MADE IN CHINA: THE GLOBAL INFLUENCE OF CHINA'S MERGER CONTROL REGIME IN THE HIGH-TECH SECTOR

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I. INTRODUCTION

Escalated tensions over trade between China and the U.S. since early 2018 have led to growing concerns that deals involving high-tech companies might crumble under China's merger control regime. Foreign high-tech companies are increasingly anxious about non-competition factors and industrial policy concerns playing a role in the review of transactions. Parties almost always ask whether China's antitrust review of global tech-deals might be impacted by broader geopolitical or industry policy considerations. If not, what are the issues that might give rise to competition concerns in high-tech transactions for the Chinese authority?

This article will endeavor to answer these questions drawing from our own experience advising global tech-deals. We will also offer some suggestions on how foreign high-tech companies should plan ahead for their China merger cases, and formulate the right strategies to navigate through the Chinese merger review cases.

A. Qualcomm/NXP

In July 2018, Qualcomm terminated its proposed US$ 44 billion takeover of Dutch counterpart NXP after it failed to obtain merger control approval from China's State Administration for Market Regulation ("SAMR") before expiration of the long-stop date of the deal. It is worth noting that the Chinese merger review of this deal had taken more than one year and Qualcomm had to pull and refile the deal once. This deal was cleared in all notifiable jurisdictions, except China.

SAMR found that the remedies proposed by Qualcomm failed to allay SAMR's concerns. A spokesperson commented later that the trade war between Beijing and Washington had no role to play in Qualcomm's failed acquisition of NXP Semiconductors, which is only relevant to antitrust enforcement. Others were not convinced. The New York Times observed that "An escalating trade battle over which country will dominate the technologies of the future is now threatening Qualcomm's business and its growth."[2]

B. ZTE

In April 2018, the Trump administration imposed a ban on Chinese smartphone and telecommunications company ZTE for violation of its export control law, which prevented it from buying sensitive products from American companies. This ban nearly paralyzed ZTE's business. The U.S. government eventually struck a deal allowing ZTE to resume business with American companies provided that a fine of US$ 1 billion be paid, among other things.

2 See https://www.nytimes.com/2018/04/18/us/politics/qualcomm-us-china-trade-war.html?action=click&module=RelatedCoverage&pgtype=Article&region=Footer.

C. Huawei

Huawei, the Chinese telecommunications company, has come under intense scrutiny by western countries in recent months over security concerns. Tensions escalated further when the Chief Financial Officer at Huawei and daughter of its founder was arrested last month in Canada and accused by the United States of breaking sanctions against Iran. The actions against Huawei have become another key issue in the larger trade confrontation between the United States and China with New Zealand, Australia Japan, India, Canada, and the UK having expressed concern over the use of Huawei equipment in their 5G networks.

D. Made in China 2025

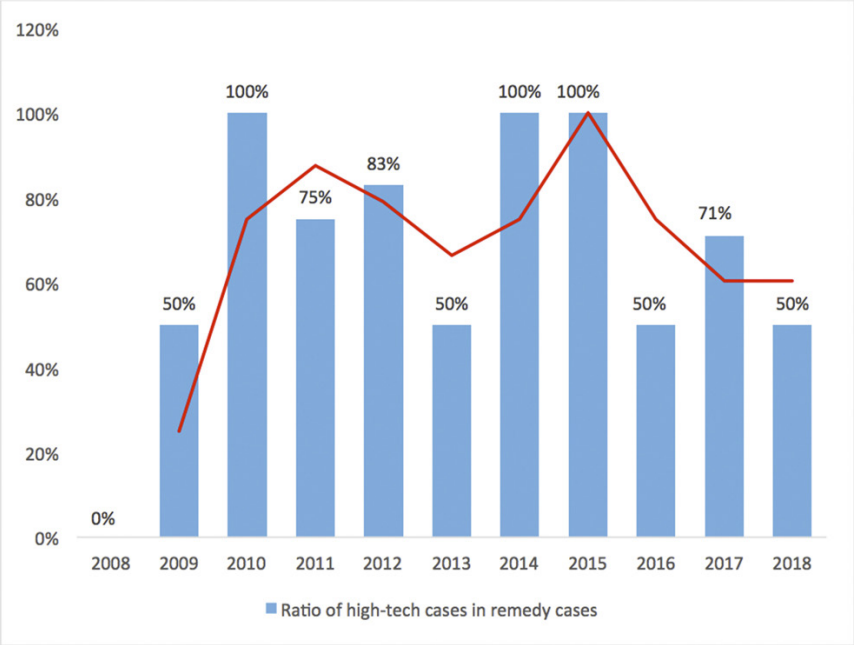
Another layer of complexity to China's merger control regime may stem from China's strategic plan to promote local innovation. China has developed a strategic plan – known as "Made in China 2025" – which aims to reduce China's reliance on foreign technology imports and invest heavily in its own innovations in order to create Chinese companies that can compete both domestically and globally. The plan highlights ten key prioritized industries including robotics, new energy and green vehicles, new generation information technology, aviation and aerospace equipment, maritime equipment and hi-tech ships, railway transport, energy equipment, agricultural equipment, new material and biopharmaceuticals, and hi-tech medical devices.

