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**The Role of Innovation in Enforcement Cases – Note by Japan**

5 December 2023

This document reproduces a written contribution from Japan submitted for Item 3 of the 141st OECD Competition Committee meeting on 5-8 December 2023.

More documents related to this discussion can be found at  
[www.oecd.org/competition/the-relationship-between-competition-and-innovation.htm](http://www.oecd.org/competition/the-relationship-between-competition-and-innovation.htm).

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## *Japan*

### 1. Introduction

1. Regarding competition and innovation, the Japan Fair Trade Commission (hereinafter referred to as the “JFTC”) has stated that ensuring a competition environment that can promote innovation is an important and contemporary policy agenda in competition policy, and that properly assess the impacts on the possible long-term efficiency, or innovation, in the future (i.e., competitive benefits). Given this situation, the JFTC launched the Study Group on Innovation and Competition Policy (Chair: Yosuke Okada, Professor, Faculty of Social Innovation, Seijo University, hereinafter referred to as the “Study Group”) in March 2023, consisting of relevant knowledgeable experts<sup>1</sup>.
2. The Study Group conducted a study on theoretical and systematic summarization of impact mechanisms that corporate conduct and other factors have on innovation based on economic knowledge, and then compiled an interim report.
3. This note provides an overview of the interim report in sections 2 to 5 below, the situation after releasing the interim report in section 6 below, and introduce a case in section 7 below in which we analyzed the impact of the merger on innovation.

### 2. Study Approach Adopted in the Study Group and Prerequisite Considerations

4. The interim report starts with objectively summarize matters that are considered to be merely theoretically and empirically appropriate while setting aside legal and administrative issues—the current legal structure/system and the administrative interpretation of the Act on Prohibition of Private Monopolization and Maintenance of Fair Trade (hereinafter the “Antimonopoly Act”)—and relations to these issues<sup>2</sup>.
5. In the summarization process, this Study Group recognizes “impact on innovation” as the state of changes in R&D incentive<sup>3</sup> of each firm caused by various kinds of corporate conduct. Furthermore, it assumes that an impact mechanism is a theoretical path in economics that observes or predicts such change. The economic theory for observing and predicting such fluctuations is defined as an “impact mechanism”.
6. Note that this note is intended to summarize matters centering on robust and universal impact mechanisms, that is to say, primary ones, and is not intended to encompass almost all possible impact mechanisms, and, it is the matter of course that whether they actually occur, and how and to what extent they occur should be determined depending on specific details of individual cases. In addition, this study attempts to summarize theoretical frameworks as necessary based on economics, etc. independently of the present legal frameworks and application practices of the Antimonopoly Act; hence, the results of the

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<sup>1</sup> For information on the purpose of the study group, its status, summary of proceedings, interim report, etc., please refer to <https://www.jftc.go.jp/soshiki/kyotsukoukai/kenkyukai/innovation/index.html> (in Japanese).

<sup>2</sup> Due to space limitations, this note has omitted the publication of documents, papers, etc. that were referenced and cited during the review and organization, so please check the interim report for them.

<sup>3</sup> This includes necessary inputs and capabilities for R&D, which affect R&D incentive.

study themselves do not predict how the legal systems and the JFTC's application policies should be in the future.

