K Sports outside the China. However, it is published by Shanghai Electronic Publishing Company and operated by BesTv in China.).
terms of allocating revenues if their brands already possess a strong influence among local game players.\textsuperscript{88}

The Chinese market demonstrates the ‘mask’ function of trademarks. Foreign investors can use their brands to offset the negative influence of administrative regulations. Although some customers may know about the joint ventures between console firms and Chinese companies, the details cannot be easily found in search engines or even the government company registration system. Furthermore, consoles are all sold under the name of the console firms. It appears that customers directly associate these consoles with the trademark of whoever sells and distributes them, for example, ‘Sony’, ‘PlayStation’ and ‘Microsoft’ ‘Xbox One’, instead of relating them to ‘Shanghai Oriental Pearl Group’, ‘E-Home’ or ‘BesTV’. The same principle applies to the sale of games as local consumers care less about the Chinese publishers. Brands such as Microsoft or Sony shield other parties in the stream from the local game players. Local game players will be less likely to care about the firms who publish these games but more likely to use the brands and game titles of console firms and developers as references. In this way, foreign investors can still develop their own brand equity almost exclusively to increase leverage of foreign investors against Chinese partners.

This does not mean that trademarks and copyright should be seen as a means by which foreign investors bully Chinese firms in this industry. On the contrary, they are used by foreign investors to offset local regulations and make sure they can capture sufficient returns on their investments. Until now, it is only foreign investors that have been investing in developing consoles and games in China. The contribution of local firms to product development in this industry is insignificant compared with foreign investors. In the short term, IPRs can be used by foreign investors to prevent abuse of government power. When the local industry becomes mature, IPRs may then be used to protect the interests of both foreign and local firms in the ways shown in the previous chapters of this thesis.

7. \textbf{Conclusion}

\textsuperscript{88} Copyright is also important. However, as showed in Chapter III and Chapter IV, copyright works have to be known by final customers so that right holders can capture more returns from innovation.
There are significant differences between the console game industry in China and its counterparts in other developed markets. These differences determine that this market must be isolated for a period in spite of the trend of globalization. Otherwise, this emerging market will be killed off before it becomes fully established. In order to establish this official market, the existing grey market and problem of game piracy must be eliminated. The preceding analysis shows that it is possible for console firms and game companies to enforce copyright to reduce the problem of game piracy. With regard to parallel importing, both copyright and trademarks confer on console firms or game companies the right to prevent third parties from importing consoles and games into China. In addition, this chapter also briefly examined the relationship between foreign investors and local firms. Copyright and trademarks are shown to be important for both local parties and foreign investors. Foreign investors with limited budgets can rely on local translation group to localise games and gain competitive advantages in the future. Translation groups are the only existing party that made an original contribution to this industry before the ban was lifted. They can also benefit from copyright and trademarks if they start to collaborate with foreign investors. In sum, the preceding analysis shows that even though the PRC Copyright Law and Trademark Law are less comprehensive than their counterparts in the developed markets, copyright and trademarks can be tailored by courts to stimulate innovation in China by establishing the local industry.
General Conclusion

This thesis aimed to evaluate the hypothesis that the IP laws create incentives for firms to invest in developing and marketing new products in the home console game industry. After conducting a series of analyses, I suggest that IPRs in general can be used to maximise the prospective returns on the investments firms make in the development of new products in this industry.

1. Main Contents Walkthrough

I began by accepting the fact that competition is a necessary element to encourage any market participant to invest in developing novel products. I then made the assumption that most participants in the home console game industry will do this only if they believe that they can gain sufficient returns from this strategy. Given the nature of this industry, I argued that such returns are monetary in nature. Hence, this thesis evaluated how IP laws can contribute to the monetary incentives to individuals so as to encourage investment. After identifying the key product leaders in the industry – the console firms and game companies – I transformed the test of the hypothesis into the original question. On the one hand, this question considers the effects that IPRs have on the ability of console firms and game companies to capture returns on investment in this industry. On the other hand, it also considers the direct impact of IPRs on competition in this industry as a whole.

