

INTELLECTUAL PROPERTY: CHINA'S IP LAWS AND ENFORCEMENT - MYTH AND REALITY

Briefing Note

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About the Author



Ian Harvey is a former engineer with extensive international business experience who has specialised in the intersection of innovation, intellectual property and business strategy. He was CEO of BTG plc from 1985 until his retirement in 2004. He oversaw the privatisation of BTG in 1992, its public flotation in 1995, a demerger of part of its business and three Rights Issues to raise business expansion capital from its shareholders. BTG was the world-leading technology commercialisation company which had been patenting and licensing globally since the early 1950s. It was acquired by Boston Scientific in 2019.

Following a degree in Mechanical Sciences from Cambridge University as an undergraduate apprentice, his early career was as an engineer for five years with Vickers and Laporte Industries in the civil, aerospace and chemical industries. After an MBA from Harvard Business School, he was with the World Bank for seven years in a variety of roles in South Asia and French-speaking West Africa.

He has been a student for many years of the history and trends of global invention and technology development and the closely-related role of IP. He has written many articles and book chapters and has lectured widely on global intellectual property and technology issues, particularly as they relate to business. He was involved previously with the development of intellectual property in China and working for the teaching of intellectual property as a necessary component of strategy in business school programmes.

He is: Adjunct Professor, Imperial College Business School, London and member of its IP Centre Advisory Board; a Fellow of the University of Nottingham; a member of: the Industry Joint Advisory Board, Center for IP Studies (CIP) Chalmers University of Technology, Göteborg University, Sweden and the Norwegian University of Science and Technology; and, the Advisory Board, International Intellectual Property Institute, Washington DC. He has an honorary Doctorate from the University of Wolverhampton.

Other appointments have included: Chairman of the UK government's Intellectual Property Advisory Committee (2001-5); UK Prime Minister's Advisory Council on Science & Technology (1989-93); Advisory Panel for Science & Technology Policy Research Unit of Sussex University (SPRU) – (1989-2003); Chairman of the UK Intellectual Property Institute (1999-2011); Air Products & Chemicals Inc. European Advisory Council (1999-2005); Director, Primaxis Technology Ventures Inc., Toronto (1999-2005); Particle Physics and Astronomy Research Council Appointments Committee (1999-2008); Policy Committee of Cancer Research UK (2004-6); Board, London Bioscience Innovation Centre (2006-14); Chairman, IP Center Advisory Board, Tsinghua University x-lab, Beijing (2009-19); Advisor to NTEM, Tianjin, China (2009-18); Course Professor, Tsinghua School of Economics and Management, Beijing (2009-18).

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EXECUTIVE SUMMARY

- The role of IP in China is much more advanced than many people realise:
 - I. IP law in China today is of a high quality by global standards.
 - II. The quality, cost and timeliness of the “rights” (patents and trademarks) granted to foreign firms under Chinese law compare very well with the rest of the world.
 - III. Enforcement of patent rights is much cheaper and faster than in most developed countries. The courts, including the IP Tribunal of the Supreme Court, are handing down sophisticated judgements. The penalties for infringement were relatively low but are now steadily increasing.
 - IV. There remain some issues, including: possible requirements to have Chinese JV partners in some sectors; some requirements to have PRC or Party directors on the Boards of foreign-owned entities; the economic asymmetries of ‘Made in China 2025’ may discourage technology collaboration and partnerships as will US sanctions on some Chinese entities and sectoral products.
- Since 2004 there has been more patent litigation in China than in any other country, including the USA. Over 95% of cases are Chinese company suing Chinese company.
- About 85% of the foreign companies litigating their patents in China win their cases (compared with 30-40% of foreign companies litigating their patents in the USA).
- Enforcing trademarks has been more difficult but is recently improved substantially with much higher infringement awards.
- Many (not all) of the alleged IP “problems” in China are “self-inflicted wounds”, such as foreign companies failing to file for patent or trademark rights in China (as they must in each country where they want protection).
- British companies file fewer patents in China than Switzerland or The Netherlands and one fifth those of German companies.
- China shows signs of regaining its historical creative and innovative position. Since 2010 Chinese entities have filed more patent applications in China than US entities do in the US¹ and now files more patents than the next four countries combined. Chinese universities now file over four times as many patents in China as do the US universities in the US and over twenty times those of UK universities in the UK.
- China ‘s foreign patent filings have been increasing rapidly and it now files more foreign patents than any other country.
- It appears that the leadership in China has a deep understanding of the role that IP plays in a knowledge-based economy. Its actions suggest that the PRC aims to have a world class IP legal and enforcement system which is both understood and used. Former Prime Minister Wen Jiabao said on many occasions “*competition in the future is competition in IP*”.
- By contrast, there is often an anti-IP tendency in Europe and particularly the US. This may hobble them in their global markets just as China becomes a major IP player.
- The recent very aggressive trade stance by the US against China creates opportunities for mutually-beneficial collaboration by others.
- ***Provided that companies take the time and trouble to understand how the IP system in China operates, there are many opportunities for IP-based businesses to flourish in China.***

There are many opportunities for universities to collaborate with their counterparts in China as well as with Chinese companies.

¹ NB “invention” patent applications in China versus comparable “utility” patents in the US

² See 1.3.1 below.

³ WIPO 2016 Report.

⁴ See <https://www.gibsondunn.com/wp-content/uploads/2017/11/Federal-Circuit-2016-2017-Year-in-Review-1.pdf>

⁵ See <http://www.ipwatchdog.com/2017/06/14/90-percent-patents-challenged-ptab-defective/id=84343> and <http://www.ipwatchdog.com/2017/08/09/federal-circuit-invalidates-patent-upheld-ptab-ipr/id=86617>

1. Introduction

The seismic shift in IP that has taken place in China since the Cultural Revolution is not well understood.

China has become a major technology and IP generator, creating a wave of patents likely to wash over the US and Europe's shores in the next two decades, enabling China to dominate significant technology areas. It already files more patents (in China) than the next eight countries combined. This stems from the recognition inside China (largely missed by foreign observers) of the fundamental importance of IP to economic growth as well as the natural creativity and inventiveness of the Chinese. By contrast, both in Europe and the US, the rôle of intellectual property today is often challenged, putting in jeopardy the West's competitive base in its global markets

Many foreign observers still believe that patent enforcement in China is either poor or non-existent. They are unaware of the profound changes that have taken place over the last thirty-five years. To understand this, there are three components in an effective IP regime:

1. the underpinning law,
2. the cost and quality of the IP "right" acquired, and
3. the effectiveness and cost of enforcing that right

1.1 IP Laws

China introduced its first patent and other IP laws in the mid-1980s, to become compliant with the international Berne and Paris IP treaties. Since then it has passed several revisions so that, today, its IP laws are of a high quality by global standards. The fourth revision of its patent law came into force in 2021.