### 3. Study on Impact Mechanisms on Innovation in Individual Behavior Types

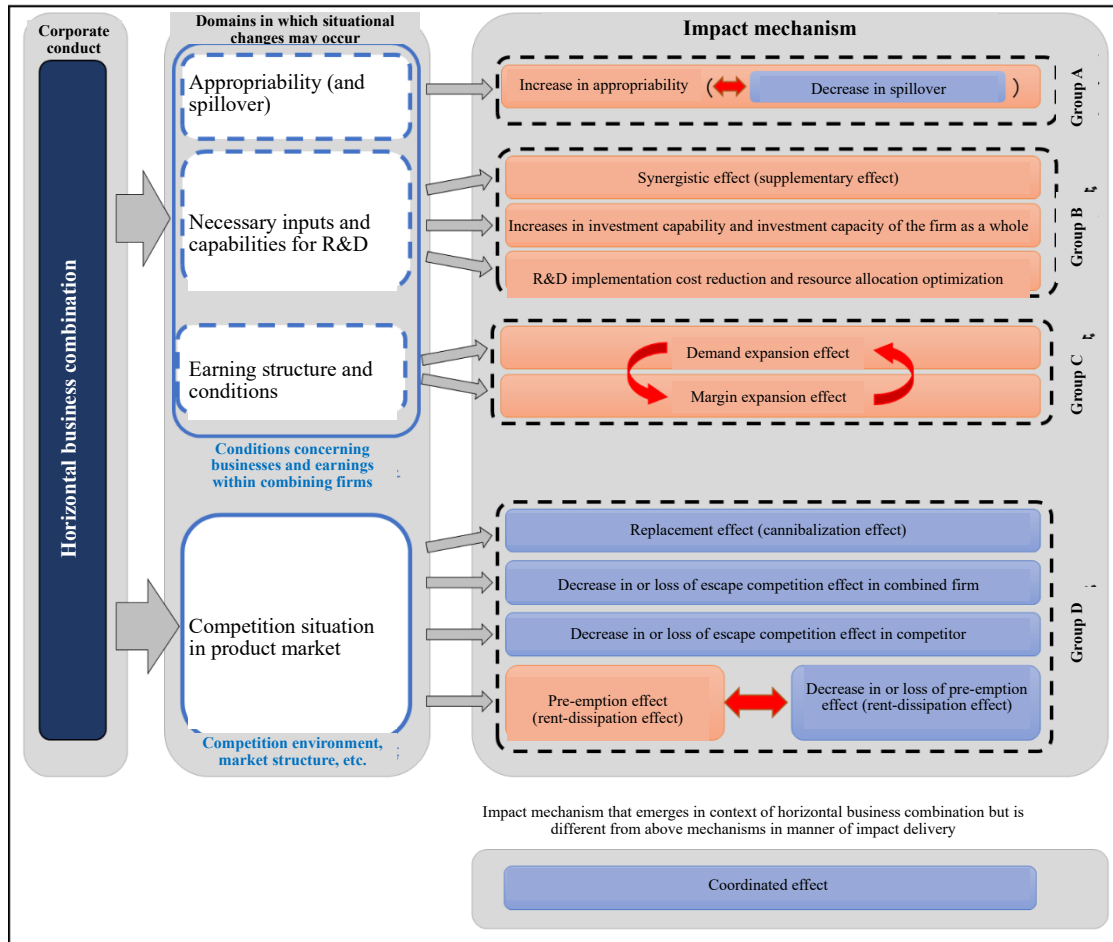
7. The Study Group cited individual behavior types on which economics field have accumulated relatively large amounts of knowledge and considered useful for incorporating by reference into other behavior types and understanding across types. These individual behavior types specifically are business combinations (horizontal, vertical, and conglomerate) and joint R&D.

8. R&D incentive toward innovation stems from the difference between profit expected to gain in the future if R&D is conducted and profit expected to gain if R&D is not conducted. The more the former compared with the latter, the larger R&D incentive is; and the less the former compared with the latter, the smaller R&D incentive is. A corporate conduct affects such differences between these expected returns in participants and non-participants (competitors), thus affecting the R&D incentives of the respective firms. In addition, “R&D-related fields”, such as the actor's internal business/profit conditions, competitive environment, market structure (4 areas of headings 3.1.1.1. to 3.1.1.4.), affects how large the expected returns will be, and corporate conduct brings about unambiguous situational changes to these fields. Therefore, the Study Group focused on these fields and summarized impact mechanisms.