II. HIGH-TECH CASES REVIEWED BY MOFCOM/SAMR

China's track record of merger review enforcement in the high-tech sector shows that remedy cases involving high-tech companies seem to account for a large share of all cases cleared by SAMR (or its predecessor, MOFCOM) with conditions. Nevertheless, many cases involving high-tech companies are cleared in China without conditions.

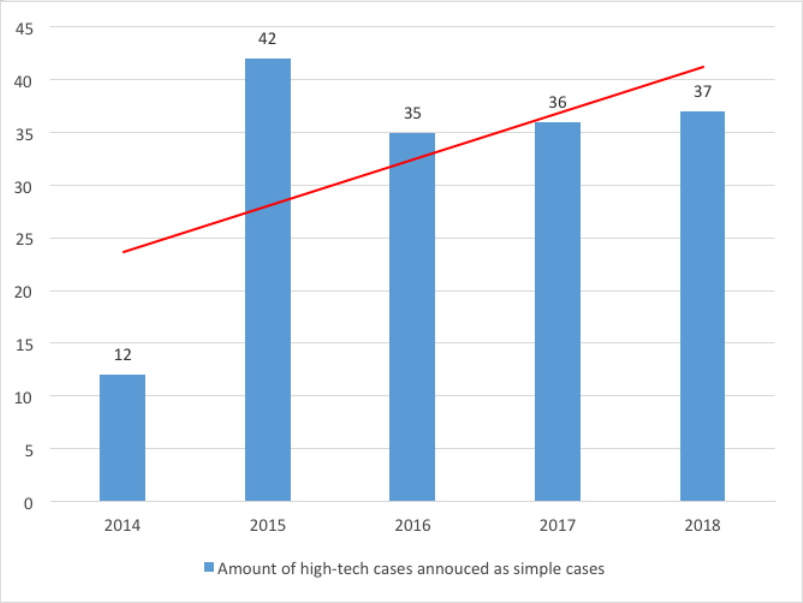
A. High-tech Cases Account for a Large Share of All Remedy Cases

On average, high-tech cases account for nearly 70 percent of all remedy cases in China. As the chart below illustrates, the share of high-tech cases out of all remedy cases is volatile over the years, but is generally over 50 percent.



B. Many Cases Cleared Without Conditions

Nevertheless, statistics also show that many high-tech cases are filed and cleared in China under the fast-track procedure as simple cases ever since the introduction of the Simple Case procedure in 2014. In that regard, many high-tech transactions are clearly not subject to industrial policy concerns or political considerations.



Further, despite the high-profile failure of the *Qualcomm/NXP* merger to secure antitrust approval in China amid Beijing-Washington trade tensions, merger reviews involving other high-tech companies (including U.S. companies) seem to be proceeding as normal. Based on the public record, some deals did not appear to be affected by the trade tensions at all – for example, *Microsemi* (U.S. military and aerospace semiconductor equipment)/*Microchip* (U.S. semiconductor), *Cavium* (U.S. electronic chip and semiconductor)/*Marvell* (U.S. electronic chip and semiconductor), *Advent International* (U.S. investment)/*Laird* (U.S. electronic materials), *Renesas Electronics* (Japan semiconductor)/*IDT* (U.S. semiconductor), *MKS Instruments* (U.S. instrument)/*ESI* (U.S. material processing) were all cleared unconditionally after the *Qualcomm/NXP* deal fell apart.

Not all high-profile high-tech cases will necessarily be impacted by the China-U.S. trade war or industrial policy concerns. However, for those high-tech cases that are likely to raise competition concerns – precedents show that MOFCOM/SAMR is not shy in testing various theories of harm. It is therefore important that sufficient guidance is provided. Failing this, where there is uncertainty about potential post-merger effects, parties risk having remedies imposed to guarantee strong competition post-merger. The next section discusses competition concerns or theories of harm identified by MOFCOM/SAMR in previous remedy cases in the high-tech sector.

III. COMPETITION CONCERNS OR THEORY OF HARM IDENTIFIED BY MOFCOM/SAMR

An overview of competition concerns identified and theories of harm tested by MOFCOM/SAMR in high-tech remedy cases demonstrates that MOFCOM/SAMR generally examined typical theories of harm, which are also relied on by other antitrust agencies in reviewing high-tech cases, but also resorted to some non-typical theories of harm in building up its competition analysis.

A. Theories of Harm in High-tech Deals which are in Line with Other Competition Agencies

1. Loss of Innovation

Loss of innovation is a common theory of harm in high-tech transactions. The concern is that the transaction may have an adverse impact on innovation where the parties have a unique ability to develop new products and innovate in a particular field.