The IP laws are based on Civil Law (similar to most of Europe) as opposed to Common Law (UK, USA). This can be a source of unfounded criticism by US and UK firms who do not understand the differences, for example, in court procedures (see 1.3). The German Justice Ministry played an instrumental role for twenty years in providing advice and support for this process and today regards the current Chinese IP legal system as well-founded.

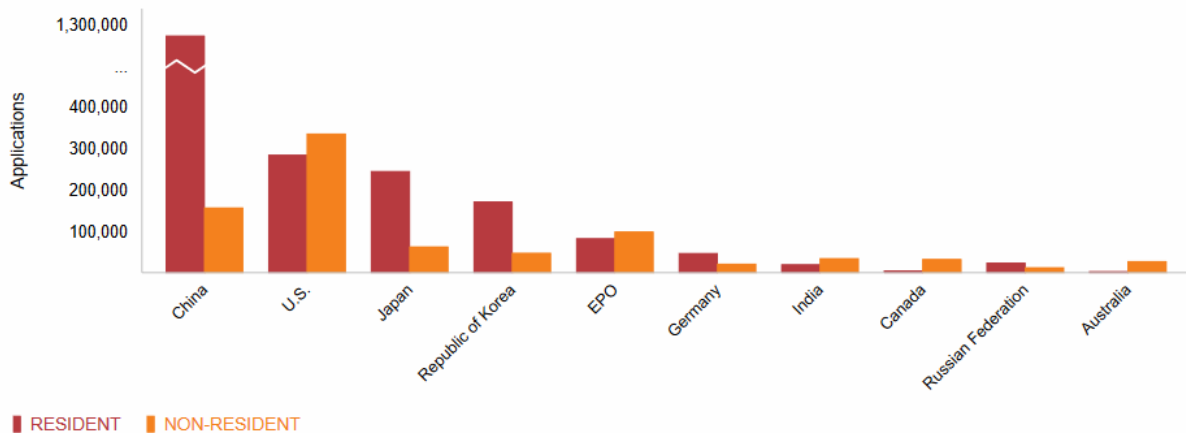
1.2 IP Rights

IP rights, particularly **patents**, issued to foreigners are generally of excellent quality, reasonable cost and timely. Patents issued to foreigners by the Chinese Patent Office have usually been well "examined" by their best patent examiners. The 20-year lifetime cost (\$20k-\$50k) of a Chinese patent is about 10 per cent of the lifetime total cost of patents filed in each of the G8 countries. It used to be the case that the shortage of trained and experienced patent examiners meant that patents issued to Chinese inventors were not always as critically examined. This problem has been addressed through a massive programme to recruit and train patent examiners². The time to grant of a patent is now slightly longer than Korea and Japan but faster than the US, EPO and UK³. As an indicator of quality, about 90% of patents issued to foreigners are held to be valid by the Chinese courts. This compares with the US Second Circuit court of Appeal which has been invalidating a growing number of patents – about 50 % were held to be invalid in 2016-17⁴. Many US patents are now also challenged in the frequently-used US Patent and Trademark Office's (USPTO) Patent Trial and Appeal Board (PTAB), where 40-90% (depending on how the data is analysed) of challenged US patents are held to be invalid, casting doubt either on the role of the PTAB or the quality of patents issued by the USPTO⁵.

China has also been allowing greater patentability of **software**⁶. This is in contrast with the US where it used to be the case that software in the US had greater patent protection than most other countries, providing a strong base for the initial growth of companies such as Microsoft, Google, Facebook and Amazon. That changed with the Supreme Court's 'Alice' decision in 2014, which reduced the patentability of software 'subject matter'. Whereas copyrighted software can be written around, patented software cannot be. So small software firms in the US today need to rely more on copyright than patents and therefore find it harder to protect their innovative ideas. The number of US software start-ups has dropped by about 50% since 2014.

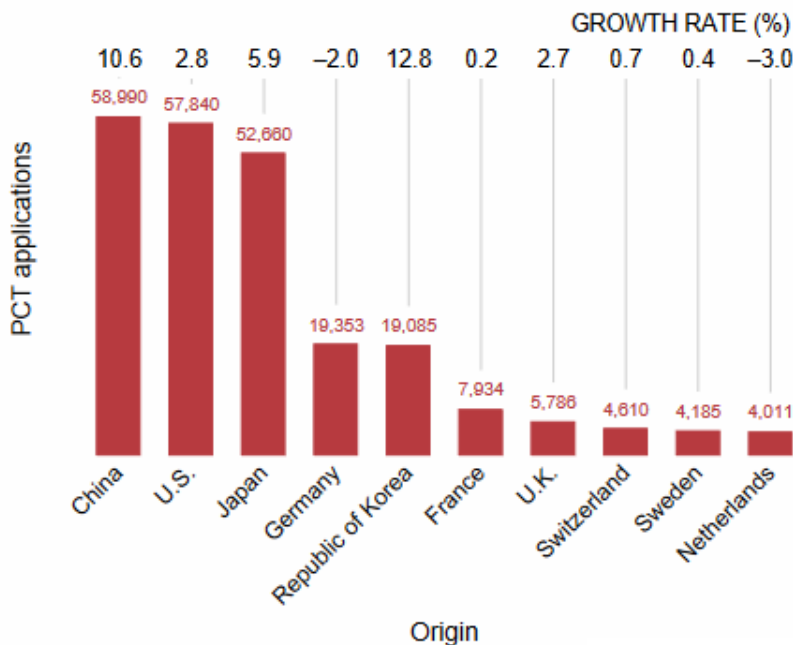
In 2020 SIPO received more patent applications than the next eight offices combined – USA, Japan, the Republic of Korea, European Patent Office (EPO), Germany, India, Russian Federation and Canada – Figure 1. It has also rapidly increased the number of foreign patent filings through the Patent Cooperation Treaty and now files more than any other country - Figure 2.