#### 3.1. Horizontal business combination

9. Figure 1 shows an overview of the main influence mechanisms in horizontal business combinations.

Figure 1. Impact Mechanisms for Horizontal Business Combination



Note: Orange boxes in the diagram indicate positive impacts, and blue boxes indicate negative impacts. The same applies to other types of actions.

### 3.1.1. Individual impact mechanisms

#### 3.1.1.1 Appropriability (and spillover)

10. Appropriability refers to the state and degree to which value (profit) can be obtained from R&D results. While the spillover of the resulting knowledge and information (the ability for others to use it and gain profits) promotes the R&D of others, if free riding by others occurs, the appropriability (expected return) of the person conducting the research and development may decrease, resulting in underinvestment. There is a trade-off between R&D incentive of an R&D conductor and R&D incentive of a free rider that would be benefited by spillover.

##### 3.1.1.1.1 Increase in appropriability (positive impact)

11. In a case where a horizontal business combination eliminates an external party that is a potential imitator, involuntary spillover is internalized (incorporated into a combined

firm), resulting in higher appropriability of R&D results, which may increase R&D incentive of the combined firm<sup>4</sup>.

#### 3.1.1.1.2 Decrease in spillover (secondary impact)

12. Meanwhile, increased appropriability by a horizontal business combination may work to suppress R&D incentive to promote innovation for a party that is benefited from spillover through free-riding, considering that the internalization of involuntary spillover within combining firms ends up reducing the number of R&D conductors that utilize spillover and the number of spillover sources.

#### 3.1.1.2 Necessary inputs and capabilities for R&D

13. R&D for new technologies, etc. has an aspect of contributing to more effective R&D by complementarily combine tangible and intangible assets. In addition, it is important to secure operational structure that would enable it to allow for such risks and costs, and to efficiently and effectively utilize a range of resources to reduce the implementation costs.

14. A horizontal business combination brings changes in necessary inputs and capabilities for R&D in such an R&D conductor. These changes bring a change in expected return of the R&D, and thus bring a corresponding change in R&D incentive.

#### 3.1.1.2.1 Synergistic effect (complementary effect) (positive impact)

15. A horizontal business combination combines complementary assets (such as human resources, equipment, know-how, and knowledge) in R&D that have been owned by each firm. As a result, a synergistic effect (complementary effect) occurs by which R&D capabilities of the combined firm increase; and the chance of success and the quality of R&D results are accordingly expected to be higher, whereby R&D incentive may increase.

#### 3.1.1.2.2 Responses to R&D investment risks and costs

##### 3.1.1.2.2.1. Increases in investment capability and investment capacity of the firm as a whole (positive impact)

16. A firm's scale expands as a result of horizontal business combination. Fixed-cost reduction and other efficiency improvements may occur as a result, and a combined firm as a whole may have an increased reserve in cash or assets. This may enable the combined firm to have an increased investment capability and investment capacity for R&D, and consequently, higher R&D feasibility, which may increase R&D incentive.

##### 3.1.1.2.2.2. R&D implementation cost reduction and resource allocation optimization (positive impact)

17. It can be considered that a horizontal business combination expands the business scale and the business portfolio, thereby bringing about economies of scale and economies of scope and providing room to adjust the details of R&D activities and the allocation of necessary resources for implementing such activities to more efficient ones. Such reduction of R&D implementation costs and optimization of resource allocation may enable the firm

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<sup>4</sup> It should be noted that, in a case where appropriability is sufficiently secured by such means as intellectual property rights from the start, a horizontal business combination may not additionally increase appropriability.

to reduce the period required to achieve R&D results or increase the number of R&D projects, and may consequently raise R&D incentive.

### *3.1.1.3 Profit structure and conditions*

18. A firm makes decisions on R&D based on an expected return. This expected return, however, changes depending on profit structure and conditions (such as profit margin, costs, the production scale, and the business portfolio) in individual parts of business activities. Therefore, if the expected return per R&D investment unit increases by changes in such profit structure and conditions, R&D incentive may increase.