Loss of innovation was considered in nine remedy cases involving high-tech products and services, including *Samsung/Seagate* (2011), *Western Digital/Hitachi Storage* (2012), *MediaTek/Cayman Mstar* (2013), *NXP/Freescale* (2015), *Dow/DuPont* (2017), *ASE/SPIL* (2017), *Becton/Bard* (2017), *Bayer/Monsanto* (2018), *UTC/Rockwell Collins* (2018).

For example, in the recent *UTC/Rockwell* decision, SAMR concluded that:

> Once UTC's oxygen supply product enters the market, it will directly threaten the current market dominance of Rockwell Collins. The proposed transaction would directly eliminate this potential competing product and would strengthen Rockwell Collins, possibly reducing its R&D investment and motivation for commercialisation of its innovative products of the same kind. At the same time, the transaction will delay the speed of new product launches, which will adversely affect market competition and technological progress.

As one of SAMR/MOFCOM's most used theories of harm in high-tech cases, loss of innovation is a typical theory of harm also tested in high-tech sectors by other regulators. For instance, according to the EC's *Horizontal Merger Guidelines*, innovation is one of the criteria against which to assess the likely effects of a merger. The EC's *Horizontal Merger Guidelines* also acknowledged that effective competition may be significantly impeded by a merger between two important innovators. Likewise, the *Horizontal Merger Guidelines* of the U.S.'s DOJ and FTC listed "curtailment of innovation" as one of the factors to be considered.

Take *Dow/DuPont* as an example. Both MOFCOM and the EC have adopted an innovation theory of harm. MOFCOM's concern stemmed from its perception of the parties' strong R&D and innovation capabilities before the merger, and its worry over the potential negative impact of the merger on R&D and innovation. Similarly, the EC focused on the analysis of "technology markets" or "innovation spaces" and noted that the impact of mergers on such innovation spaces is generally negative.

Another example is *Bayer/Monsanto*. Innovation is a competition concern shared by China, the EU, and the U.S. regulators. MOFCOM concluded that the deal may have negative impacts on technical advancement in the markets of corn, soybean, cotton, and oilseed rape traits because the decrease in the number of R&D competitors may incentivize Bayer to cut the investment in innovation and delay the launch of new products. Further, MOFCOM concluded that the merger may have adverse impacts on innovation in digital agriculture for the same reason, and also an increased risk that Bayer may prevent market innovation by raising technical barriers. In line with MOFCOM's decision, the DOJ approved the deal conditioned upon a divestment to ensure competition in future product innovation and development, which was a key concern for the regulator when reviewing this merger. Similarly, the EC cleared the proposed merger with conditions to address concerns not only over existing products, but on areas of innovation where both parties had active R&D projects.

2. Access to Competitors' Confidential Information in Vertical Mergers

Given the importance of IP and confidential or proprietary information to success in the high-tech industry, vertical integration may lead to improper exploitation by the merged entity of the confidential or proprietary information of its suppliers or customers (who will become competitors to the merged entity), which will harm competition.

Misuse of confidential information was one of the key concerns shared by antitrust agencies in China, the EU and the U.S. in *Broadcom/Brocade*. In the eyes of all three regulators, there is a concern that Broadcom (who is in the upstream market) may make improper use of the confidential information of third-party suppliers (who are in the downstream market as Broadcom's customers), excluding or restraining competition on the downstream market where the merged entity will now compete with Broadcom's customers.

3 Degradation of Interoperability

Interoperability is an important element in the high-tech sector as it enables different information technology systems and software applications to communicate, exchange data, and use the information that has been exchanged.

The interoperability theory of harm examines a situation where a dominant firm degrades product interoperability so that a product by a competitor cannot be made reasonably compatible or interoperable with readily available information. This serves to strengthen the position of the already dominant company and foreclose competitors.

The interoperability issue is not a concern that is unique to the Chinese antitrust authority. Interoperability has been a focused area of competition assessment by the EU Commission in a number of high-tech cases including *Microsoft/LinkedIn, Qualcomm/NXP*, and *Broadcom/ Brocade*.

In *Broadcom/Brocade*, MOFCOM reached the same conclusion as the EC, that Broadcom may, while improving the interoperability between its own FC Switches and FC Adapters, refuse to improve interoperability with third-party FC Adapters, or otherwise treat third-party FC Adapters discriminatorily, thus excluding or restraining competition on the FC Adapter market.

B. Competition Concerns not Typically Identified in Other Jurisdictions

MOFCOM/SAMR would also identify competition concerns not typically well-founded in high-tech cases reviewed by other antitrust agencies. There have been cases in which MOFCOM/SAMR adopted a different decision with respect to markets that have a worldwide scope – which is generally a feature of the high-tech industry.