Figure 1: Patent applications at the top 10 offices, 2019⁷



Source: World Intellectual Property Indicators 2021, WIPO

Figure 2: PCT applications for the top 20 origins, 2019



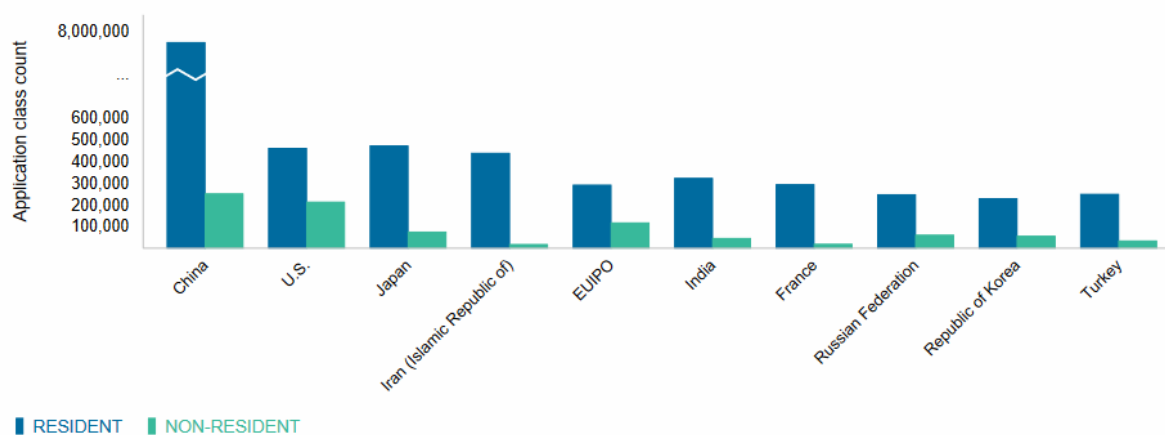
Source: World Intellectual Property Indicators 2021, WIPO

⁶ See: <http://www.ipwatchdog.com/2017/03/03/china-relaxing-barriers-software-business-method-patents/id=79017>

⁷ In Europe a granted "invention" patent has been examined by a patent office and is a strong IP right, whereas in Germany and China their "utility" patents are not examined and are therefore quite weak IP rights. In the US the examined patent is called a "utility" patent. Care must be taken when comparing such cross-country patent data to avoid confusion.

There used to be more problems with **trademarks**, which were more difficult to enforce and penalties for infringement were small. But today, a granted trademark in China is generally of good quality. There are far more trademark applications in China than in any other country – Figure 3.

Figure 3: Trademark applications for the top 10 offices, 2016

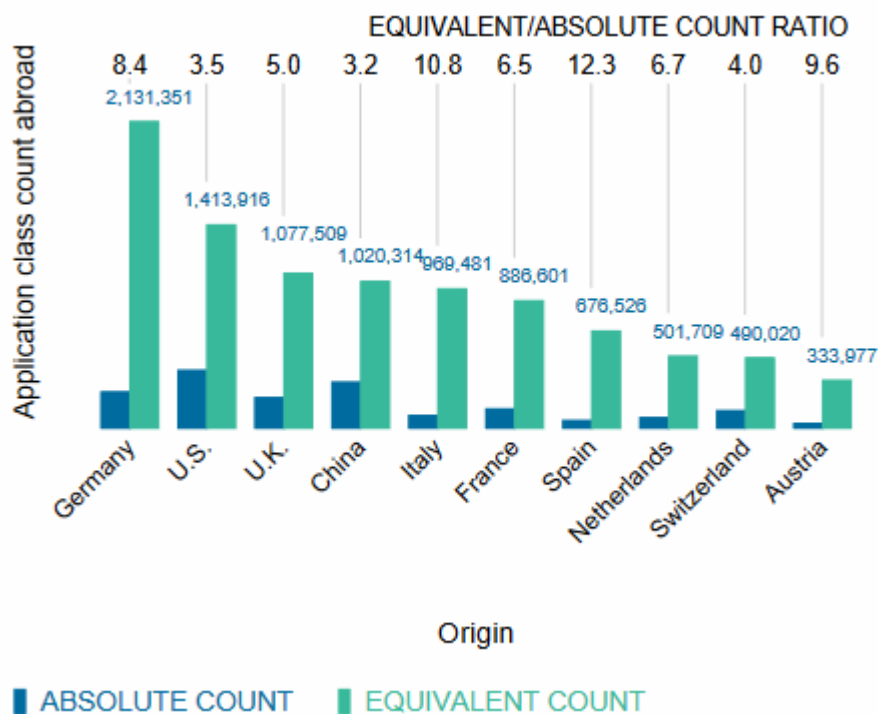


Note: EUIPO is the European Union Intellectual Property Office.

Source: World Intellectual Property Indicators 2021

However, as with patents, China is filing far fewer international trademarks than internally, perhaps an indication that growth of the internal market still provides plenty of opportunity without yet the need to go overseas – Figure 4.

Figure 4: International trademark applications, 2019⁸



Source: WIPO Statistics Database, September 2020

⁸ Note: This figure distinguishes between absolute counts and equivalent counts for filing activity abroad; that is, resident applications are excluded. Based on equivalent application class counts, applicants from Germany had the highest level of trademark filing activity abroad. This was due not only to their high application class counts at numerous foreign offices, but also to the frequent use of the European Union Intellectual Property Office – with its multiplier effect – to seek trademark protection within the entire EU. See the glossary for the definition of equivalent application. The origin of a trademark application is determined by the residence of the applicant

1.3 IP Enforcement

Although some problems remain, the third area, enforcement, has improved substantially and continues to improve. It is quite possible to get a patent or trademark enforced through the Chinese court or administrative systems. Many foreign companies have successfully litigated against products which have infringed their patents or trademarks. The cost is not high - \$60,000-\$120,000 - compared with about \$100,000 in Germany, \$500,000 in the UK and \$5+million in the US.

In China, provided the appropriate route is chosen, IP cases are usually held in front of specialised IP judges. There are usually three judges but, particularly in high profile cases, there may be five. The IP Tribunal of the Supreme Court, as the final court of appeal, gives high quality judgements by international standards. Civil Law cases in general are usually argued on the basis of the law, without reference to precedent, unlike Common Law countries. However, in the case of IP China has developed a half-way house where the IP Tribunal often publishes (in English as well as Chinese) the reasoning behind its judgements – ‘to help other courts’.