19. A horizontal business combination changes the profits' structure and conditions of combining firms following the integration of their business organizations and assets, and may consequently change an expected return that would be gained by R&D.

#### *3.1.1.3.1 Demand expansion effect (positive impact)*

20. Profit earned by an increase in demand increases as a margin per product unit increases. Thus, in a situation where an increase in margin per product unit is expected, a firm's R&D (of product innovation which increase in new demand) incentive may increase to increase demand.

21. Therefore, in a case where a certain level of rent is generated by a horizontal business combination, product innovation R&D incentive to expand the demand for a product may increase in a combined firm due to an increase in the rent<sup>5</sup>.

#### *3.1.1.3.2 Margin expansion effect (positive impact)*

22. In a case where the purpose of R&D is technology development to increase a margin per production unit, profit earned from a technology increases as the volume of production to which the technology can be applied increases. Thus, in a situation where an increase in production volume is expected, a firm's expected return from R&D results increases, and its R&D (of process innovation) incentive may increase in its pursuit of the expected return<sup>6</sup>.

23. Therefore, in a case where an increase occurs in production volume per firm through a horizontal business combination, this increase in production may result in an increase in process innovation R&D incentive for expanding the margin per production unit.

### *3.1.1.4 Competition situation in product market*

24. A firm's decision on whether it will conduct R&D is strategically made also depending on relative and external elements of the competition environment such as the competition situation with competitors in the product market and the market structure.

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<sup>5</sup> This situation, however, indicates that the competition in the product market has been weakened. Accordingly, if the combined firm can earn a larger profit by optimizing the price of the product than by achieving product innovation, its R&D incentive is rather more likely to decrease.

<sup>6</sup> However, if there is no improvement in production efficiency through horizontal business combinations, this will lead to price increases and production volume declines, so there will be no margin expansion effect.

25. A horizontal business combination can change R&D incentive by the following impact mechanisms as a result of change in the competition situation of a product market caused by the horizontal business combination.

#### 3.1.1.4.1 Replacement effect (negative impact)

26. In a case where a horizontal business combination brings a combined firm an increased market share in a product market and consequently a certain level of rent, the combined firm's R&D incentive for a new product may decrease because a new product to be launched would substitute for (cannibalize) the sales of the firm's own existing product.

27. Furthermore, combining firms in a horizontal business combination may have overlapping elements (i.e. an existing product and a pipeline (an R&D project for a specified purpose toward productization or the target of such an R&D project); a pipeline of one firm and a pipeline of the other) or may have similar R&D capabilities. In such a case, this relationship of business stealing each other is internalized due to the horizontal business combination, whereby a replacement effect occurs. In a combined firm, incentive to continue to maintain (start) R&D of the combining firms may decrease.

28. By the way, a killer acquisition, where a firm acquires another firm (such as startup) that has been conducting innovative R&D and then terminates the R&D, can be understood as a means to eliminate a potential risk to a product of an existing firm in a case where another firm has been conducting R&D for a product that overlaps with (potentially substitutes for) the existing firm's product and the R&D is the potential risk. Under a certain condition<sup>7</sup>, a replacement effect (cannibalization effect) works, and the existing firm ends up terminating the acquired R&D.

#### 3.1.1.4.2 Decrease in or loss of escape competition effect on combined firm (negative impact)

29. When competition in a product market is intense, a firm then has high R&D incentive if it sees a chance of using innovation to escape the competition and securing a position where it can earn a high profit. This is called "escape competition effect", and the strength of the effect changes depending on the intensity of competition.

30. If a horizontal business combination dampens competition in a product market, an escape competition effect on the combined firm decreases or disappears, whereby its R&D incentive may decrease.