1. Bundling and Tying Risks

MOFCOM/SAMR has a tendency to focus on anticompetitive bundling and tying concerns in transactions involving high-tech sectors, and it considered this issue in five remedy cases involving technology including *Merck/AZ Electronic* (2014), *Broadcom/Brocade* (2017), *Samsung/HP* (2017), *Bayer/Monsanto* (2018), and *UTC/Rockwell Collins* (2018). It seems to take the view that if the merging parties have "complementary products" with superior technology regarding one product, it would be easier for them to engage in anticompetitive bundling and tying.

Case name	Products subject to the concern of bundling and typing
Merck/AZ Electronic (2014)	Liquid crystal and photoresistances
Broadcom/Brocade (2017)	Fiber channel switches and Fiber channel adapters
Samsung/HP (2017)	Printer and printing supplies
Bayer/Monsanto (2018)	Agrochemical products, seeds and traits
UTC/Rockwell Collins (2018)	Avionics equipment and parts / Global Atmospheric Data Sensor, Atmospheric Data Computer and Integrated Atmospheric Data System

Bundling and tying theories of harm have their unique place within Chinese merger reviews of high-tech cases in the sense that it is not an unusual concern, often examined by other regulators (particularly the U.S. antitrust authorities) who, however, generally consider bundling and tying as less relevant. For example, *Merck/AZ Electronic* and *Samsung/HP* were cleared in both the U.S. and the EU without conditions. The U.S. and EU authorities did not identify any concerns relating to potential anticompetitive bundling and tying. With regard to the other three cases, different conclusions were drawn by MOFCOM/SAMR on this same issue.

Broadcom/Brocade

In *Broadcom/ Brocade*, the EC concluded that the merged entity will likely not have the ability and incentive to engage in mixed bundling strategies of FC SAN switches and FC HBAs, due to (i) the asynchronous purchasing patterns for FC HBAs and FC SAN switches; and to (ii) the customer's (server and storage OEMs) ability to unbundle the offer.

MOFCOM reached an opposite conclusion on the basis of what distinguishes the Chinese market from the global market. MOFCOM noted that China has a large number of diversified downstream users, and that the largest buyer accounts for only 1-10 percent of Broadcom's sales volume and cannot therefore bargain with Broadcom. Further, Chinese buyers are likely to buy bundled or tied-up products from the perspective of lower costs and increased profitability, considering the growing demands of the Chinese market, thus excluding or restraining competition on the Chinese FC Adapter market.

Bayer/Monsanto

In *Bayer/Monsanto*, the EC's decision shows that an in-depth investigation does not confirm any ability for the transaction to exclude competitors from the market through the bundling of seeds and pesticides products, whether at the distributor or grower level. In the U.S., the DOJ did not review bundling or tying theories of harm in this case, consistent with their recent merger review approach.

In stark contrast, MOFCOM identified concerns in non-selective herbicide related bundle sales (e.g. seeds and traits), as well as Monsanto and Bayer's digital agriculture business strategy through platformization, and concluded that Bayer's motivation and ability to use the digital agriculture platform to promote the company's products and foreclose other competitors through bundling and tying may be enhanced post-transaction.

UTC/Rockwell Collins

The EC ruled out tying/bundling concerns in *UTC/Rockwell Collins* and concluded that UTC would have neither the market power nor the incentives to engage in bundling or tying, i.e. using components in its portfolio to shut out competitors, and harm competition. The DOJ did not appear to review bundling or tying issues in this case.

However, SAMR, replacing MOFCOM as the new antitrust regulator in China since early 2018, dedicated a lot of effort to analyse tying and bundling concerns in this case. SAMR concluded that after the transaction UTC has the motivation and incentive to bundle different products; market competitors will not be able to compete by using a similar strategy since they do not have a comprehensive product line or cannot enter a new market within a short time; customers (especially medium-to-small-sized aircraft manufacturers) will not be able to counter such a strategy due to their strong reliance on the combined entity.

2. SEP-related FRAND Issues

MOFCOM also looks at possible theories of harm that are not merger-specific in nature. A notable example is Standard Essential Patent (SEP) related FRAND issues, which were raised by MOFCOM in three cases – *Google/Motorola, Microsoft/Nokia*, and *Nokia/Alcatel-Lucent*. A comparison of the opinions by the EC in these three cases shows that SEP-related FRAND issues are generally understood as non-merger specific, and therefore it is a unique approach taken by the Chinese regulator.

The effect of SEPs is that any company manufacturing products incorporating a certain standard must either obtain the appropriate licenses covering the technology included in that standard or risk infringing the IP rights of the SEP holders. In the event licensing discussions fail, the SEP holder may ultimately take its counterparty to court and seek an injunction. Depending on the circumstances, it may be that the threat of injunction, the seeking of an injunction, or indeed the actual enforcement of an injunction granted against a good faith potential licensee, may significantly impede effective competition by, for example, forcing the potential licensee into agreeing to potentially onerous licensing terms, which it would otherwise not have agreed to. Generally, any party to a merger who is a SEP holder would already be under the FRAND obligation and it would need to honor its FRAND commitment regardless of the merger.