Some of the criticisms voiced by US companies (for example, no “discovery” in litigation and the extent to which cases can be argued in court) would apply to any Civil Law country (such as Germany) and not just China.⁹

The time for an entire **patent** case, through the appeal and to enforcement is usually quick by international standards. As it is a civil law system, more time may be needed to collect evidence before the start of the trial. Costs including appeal are low - \$50,000 to \$250,000 compared with \$250,00 to the low millions in Europe and possibly \$5 to \$10+ million in the US. Rather than the current highly adversarial and expensive US system, the Chinese system encourages good-faith negotiations between parties before trial whilst still having strong injunctive remedies for the patent owners if they win in court. If the Administrative route (funded largely by the PRC government) is chosen, enforcement can take place in a few weeks and cost less than \$10,000. In the latter case, companies must be ready to respond very quickly to requests from the court. This means that IP cases need to be managed locally, without (possibly lengthy) reference to head office.

Trademark enforcement is improving. For example, the US running-shoe company New Balance won a counterfeiting case in 2018 in the Suzhou Intermediate Court¹⁰, which was supported by the second instance court at the Jiangsu High Court with an award of over \$1.5m. Nonetheless, counterfeiting and parasitic brands remain a problem for both Chinese and foreign brands. Continuous vigilance and assertion action is important.

Trade secrets: many western companies do not take the issue of protecting trade secrets seriously. Every company, whether they operate in the US, the EU or China should assume that people will try to steal their trade secrets and take appropriate protective action. Excellent background for China can be found in Intellectual Asset Management by Jacob Schindler¹¹.

The Chinese government has been aware of most of the unresolved problems and shown itself willing to address them. For example:

1.3.1 In 2005 China had one third the number of patent examiners of the US. The Chinese Patent Office (SIPO) then recruited and trained annually between 400 and 500 patent examiners (many more than the total number in the UK). This was an immense training challenge which was supported by the UK and European patent offices. The training in the SIPO institute for examiners is today regarded as rigorous by the EPO. Today, the number of examiners is comparable with other countries and the standard of examination is regarded as high. Patent attorneys in Europe have commented on

⁹ It is the expensive discovery process (taken to its financial extreme in the US) in the “adversarial” structure of Common Law trials that arguably leads to far higher costs in the UK and US – but, some would claim, better justice.

¹⁰ now pending for the second instance judgement at the Jiangsu High Court

¹¹ IAM <https://www.iam-media.com/litigation/trade-secrets-take-centre-stage>

the increasing amount of prior art (from outside China) that is being identified by SIPO examiners (including through the use of AI) but not by those of other offices.

1.3.2 The In 2005 about sixty percent of the one thousand judges hearing IP cases had no IP legal training¹² which meant the quality of the first level courts was variable. Following a government training programme, funded by the EU, judges hearing IP cases now will have had formal IP training. Relatively independent provincial governments have not always recognised that their courts need to be impartial between foreign and Chinese litigants. So local judicial systems are not always fully independent of local government which, in some cases, may influence court decisions. Corruption was recognised as a problem, particularly in the least developed provinces. Structural changes to counter this included the central payment of judges, limiting the time judges can spend in any one jurisdiction and in their home area. However, companies need to be aware of this issue in deciding where to set up business as well as where to, and where not to, use the local judicial system. On-the-ground knowledge of jurisdictions is essential – just as it is in the US.

1.3.3 To address these problems, three Chinese IP Specialist Courts in were set up in Beijing, Shanghai, & Guangzhou in 2014. They have been very successful, and the Chinese Government has expanded the system so that today there are 20 specialist IP courts and tribunals. The original three courts were expanded in 2018 to 3 + 15, i.e., the three original IP Specialist Courts together with 15 Specialized IP Tribunals (Shenzhen, Xi'an, Suzhou, Wuhan, Tianjin, Ningbo, Fuzhou, Hangzhou, Chengsha, Zhengzhou, Ji'nan, Qingdao, Heifei, Nanjing, and Chengdu). While the courts and the tribunals have different minimum requirements in order to accept a case, foreigners can essentially think of the tribunals as regional/city IP specialist courts. Furthermore, each of these courts/tribunals requires that their judges must have significant IP experience. These 18 courts are essentially selecting the best from the regional IP judges which, arguably, makes the influence of these courts on Chinese IP jurisprudence significantly greater than just 18 "regular" courts.¹³ Because of such variations across China, forum shopping (which is common in the US and Germany) for the appropriate jurisdiction in which to litigate is also now important in China.

1.3.4 The central government has actively encouraged foreign firms to use the IP Tribunal of the Supreme (Appeal) Court, whose decisions have been sophisticated and of high quality.

Today, there are more patent litigation cases filed in China than in any other country, including the US. In 2017 about 16,000 patent cases were filed in China (up 30% from 2016) dwarfing the 4,000 cases filed in the US. Over 95% of the patent litigation cases involved only Chinese parties¹⁴. The 5% foreigners won more frequently than domestic litigants (84/80%), had a higher injunction rate (93/90%) and higher awards (202k/66kRMB)¹⁵ Chinese companies today are acting as though their IP is important, is worth defending and that their judicial system is worth using. The 84% success rate of foreign patent litigants in China compares with between 30-40% in front of a jury in the US¹⁶. This is counter to the all-too-common view that foreign patents cannot be enforced in China. Although enforcement of decisions is not always straightforward, well-organised companies manage to do so. Awards for infringement are still low by international standards but are steadily increasing.

¹² This compares with the UK and Germany whose IP court judges are almost all IP specialists with judgements of high quality. However, in the (final appeal) European Court of Justice none of the current justices has IP experience, resulting in variable and inconsistent judgments. In the US, very few of the court of first instance judges hearing patent cases have specialist IP training or experience and the juries will have none, resulting in judgments which are often of poor quality, as well as being domestically or locally biased. The Second Circuit Court of Appeal has specialist judges with good judgments.

¹³ Michael Lin, Marks&Clerk, Hong Kong - <http://ipkitten.blogspot.com/2018/05/when-it-comes-to-ip-enforcement-chinese.html>

¹⁴ "Chinese" includes Hong Kong, Taiwan and Macao but may include some joint ventures with foreign firms.

¹⁵ See Prof Mark Cohen, China IPR, <https://chinaipr.com/2018/04/10/the-widening-impact-of-chinas-publication-of-ip-cases>

¹⁶ Estimate based on US data and the author's 19-year experience with BTG plc of litigation in many US jurisdictions. In one jurisdiction (Eastern Texas) very few foreign companies have ever won patent cases.