Section I

The first section (chapter I) examined the home console game industry in order to enhance the understanding of both this industry and the original question I proposed in the Introduction. Organisational economics were introduced, compared and synthesised to analyse the competition in this industry. After using Porter’s Five Forces and the VRIO framework to examine the market competition in this industry, factors that affect incomes of a console firm or a game company were identified. I identified four major factors that affect returns of a console firm or a game company

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in this industry. They are: (1) upstream and downstream parties’ bargaining power; (2) buyers’ arbitrage (parallel importing and second-hand game reselling); (3) game piracy; and (4) rivalry competition. I therefore argued that a console firm or a game company in this industry can maximise its returns by improving competitiveness, increasing bargaining power, preventing parallel importation and second-hand game reselling, and game piracy. The analysis in this section demonstrated the underlying reasons for the way the original question was broken down and rephrased into the four sub-questions. Furthermore, I also explored ways to increase the competitiveness of both console firms and game companies in detail on the basis of these two frameworks. It was suggested that console firms gained competitive advantages by managing their supply chain, investing in an innovative interface system of console platforms, and increasing first-party and second-party games. With regard to game companies, I argued that letting game players know about their products is a key factor, which is as paramount as other factors such as quality, genre and selecting appropriate platforms in terms of competing for final customers on the software market. Further analysis was conducted in section II to explore the effects of different types of IPRs on these factors.

Section II
Bearing in mind the four sub-questions, the hypothesis was tested in this section which includes Chapter II, Chapter III and Chapter IV. This section considered the impact of IPRs both on competition and on individual innovators’ returns.

Due to the fact that innovation in hardware technologies moves into the upstream industry – the semiconductor industry – the hypothesis was therefore tested primarily in the semiconductor industry in Chapter II. Patents were found to intensify competition in the semiconductor industry by facilitating vertical disintegration, which lowers the entry barrier to this industry. Competition in the semiconductor industry benefits the home console game industry by providing more options for console firms. I also examined the inherent problems of the patent system that may stifle competition and suggested that such problems can be reduced by both utilising the internal mechanisms of the patent system and relying on court discretion.
Chapter III focused on evaluating how copyright can act to maximise returns a game company or a console firm can capture from its investment. The analysis suggested that copyright conferred a relatively weak right to exclude on right holders in terms of preventing competitors from cloning games. The analysis did not find that copyright automatically gives console firms’ the market power to control game companies. In other words, a console firm cannot enforce copyright to compel game companies to obtain licenses from it before developing games. The analysis also suggested that the weak right to exclude conferred by copyright on copyright holders intensifies the competition on the software market. Game companies and console firms have sufficient resources in the public domain to innovate and compete with each other at another level.

Trademarks were assessed in Chapter IV. Trademarks affect both the console hardware market and console software market. Like copyright, the analysis did not find that trademarks confer on a console firm market power automatically which may be used by the firm to distort competition on the software market.

Section II also showed that IP laws increase returns of both console firms and game companies by improving their competitiveness, increasing their bargaining power and maximising the total revenue the whole industry captures.

Intensified competition in the semiconductor industry increases the incentive of a firm to invest in novel products so that it can gain competitive advantages over competitors, whereas competition creates incentives for a diverse range of products to be developed and of course also works to keep pricing in check. A console firm, as the only party connecting suppliers and other participants in the home console game industry, is more likely to reduce hardware costs and gain advantages in terms of both price and power of consoles if it selects the right hardware suppliers and products. Furthermore, as indicated in the first section, managing supply chain, developing aspects of the interface system and increasing first-party and second-party games are three possible ways for console firms to gain competitive advantages. These strategies also require console firms not only to have the right external partners but also maintain efficient communication and knowledge sharing with these partners. The analysis showed that patents can contribute to console
firms’ selection of partners and to gaining competitive advantages by conveying information, improving communication efficiency and facilitating knowledge sharing between console firms and other parties in the console hardware market.

In the software game market, game companies can gain competitive advantages by using both trademarks and copyright. A copyright work is a basis for a game company to gain competitive advantage and increase bargaining power. However, the weak exclusivity conferred by copyright also implies that other measures have to be taken by a game company or a console firm to translate a valuable game into resources of competitive advantage. The importance of marketing and branding were highlighted. I found that copyright can be used by right holders as a complementary means to trademarks in implementing marketing strategies. The unique features of games created a new industry – e-sports. I pointed out that the most impressive characteristic of copyright is that it automatically gives a game company control over the bottleneck of this industry as far as the businesses that are relevant to its games. The game company may not only profit from events directly but can also develop brand equity via using brands or trademarks in such events.

Trademarks are related to brands in Chapter IV. The exclusivity that a trademark confers encourages the right holder to invest in building brand equity (i.e. awareness, familiarity, association, loyalty, etc.) to increase the perceived value of the mark and the marked products. The analysis showed that the legal protection of trademarks consolidated the functions of brands and increased the brand equity of a game company or console firm which in turn helps it gain competitive advantages and leverage in this industry.