Google/Motorola

In *Google/Motorola* MOFCOM found that with Motorola's large number of core patents for mobile phones, the extensive capabilities of the merged entity in development, and integration of both hardware and software by leveraging its dominant position in the smart mobile terminal market, Google has both the incentive and the ability to impose unreasonable conditions on its patent licenses, which will hurt competition in the relevant market.

By contrast, both the DOJ and the EC took a "wait and see" approach – they will continue to monitor Google's and Motorola's post-merger conduct. The EC recognized that this issue is largely non-merger specific and also that the merged entity is bound by FRAND commitments in any event, and is also potentially subject to proceedings under Article 102 TFEU and/or court proceedings, as well as any national competition legislation or national procedural law, if it were to engage in any anti-competitive behavior by leveraging its SEP portfolios. In the U.S., the DOJ's probe focused on SEPs which Motorola had committed to license in SSOs as well as whether Google could use these patents to foreclose on rivals. The DOJ finally concluded that the transaction is not likely to significantly change existing market dynamics. However, the DOJ would continue to monitor the use of SEPs, particularly in the smartphone and computer tablet markets.

Microsoft/Nokia

MOFCOM determined that the deal would harm competition in China's smartphone market both in terms of what Microsoft could do with its patents (SEPs and non-SEPs) as a result of the acquisition, and in terms of what Nokia could do with the SEP assets that were not part of the acquisition.

Specifically, MOFCOM holds that a post-transaction Microsoft as a player in the smartphone market, with the SEPs and non-SEPs related to the Android system, has the motive to raise royalty fees; Nokia could abuse its reserve of patent licenses because the deal enhances Nokia's motive to rely on profits from patent licensing.

Neither the DOJ nor the EC speculated on the likely post-merger licensing conduct of the merged entity or the portion of Nokia that was excluded from the acquisition with respect to SEPs and non-SEPs. Both cleared the transaction without conditions. In particular, the EC noted that concerns related to the licensing of Nokia's patent portfolio that was not part of the acquisition were beyond the scope of its review, but that it will monitor Nokia's post-merger licensing practices.

Nokia/Alcatel-Lucent

MOFCOM concluded that the acquisition would have an anticompetitive effect in the market for communications technology SEP licensing. The acquisition would strengthen Nokia's position in all segments of the communications technology SEP market and increase the degree of concentration. With Alcatel-Lucent's large portfolio of 2G and 3G SEPs, the acquisition would strengthen Nokia's bargaining power in patent negotiations. In China, a majority of the actual and potential licensees are mobile device and wireless communications network equipment manufacturers, who do not have the leverage to cross-license with Nokia. China is the world's largest producer of mobile phones, but Chinese mobile device and wireless communications network equipment manufacturers have low-profit margins. As such, any unreasonable changes to Nokia's SEP licensing policy may lead these businesses to exit the market or pass on all or some of those costs to consumers.

In stark contrast, the transaction was unconditionally cleared in the EU and U.S. The EC noted that the merged entities' SEPs portfolio is subject to FRAND obligations. FRAND commitments essentially oblige SEP holders to make the patent in question available to all interested third parties, not to discriminate between different licensees, and to offer a license under fair and reasonable terms. The merged entity is therefore obliged to license its SEPs to any interested party under such FRAND terms, and the transaction will not affect or change the Parties' FRAND commitments in this regard.

IV. TYPES OF REMEDIES IMPOSED BY MOFCOM/SAMR

Considering that MOFCOM/SAMR's review not only focuses on competition concerns shared by other competition authorities but also considers some non-typical theories of harm that are to some extent unique to China, it is not surprising that MOFCOM/SAMR tended to resort to a wider range of remedies to allay those China-specific concerns. Overall, in high-tech deals, while MOFCOM considers structural-type remedies to the same extent as U.S. agencies and the EU, it also showed a greater preference for behavioral remedies, and some of the remedies imposed by MOFCOM/SAMR are unique to China.

A. MOFCOM/SAMR's Preference for Behavioral Remedies

There have been 27 high-tech related remedy cases. SAMR has imposed behavioral remedies in 20 of them. Among the 20, there are seven cases involving hybrid behavioral/structural remedies and 13 involving pure behavioral remedies. By contrast, there are only 4 out of 27 cases in which the U.S. and the EU imposed behavioral remedies, i.e. *UTC/Goodrich* (2012), *ARM/G&D/Gemalto (JV)* (2012) (U.S. did not review this case), *Broadcom / Brocade* (2017), and *Bayer / Monsanto* (2018), and only in *Broadcom/Brocade* did the three regulators consistently impose a pure behavioral remedy. As for the rest, the U.S. and the EU have unconditionally cleared 9 mergers, including 2 that were not notifiable in the EU (*Merck / AZ Electronic* (2014) and *ASE/SPIL* (2017)). In addition, 3 cases are China-specific (*GE/Shenhua* (JV) (2011), *Walmart/Niuhai* (2012), and *Hunan Corun New Energy/Toyota (JV)* (2014)), meaning they were not notified in the EU or U.S.