2. Self-inflicted wounds

Although problems do remain, more so in the copyright and trademarks areas, many Western companies' problems are self-inflicted wounds. As the CEO of Rouse, the largest foreign IP advisory company operating in China, says: *"The anecdotes that people seize on to reinforce their biases - that China does not respect IP and therefore will never be an innovative nation – at their root are frequently about Western corporate failures deriving from poor strategic decision making, weak due diligence and a haste to gain market share. While the West continues to misconstrue these corporate misadventures as China's innovation and IP failure, China's real progress in developing an IP-aware society, and a business environment that truly understands innovation, proceeds under the radar."*

The most common failures are:

2.1 Not registering their rights in China – unless you register your trademark, design or patent in China you will have no "right" to enforce – just as in the US or Europe. An astonishing number of global companies still fail to file adequately in China. For example, one global UK company has filed only 4% of its patents in China compared with 23% by its major US competitor - both have joint ventures in China. If you do not file patents or trademarks in China, you have no protection in China.

2.2 Inadequate understanding of the market-place. Many companies leap quickly into China without a proper analysis. This omission is surprising given that China has the population, and diversity, of the 50+ countries comprising the EU, North America and South America. Local knowledge is essential.

2.3 Limited or non-existent on-the-ground IP expertise. Two of the largest companies globally in their field – the Head of IP for China in one (American) has never been to China and another (Japanese) with substantial manufacturing in China has a recent graduate as its only local IP presence. It is therefore not surprising that many firms do not understand and cannot cope with what is happening in IP in China. By contrast, 95% of Philips' 50 IP lawyers and patent attorneys in China are Chinese and they have a very successful business in China (see below). When Bill Gates brought in Marshall Phelps out of retirement in 2002 (he had been head of IP for IBM), as a fluent mandarin speaker he transformed Microsoft's China operations from loss-making to very profitable¹⁷.

2.4 No delegation and too slow. The Chinese have a fast legal and enforcement system where a company must respond rapidly (for example 5 days to agree a seizure/enforcement order). With the low level of their IP representation in China, many companies must refer this to head office for approval and simply run out of time.

2.5 "We mustn't sue – it would annoy the government". Far from it – the government and judiciary have made clear that the system is there to be used. What they will not accept are complaints from companies about "poor IP enforcement" but who have not made use of the legal and judicial routes available to them.

There are many examples of foreign companies that have been successful in China. At one end of the spectrum *Philips* (Electronics) has a €7b profitable business with 35 companies, 15 research centres and 20,000 employees in China. About 15% of its global inventions now come from China and it is planning for 50%. It already has 4 IP centres and supports "IP Academies" in 3 universities. At the other end of the size spectrum *Zwilling-Henckels* – the top-end German cutlery manufacturer with global sales of €250m and the oldest trademark in Germany – had a major problem with Chinese-origin counterfeits during the early 1990s. Today, there is no infringement (the city of Yangjiang has stopped infringing activity from its 2000 cutlery factories) and Henckels has its own factories in that city as well as 10 distributors, 6 sales offices and 130 points of sale across China. Its

¹⁷ Burning the Ships: Intellectual Property and the Transformation of Microsoft – Marshal Phelps, David Kline

Head of IP is now a Chinese speaker. Many other companies have successful businesses in China including P&G, Microsoft, ARM and Dyson.

Many of the complaints about the IP system in China are made by senior executives or others who do not understand IP, or the mistakes their own companies have made in creating their problems. The situation was, for example, reinforced by the US Trade Representative (USTR) when it claimed “IP theft” because of the decision to invalidate a Pfizer Viagra patent by SIPO, which was then upheld by the Patent Review Board. Not only was the analogous Viagra patent in the EU previously invalidated by the European Patent Office, but 12 Chinese companies used due legal process to oppose the Chinese patent rather than embarking on infringing production, demonstrating respect for due legal process. Most patent professionals would support the view that SIPO’s invalidation was fully merited. Regrettably, probably because of intense political pressure from the US, a Beijing appeal court later reinstated the patent. That action supports the view that the judicial system in China is not yet fully independent of the political process. Pfizer had also failed to register the Viagra trademark in Chinese in China and thus legally could not prevent its use by others.

Although there are still problems (see below) the current situation is far better than many foreign observers appreciate. Moreover, the situation is rapidly changing and improving. For example, the author has been an advisor to Tianjin, a city of about 11 million, 120 km from Beijing. In Tianjin, there is an IP tutor in every school from primary through secondary. From the time they start primary school every child is taught about IP because:

- a) “Stealing IP is like stealing a person’s intellect”
- b) “A modern economy depends on IP”
- c) “IP theft is against WTO rules”

Such far-reaching national IP education programmes in primary and secondary schools and universities will have a significant long-term impact on both awareness of, and capability in, IP. One of the best business schools in China, Tsinghua, has had a course¹⁸ since 2009 on ‘*Innovation – IP – Business Strategy*’. Tsinghua is one of the first business schools anywhere in the world to teach IP as part of an MBA curriculum and it is now a popular course open to all graduate students.

3. Remaining Problems

The US frequently asserts IP theft by China. In many, perhaps most, cases this is not true as demonstrated earlier. However, several issues remain:

3.1 Foreign investment: In some sectors such as automobiles, energy and aerospace, it had been a requirement to have a joint venture with a Chinese company (often a State-Owned Enterprise - SOE) which both assisted access to a complex market place but also brought requirements such as technology sharing. To promote investment, in 2020 the PRC government introduced a new Foreign Investment Law which, if implemented fully over the stated five-year transition, should remove many of the previous issues. It has already done so in the auto sector, where Tesla has recently set up in China without a JV. Understanding whether a JV is a requirement or is negotiable is an area where local knowledge of real requirements is essential.

3.2 Board directors: There appears to be a requirement in some cases that there should be a Board director from the PRC or from the Party. This clearly creates the potential for loss of commercial secrets and the PRC should be pressed to remove any such requirements;

3.3 Technology import/export: although national security may clearly require some limits on import/export of technologies, the PRC should bring such restrictions on IP into line with commercial practice elsewhere.

3.4 WTO: the new Foreign Investment Law should bring China into line with the WTO’s Government Procurement Agreement where foreign owned entities should have the same right of access to government procurement as Chinese firms.