With regard to game piracy, copyright was shown to be effective in terms of restraining diffusion of game piracy although there is a slight difference between the EU and US in this respect. Neither copyright nor trademarks were found to be a reliable means for a console firm or a game company to stop second-hand game reselling. In general, IPRs do not confer on a game company or a console firm the right to interfere in the subsequent distribution of a game after its first sale. I also conducted a comparative study on copyright law and trademark law in the EU and US regarding parallel importation of games, and found that they held opposite
attitudes. After analysing the market environment in these two jurisdictions, I argued that such differences were partly determined by the actual market environment in these two regions. The EU union exhaustion and the US international exhaustion doctrines each guarantees that local companies in these two regions can capture at least similar returns from innovation. At the end of this section, I suggested that digital distribution is a better solution than IPRs in terms of reducing the losses of console firms and game companies caused by second-hand game reselling and parallel importing.

To complete my evaluation of the relationship between IPRs and the owners’ ability to maximise return on investment, I extended it from developed and saturated markets in the US and EU to a developing market in China as businesses in this industry have become globalised.

Section III
This section only had one chapter – Chapter V. In this chapter, I selected the Chinese home console game market to test the hypothesis. The initial step of my analysis was to show the difference between this emerging market and other developed markets. After examining the local market environment, I found that this emerging market features both a large grey market and a severe game piracy problem, which distinguishes it from other developed markets. Accordingly, I argued that the priority was to solve these two major problems so that an official market could be established. After identifying copyright and trademarks as two types of IPRs that are closely related to this market, I examined copyright law and trademark law in China looking for ways to solve these two problems. As has been shown in chapter V, although copyright law and trademark law in China are not as comprehensive as their counterparts in the US and EU in terms of preventing game piracy and parallel importing, they still can be tailored by the courts to reduce these two problems. This result implies that IPRs can contribute to maximisation firms’ returns on investment in a highly-regulated market.

2. Limitations and Directions for Future Research
The following paragraphs give my concerns about the limitations of my research and the possible ways to corroborate the conclusions I came to in this thesis.

Firstly, my study focused on the home console game industry. Whether or not its conclusions can be generalised and to what extent they can apply to other industries still needs further examination. I used the term ‘monetary’ to describe the incentives provided by IPRs in this particular industry where ‘deep’ pockets and expected financial returns play the major roles in investment decisions. However, this approach may not fit well with some industries. For instance, monetary returns may not be a primary incentive for university scholars to publish papers. Hence, to examine the relationship between IPRs and innovation in such industries, the nature of the incentives should be changed. Likewise, conclusions may vary as well. For instance, the music industry does not rely on the semiconductor industry as much as the home console game industry does. Patents may thus not be as important to firms in the music industry as they are in the home console game industry. This thesis only provides an illustration of ways to evaluate the hypothesis regarding the relationships between IPRs and incentives to invest in innovative products in a particular industry. Although a similar method can be adopted in another industry, a different conclusion may be drawn at the end.

Secondly, this study does not claim to be comprehensive even though it tries to give a more systematic and specific analysis of the effects of IPRs on the home console game industry. As has been shown, such association varies from country to country. I chose the US and EU market to represent developed markets because they are the two largest markets in the world in terms of the home console game industry. China was selected because it is the first emerging market targeted by this industry and it may become the largest market in the future which in turn would contribute to the further growth of this already saturated industry. Due to the unfamiliar language and timeframe of this study, I did not consider the Japanese home console game industry, one of the largest home console game markets in the world and neither did this study explore other large potential markets such as India for the same reasons. Further research that tests the hypothesis in these unaddressed markets will no
doubt enhance our understanding of the relationship between IPRs and innovation in this particular industry.

Last but not least, even though this thesis gives a new perspective to analyse and observe the association between incentives to invest in the development of new products in this industry and IPRs, only a theoretical approach was applied which has to be corroborated by empirical work. For instance, an important avenue for future research could be done in future to examine the hypothesis by taking the organisation structure and performance of firms into consideration.

My analysis in this thesis only provides a starting point rather than an end to the debate on relationships between IP laws and the incentives that they provide. What I can hope is that this thesis sets a new template in which such relationships can be observed and analysed in a particular industry to enhance the present general understanding of IPRs.
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