Case	Merger Type	Overlapping Industry	Remedy Type China	Remedy Type EU	Remedy Type U.S.
Pfizer / Wyeth (2009)	Horizontal	Pharmaceutical	Structural	Structural	Structural
Panasonic / Sanyo (2009)	Horizontal	Electrical equipment	Hybrid	Structural	Structural
Novartis / Alcon (2010)	Horizontal	Pharmaceutical & Bio-science	Behavioral	Structural	Structural
Penelope / Savio (2011)	Horizontal	Machinery and equipment	Structural	Cleared	Cleared
GE / Shenhua (JV) (2011)	Vertical	Energy Technology	Behavioral	N/A	N/A
Seagate / Samsung (2011)	Horizontal	Electrical & IT	Behavioral	Cleared	Cleared
Western Digital / Hitachi (2012)	Horizontal	Electrical & IT	Hybrid	Structural	Structural
Google / Motorola (2012)	Vertical	Electrical & IT	Behavioral	Cleared	Cleared
UTC / Goodrich (2012)	Horizontal	Machinery and equipment	Structural	Structural	Behavioral & Structural
Walmart / Niuhai (2012)	Horizontal	Retail	Behavioral	N/A	N/A
ARM / G&D / Gemalto (JV) (2012)	Vertical	Electrical & IT	Behavioral	Behavioral	N/A
Baxter / Gambro (2013	Horizontal	Pharmaceutical & Bio-science	Hybrid	Structural	N/A
MediaTek / Cayman Mstar (2013)	Horizontal	Electrical & IT	Behavioral	Cleared	Cleared
Thermo Fisher / Life Tech (2014)	Horizontal	Pharmaceutical & Bio-science	Hybrid	Structural	Structural
Microsoft / Nokia (2014)	Vertical	Electrical & IT	Behavioral	Cleared	Cleared

Merck / AZ Electronic (2014)	Conglomerate	Electrical equipment	Behavioral	N/A	Cleared
Hunan Corun New Energy / Toyota (JV) (2014)	Horizontal & Vertical	Electrical equipment	Structural	N/A	N/A
Nokia / Alcatel Lucent (2015)	Horizontal	Electrical & IT	Behavioral	Cleared	Cleared
NXP / Freescale (2015)	Horizontal	Electrical & IT	Structural	Structural	Structural
Abbott / St. Jude Medical (2016)	Horizontal	Pharmaceutical & Bio-science	Structural	Structural	Structural
Dow / DuPont (2017)	Horizontal	Chemicals	Hybrid	Structural	Structural
Broadcom / Brocade (2017)	Vertical & Conglomerate	Electrical & IT	Behavioral	Behavioral	Behavioral
Samsung / HP (2017)	Horizontal & Conglomerate	Electrical & IT	Behavioral	Cleared	Cleared
ASE / SPIL (2017)	Horizontal	Electrical & IT	Behavioral	N/A	Cleared
Becton / Bard (2017)	Horizontal	Pharmaceutical & Bio-science	Structural	Structural	Structural
Bayer / Monsanto (2018)	Horizontal & Conglomerate	Chemicals	Hybrid	Hybrid	Structural
UTC / Rockwell Collins (2018)	Horizontal & Conglomerate	Machinery and equipment	Hybrid	Structural	Structural

B. Behavioral Remedies Unique to China

Behavioral remedies are a commonplace feature in high-tech transactions that are subject to conditions. Some of the behavioral remedies are unique to China and are largely specific to high-tech deals. More than that, behavioral remedies imposed involve conditions that have never before been sought by other antitrust agencies around the world (usually, because of difficulties in administering and monitoring the remedies), making it a minefield of unpredictability. Behavioral remedies include commitments related to continued supply, price commitments, commitments relating to interoperability, no further related acquisitions, continuation of current business models/contracts/capacity, continued R&D investment, anti-tying and bundling, FRAND commitment, anti-exclusive dealing arrangement, guarantee of access to platform, and hold-separate measures, etc.

1. Hold-Separate

Hold-separate remedies are a hybrid of a behavioral remedy and structural remedy that allows the acquiring party to close the merger deal but refrain from integrating the target business into its own business post-closing until the condition is lifted. The parties must therefore continue to operate independently and in competition with each other for a certain period. This leaves the parties with a high degree of uncertainty and unable to achieve the desired synergies from their investments, as well as facing considerable uncertainty as to what the future holds. A hold-separate remedy can effectively maintain the market structure post-merger as if the merger never occurred.

Since 2011, MOFCOM/SAMR has imposed hold-separate remedies in a total of five cases. Four of the five cases are high-tech transactions including *Seagate/Samsung* (2011), *Western Digital/Hitachi* (2012), *MediaTek/MStar* (2013), and *ASE/Siliconware* (2017). The average period of such hold-separate remedies ranges from one to three years.