¹⁸ Organised and run by the author

3.5 **Made in China 2025:** The goal of 'Made In China 2025' runs the same mercantilist risk that the US is creating by its current trade sanctions. On both economic and strategic grounds, the PRC needs to be very careful in how this is actually implemented. At the least it should be prepared to consult with others on the implications for trading relationships.

3.6 **Cyber security/cyber theft:** There are assertions of cyber theft by Chinese companies or the Chinese State and Chinese companies are legally obliged to cooperate with China's intelligence services. This paper does not attempt to address this question, which is best done by the relevant security services. However, IP theft can be a problem in any country and every company should take appropriate precautions to help prevent it. Many companies do not do this effectively, leaving themselves open to IP theft from any country or company.

4. Direction of Travel

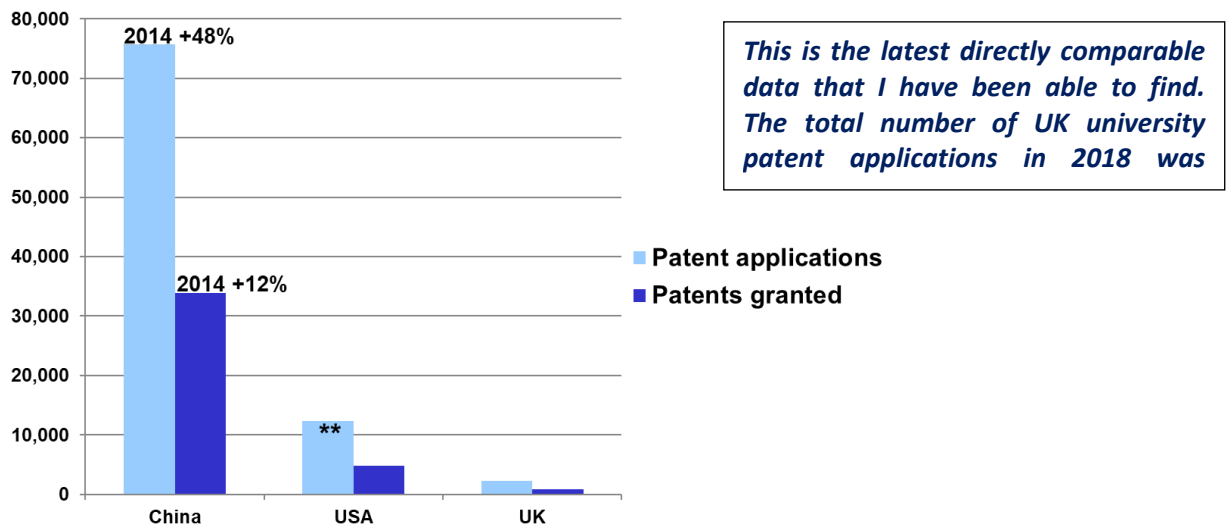
China continues to address its current IP issues. Some will take time to improve, such as increasing court awards for patent or trademark infringement. The government has said it intends to the current five-year plan states this and history suggests that they will implement what they say they plan to. Meanwhile, the continuing "constructive engagement" and practical support being followed by the EU will both help China and, in the long term, will establish good relations in a country where long term relationships are important. The Obama Administration had generally moved the US towards a similar more constructive engagement. The Trump Administration moved strongly in the opposite direction. The Biden administration has not changed this aggressive stance to any significant degree. The recent shift of the US towards a very aggressive, but often poorly-informed, position on IP is seen as not helpful by many companies which do operate successfully in IP-based businesses in China.

The PRC government has shown itself to have an excellent understanding of the importance of IP. Wen Jiabao, the former Chinese Prime Minister, said on many occasions: *'future competition in the world is competition in IP ...'*. Almost thirty five years ago, one of the first post-Cultural Revolution laws established the right to protect and own intellectual property, a right it has still not yet formally extended to physical property such as land. Most actions indicate that China is intent on having a high quality IP legal and enforcement structure. The fourth revision of Chinese Patent Law continues progress in that direction.

Twenty years ago I would have said that most people and companies in China did not have a good understanding of what IP is, how it is used in business and what they should be doing with respect to IP. That has changed radically and there is a good understanding that IP is key in a modern economy. Even if they do not know the details they usually "know they don't know" whereas I still find that many top executives in the US and the UK "don't know they don't know".

In 2014, Chinese universities filed at about four times the number of patents in China (about 75,000 a year) that US universities did in the US (12,000). That was about twenty times the number filed in the UK by British universities (see Figure 5). In China this growth was initially driven in part by the government giving patent applications by academics more credit leading to academic promotion than to published papers. That then evolved to credit being given for granted patents (a higher standard). This evolution indicates the practical nature of China's long-term IP strategies at the micro level.

Figure 5: Comparison of university invention patents 2014



Sources: SIPO, AUTM, HEFCE. Excludes other research institutions

* In the US "Utility" patents ** 2010 data

One recent trend is the rapid increase in the number, and use, of utility-model patents by Chinese companies. These "unexamined" patents are in principle weaker than invention patents. However, German companies make good of the utility-model patent system in Germany and Chinese companies are now showing similar aptitude in China where they have increasingly been successfully suing foreign companies for utility-model patent infringement. However, SIPO has become uncomfortable with the number of utility-model patents, many of which are so called "junk" patents. They often have no or low technical value and are often written in a cheap way to obtain a government subsidy. They could be phased out.

China has also been climbing a steep international hill from a very low base because it had a limited, but now rapidly growing, stock of international patents. In 2005 it had only 3.5% of triadic¹⁹ patents that you would expect given its spending on R&D²⁰. China then said it aimed to increase R&D spending to 2.5% of GDP and to be in the top five countries receiving triadic patents by 2015. It achieved that and in 2019 China was the largest PCT²¹ filer (see Figure 2). It will probably take a further 10 years for China to establish a stock of granted patents commensurate both in number and quality with its R&D spending. The lack of understanding and money to engage efficiently and effectively in the global patent (and trademark) system still remains an opportunity for foreign companies to partner in China in some sectors. That window of opportunity will soon close.