In contrast to the U.S. and EU, where there are hold-separate orders by the authorities to maintain the independence of the businesses until clearance or upfront buyer approval, etc., China has imposed unusual "hold-separate" behavioral remedies. First, hold-separate remedies are imposed to address horizontal competition concerns as a fix, rather than following the global trend toward requiring clean-cut, structural divestments to address horizontal issues. Second, MOFCOM's hold-separate remedies are global in nature, although it is not always the case that other regulators share the same concern as MOFCOM. For example, in *ASE/Siliconware*, MOFCOM imposed global hold-separate, and other behavioral remedies, for a period of 24 months. The transaction did not trigger EC merger control filings; in the U.S., the FTC conducted an investigation of the transaction and approved it without conditions. Additionally, the Taiwan TFTC cleared it without conditions.

MOFCOM's hold-separate remedies were normally imposed when it was not comfortable with the level of concentration resulting if the transaction went through. Rather than outright prohibitions or pure structural remedies, the hold-separate remedies provide opportunities to see if things might change in the future. MOFCOM's approach appeared to give scope for a phased and proportionate review over time, reflecting a more cautious approach than that taken in Europe and the United States.

That said, MOFCOM/SAMR has already lifted or partially lifted hold-separate conditions in two of the four abovementioned high-tech deals. In October 2015, MOFCOM partially lifted the hold-separate obligation of the merging parties in *Western Digital/Hitachi*, allowing the integration of their manufacturing and R&D activities, but still required Western Digital to maintain two separate sales divisions and brands (alongside certain other behavioral commitments). Then, in November 2015, MOFCOM removed the hold-separate obligation on *Seagate/Samsung*, allowing full integration (again while still maintaining certain other behavioral commitments). MOFCOM also noted that these revisions would allow the parties to offer full product ranges and reduce costs.

2. Continued R&D Investment

In some high-tech cases where intervention has been triggered by concerns over the loss of innovation, parties were requested by MOFCOM/SAMR to commit to continued R&D investment. MOFCOM has, on three occasions, imposed commitments to guarantee investments related to R&D in the high-tech sector, including in *Seagate/Samsung* (2011), *Western Digital/Hitachi* (2012), and *UTC/Rockwell Collins* (2018), while neither the EU nor the U.S. imposed similar remedies.

In *Seagate/Samsung*, Seagate was required to invest at least US$ 800m a year in R&D. The deal was cleared by the U.S. and EU without any conditions.

In *Western Digital/Hitachi*, which occurred shortly after Seagate, MOFCOM made the parties commit to an R&D expenditure and speed equivalent to those of previous years. Both the FTC and EC imposed divestitures only, which also formed part of MOFCOM's conditions.

In *UTC/Rockwell Collins*, continuous R&D investments were again imposed by SAMR, including a commitment to promote certain levels of innovation benefitting the aviation industry and aircraft platforms in China. The DOJ and EC both imposed structural remedies through divestitures only.

3. FRAND Commitments

MOFCOM/SAMR's FRAND commitment remedies normally requested that the SEP holders post-transaction must comply with their FRAND commitment as made to SSOs. In addition, the FRAND commitment remedies would also require the SEP holders not to seek injunctions or exclusion orders against a "willing licensee" or potential licensees within mainland China. MOFCOM/SAMR has imposed a FRAND commitment in three high-tech mergers involving SEPs issues, i.e. *Google/Motorola, Microsoft/Nokia*, and *Nokia/Alcatel-Lucent*. Considering that China is a global mobile phone production powerhouse and the Chinese government's initiatives aimed at growing the country's tech industry, it is no surprise that MOFCOM/SAMR takes a more proactive stance than its U.S. and EU counterparts. The FRAND commitment remedy is a less onerous form of condition because it arguably only reinforces the pre-existing obligation of the SEP holders to honour the FRAND commitment.

MOFCOM/SAMR has also imposed unusual remedies akin to FRAND commitments in non-SEP related cases.

In *Merck/AZ Electronic*, a "reasonable and non-discriminatory" licensing obligation on non-SEPs was imposed – "Merck shall license any patent in liquid crystal on a non-exclusive basis without the right to sublicense. All terms shall be commercially reasonable and non-discriminatory."

In *Bayer/Monsanto*, to allay concerns raised in MOFCOM's decision that the transaction could increase the control of the merged entity on the global digital agriculture market, increase the entry barrier, increase the risk of using digital agriculture platform to conduct bundling and tie-in sales, and reduce innovation in the digital agriculture market, MOFCOM required the merging parties to allow Chinese agricultural app developers to access the digital agricultural platform on fair, reasonable, and non-discriminatory terms.

In *UTC/Rockwell Collins*, to address tying and bundling concerns, the merged entity was required to provide A664 terminal system chips and licenses to customers based on fair, reasonable, and non-discriminatory principles for use on Chinese aircraft platforms.