Chinese companies and universities now understand that the international IP system will bring them substantial benefits. Acquisition by SAIC of Rover Group's IP – and only the IP, Lenovo's acquisition of IBM's PC business for its unparalleled global IP position and China WanXiang's acquisition of Schiller, are indicators of some Chinese companies' rapidly growing IP sophistication. The fast-paced business culture in China means that many Chinese companies in China are quite prepared to build their IP portfolio through acquisition. However, particularly in the HiTech sector, the speed of innovation by Chinese companies compared with their Silicon Valley competitors may mean the patent system is less relevant except for more fundamental technologies with a longer life²². Huawei now ranks 9th in US patents granted. With US companies now largely prohibited from engaging with Huawei on

¹⁹ Triadic Patents: patents filed in Japan, the US and key European countries.

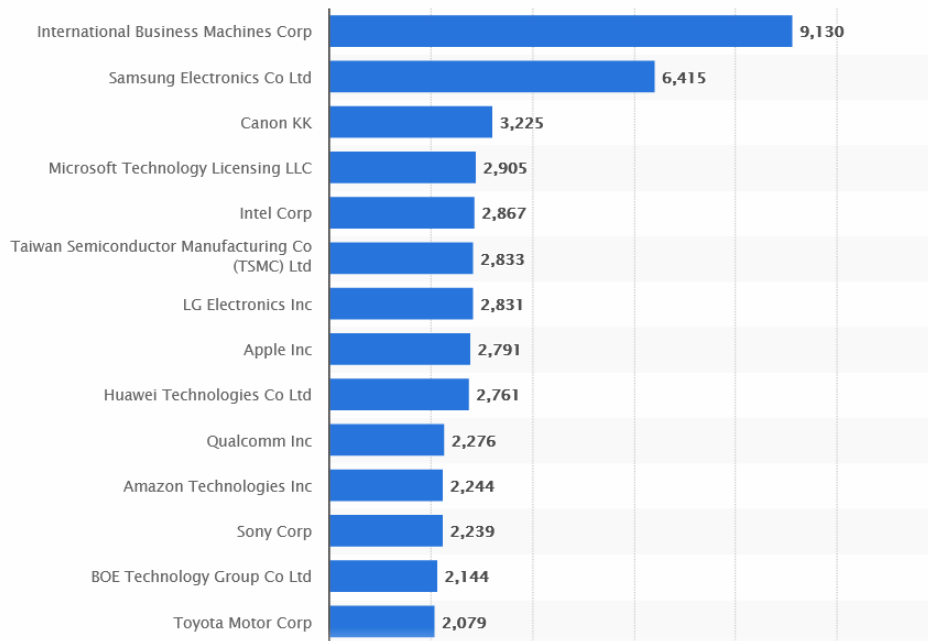
²⁰ Sources: "Beyond the Great Wall – IP strategies for Chinese Companies", BCG, 2007 and OECD Patent Statistics

²¹ PCT: Patent Cooperation Treaty – the most common process for getting international patents

²² See AI Super-Powers : China, Silicon Valley and the New World Order - Kai-Fu Lee

national security grounds, the US will need to decide how to react if/when Huawei decides to enforce its patents against potentially infringing US firms.

Fig 6. Companies granted US patents in 2020



Source: Statista 2022

5. An Inventive Nation

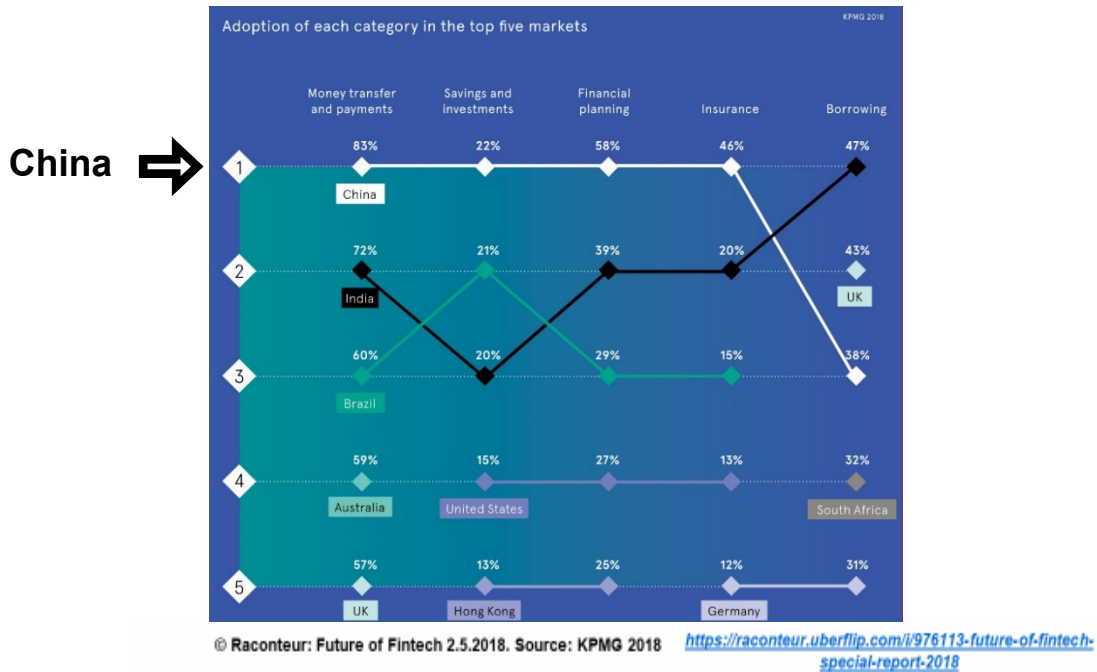
Over the centuries, China has been a leader in fields from mathematics to shipbuilding. The entrepreneurial and argumentative nature of the Chinese goes hand in hand with inventiveness. The world's first genetic therapy for a cancer was invented, developed and approved in China²³. The instant criticism from some in the west – that the regulatory process must have been flawed – recognised neither the excellence of some Chinese science nor the high quality and ethical standards of some clinical medicine in China²⁴.

Chinese companies and universities have begun to realise that if they can invent the next generation of high definition television, or mobile phones, they could be significant players in setting global standards. Having also patented these technologies globally, they can then decide whom to license. These patents are beginning to be filed now and their effect will become visible as technologies mature – perhaps 5-10 years in the case of high technology or 10-20 years for pharmaceuticals. In sectors such as battery technology and AI Chinese companies are already leaders, as they are in the FinTech sector - Figure 7.