4. No Tying and Bundling

Concerns about potential tying and bundling are a commonplace theory of harm in high-tech transactions in China. To address such concerns, anti-tying and bundling behavioral remedies are normally required. Commitments of no tying and bundling were required in four of the five remedy cases raising tying and bundling concerns, including *Merck/AZ Electronic Materials* (2014), *Broadcom/Brocade* (2017), *HP/Samsung* (2017), and *UTC/Rockwell Collins* (2018).

The specific requirement varies depending on the specific industry dynamics in each of these four cases. In *Merck/AZ Electronic* and *HP/Samsung*, MOFCOM simply required the combined entity to refrain from tie-in sales or bundling absent justifiable reasons. In *Broadcom/Brocade* and *UTC/Rockwell Collins*, the combined parties were also requested to guarantee interoperability, openness and compatibility to reduce further the possibility of tying or bundling. Further, in *UTC/Rockwell Collins*, given the strategic importance of the aviation industry in China, SAMR also imposed a series of specific conditions to enhance the no tying and bundling commitments (e.g. continue to supply the products separately or provide customers with supply sources for the next-generation version of the products.")

V. KEY TAKEAWAYS

A. Close Scrutiny, but not Necessarily Political or Industrial Policy Intervention

Almost 70 percent of remedy cases relate to the high-tech sector. It should not be assumed, however, that there is a link to political and industrial policy intervention. Actually, as explained above, the majority of high-tech deals have been cleared without remedies and even under the simplified case review procedure. However, high-profile high-tech transactions will likely continue to be subject to close scrutiny by the Chinese competition authority. Therefore, it will still be important to have a good understanding of the potential competition concerns (especially China-specific concerns) that might be relevant in high-tech cases so as to identify early on some of the possible sticking points.

B. Industrial Policy Factors need to be Considered

Merging parties need to be aware of potential competition concerns that may arise, including possible remedy designs, (e.g. remedies that are not typical in other jurisdictions but may come up in high-tech deals), some of which are partly due to industrial policy considerations.

Industrial policy considerations are likely to continue to influence SAMR's decision-making process. Given its legal obligation to consider the impact of a transaction on national economic development, SAMR will continue to assess the impact on China's high-tech industry, customers or license holders. This may result in decisions in which SAMR takes a different approach to its peers.

The divergence should not be overstated, however. Out of the 2,435 transactions that MOFCOM/SAMR has cleared so far (excluding the two that resulted in prohibition), only 39 were cleared with conditions. Some of these 39 transactions were only notifiable in China and not elsewhere. Thus, the divergence seems to be limited.

Industrial policy factors should be considered even when the scope of the relevant market is normally considered global, which is common in large tech deals. Nevertheless, markets that appear worldwide in scope may often be more limited in practice, which may mean that unique and varied concerns raised by other authorities need to be addressed. Nor should parties assume that SAMR, as a newer competition authority relative to more established ones in the EU and the U.S., will tend to defer to longer-established authorities. MOFCOM/SAMR is not shy in examining unique theories of harm and imposing non-typical and unusual behavioral remedies, as discussed above.

It is therefore important that sufficient guidance is sought through legal counselling. Failing this, where there is uncertainty about potential post-merger effects, parties risk having behavioral remedies imposed to guarantee strong competition post-merger.

Certain remedies imposed by SAMR are burdensome and can take a long time to work through. Parties should consider their respective rights in advance (e.g. the purchaser's 'walk-away' rights; termination and break fees; etc.). Hold-separate remedies, for instance, effectively prohibit the parties from materializing business and cost synergies. Buyers might find this too onerous and, in effect, not a clearance; nor will they be willing to deal with ongoing hold-separate orders and the uncertainty of subsequent review.

C. Be Prepared and more Creative when Designing and Offering Remedies

Global mergers can end up with two types of remedy conditions in China: local remedies and international remedies common to many jurisdictions. As SAMR would work from the basis of their own national perspective, and often with different approaches and inputs (e.g. in terms of market testing results), local remedies that are not commonly seen in other jurisdictions might be required in order to address China's unique concerns. For example, as noted above, MOFCOM occasionally uses a hold-separate remedy, which neither the European Union nor the United States would like to impose.

D. Impact on Deal Timetables

Needless to say, China's antitrust regime can be unpredictable. *Qualcomm/NXP* will serve as a long-standing reminder of that. In the high-tech sector specifically, this means that sufficient time needs to be accounted for to ensure deals do not fall through, particularly when negotiating condition precedents and long-stop dates.

E. More Sophisticated Frameworks of Analysis Anticipated

Unlike other regulators, SAMR has not separately developed strategies to tackle novel high-tech issues such as big data or algorithms. It has also not publicly commented on these hot topics. Nonetheless, SAMR is acutely aware of these issues and is continuously developing more sophisticated frameworks of analysis and theories of harm.

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