²³ https://www.researchgate.net/publication/8934547_China_approves_first_gene_therapy

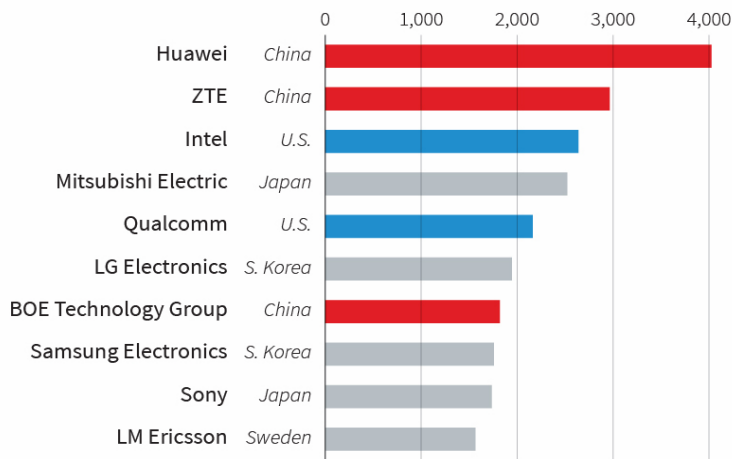
²⁴ For example see: <https://www.theguardian.com/science/2018/feb/18/china-great-leap-forward-science-research-innovation-investment-5g-genetics-quantum-internet> and <https://www.clinicalleader.com/doc/should-you-look-at-china-for-your-next-clinical-trial-0001> and

Figure 7: FinTech – China leads in four of five categories



The book *Dragons at the Door*²⁵ highlights the strides that some Chinese companies have made in both innovation and IP. One example from the telecoms industry is where China has been pursuing TD-SCDMA standards to avoid the payment of patent royalties to many western patent holders. Another indicator is the ranking of Chinese companies now using the PCT for international patent filings – Figure 8.

Figure 8: Top 10 PCT applicants 2017



There are many indications that, over the past 20 years, Beijing has been intent on having a good, enforceable IP system. It took 30-40 years for Japan, Korea and Taiwan to get to the same point. China, contrary to popular perception, has made very good and faster progress.

Source: World Intellectual Property Organization.

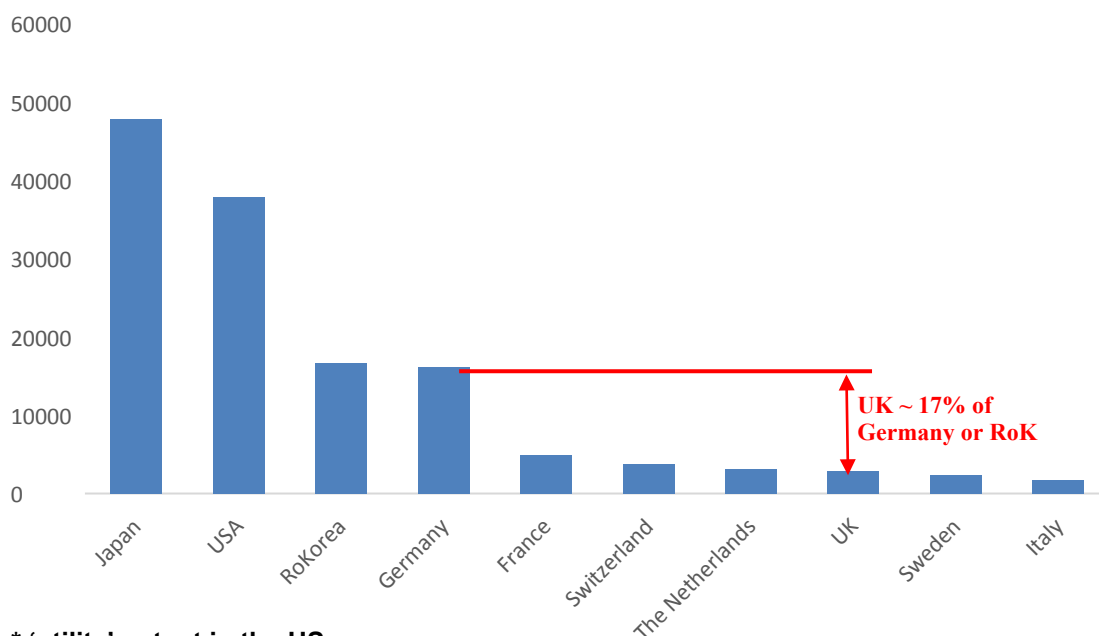
²⁵Dragons at your door: How Chinese Cost Innovation Is Disrupting Global Competition – Ming Zeng & Peter Williamson, Harvard Business School Press, 2007

6. Threats and Opportunities for the West

China is both a threat and an opportunity for western business. The threat is that its strong manufacturing base will increasingly draw on its own technology, to the loss of foreign business. That trend will almost certainly reinforced by the US' current prohibition of companies selling, for example, certain US-designed or manufactured chips to named Chinese companies. The opportunities are that China is a huge market where patent protection is beginning to be as important and useful as in any developed country. Chinese companies and universities are generally eager to collaborate and are looking actively for partners. Foreign universities and companies should understand that working with Chinese universities and companies need not be a zero-sum game but one where both sides can benefit. The window for collaboration is open today but may close as Chinese companies and universities develop their own expertise. Companies who avoid China are probably condemning themselves to second rank status or worse in the medium to long term. The current very aggressive and confrontational posture of the US towards China should also create opportunities for others to collaborate with universities and companies in China.

What is Europe's response to the changes in China? There are wide variations. Germany companies, for example, have a good record filing patents in China, as do The Netherlands, Switzerland and Sweden for their size. But in corporate UK China is not taken seriously except by a small number of large companies. British companies in aggregate file fewer patents in China than Dutch or Swiss ones, and fewer than 20% of Korean or German companies – Figure 9. This is perverse, given that the UK leads EU investment in China and is one of the largest recipients of Chinese inward investment. Interestingly, however, the UK leads these countries in brands registering their trademarks in China.

Figure 9: Top ten countries filing invention* patents in China 2020



Source: China National Intellectual Property Administration. Annual Report 2020

Companies' responses should be:

- if you expect to access the Chinese market, or protect your IP there, make sure you apply for patents and trademarks in China;
- establish an IP base in China with fluent Chinese speakers;
- start looking for your new technologies in China; and,
- establish relationships with Chinese technology partners who will value your expertise and resources.

For politicians and policymakers, it reinforces the importance of turning Europe into a knowledge-based economy with technologies protected through strong patents in global markets. Unless they do so, Europe and other developed countries will be beaten at the knowledge-based IP game which they invented.

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