#### 3.1.1.4.3 Decrease in or loss of escape competition effect on competitor (negative impact)

31. In a case where a competitor may have a lower expected return in a product market if the advantage of a combined firm in terms of R&D increases, an escape competition effect on the competitor decreases or disappears, and may discontinue or slow down R&D activities or reduce R&D investment. This further leads to a decrease in or loss of escape competition effect on the combined firm as a counter effect, whereby the combined firm's R&D incentive may also decrease.

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<sup>7</sup> A condition such that [1] the existing firm's earnings decreases if it productizes its R&D results without the acquisition of the R&D-conducting firm or [2] it is more beneficial for the existing firm to terminate the R&D after the acquisition than to continue the R&D despite a risk of having its own sales cannibalized after the acquisition.

#### 3.1.1.4.4 Pre-emption effect (rent-dissipation effect) (positive impact)

32. A monopolistic firm has a large gross margin (quasi-rent) that corresponds to a demand that would be lost when a competitor enters its market, even larger than an oligopolistic firm. Thus, when there is a threat of entry, the monopolistic firm may have higher R&D incentive so as to prevent new entry by making the entry less attractive or so as to protect its existing profit (rent) (pre-emption effect (rent-dissipation effect)). While this effect is noticeable in the case of monopoly, it is considered that the effect is stronger on a firm that has a higher market share.

33. In a case where a horizontal business combination creates a monopolistic firm in a product market, the monopolistic firm (combined firm) may have higher R&D incentive thanks to a pre-emption effect.

#### 3.1.1.4.5 Decrease in or loss of pre-emption effect (rent-dissipation effect) (negative impact)

34. As described in 3.1.1.4.4 above, a monopolistic firm (or quasi-monopolistic firm) may conduct aggressive R&D activities to gain future sales and protect profits when there is a threat of entry. Meanwhile, if, as a result of a horizontal business combination, a combined firm will have certain market power in a product market with the chance of new entry reduced, the pre-emption effect on the combined firm rather decreases or disappears, whereby its R&D incentive may decrease.

#### 3.1.1.5. Buyout effect

35. Because of reasons such as the possibility that an existing firm may raise an acquisition price as it has a motivation to internalize innovation of a competitor, a premium assessment on a buyout at the exit and a sense of anticipation for the assessment help advance the competitor's R&D incentive and innovation, whereby new entry of startups may be encouraged (buyout effect)<sup>8</sup>.

36. A buyout effect is generated from premium assessments as above in past business combinations as well as prediction and anticipation about a future business combination with these premium assessments taken into consideration, and is not generated as a unique result attributable to a specific horizontal business combination case that is examined. It is thus thought to be an impact mechanism in which a trigger for an emergence of impact on a firm's R&D incentive is different<sup>9</sup>.

### 3.1.2. Overall summarization and mutual relationships among impact mechanisms

37. Regarding the interrelationships between each impact mechanism and the overall impact, specific situations and conditions (elements) related to R&D activities, competitive environment, market structure, etc. that can influence the specific impact will be determined. When observed based on the above premise, it is possible to extract some general trends within that range.

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<sup>8</sup>The other suggestions include that, as an impact of a buyout, a distortion occurs in R&D incentive as R&D themes of startups center on those that tend to become target of acquisition by existing firms.

<sup>9</sup>It should be noted that further consideration is needed on how competition policy should address such a buyout effect, which is not a unique effect attributable to a specific business combination case.



38. The interim report organizes the interrelationships among each impact mechanism into four “R&D-related fields” under specific circumstances and conditions such as various technological characteristics, market characteristics, and product characteristics. Then the report points the following of how the overall impact will emerge based on the interrelationships between each field. Additionally, the state of changes in R&D incentive that occur in the fields (Groups A to C) relating to individual conditions concerning businesses and profits within a combining firm is also largely affected by strategic decision making that reflects relative and external elements of the competition environment of a product market.

#### *3.1.2.1. Stable monopolistic situation in product market*

39. As the competition situation of a product market, there is a case where a combined firm gains an extremely high market share (monopolistic market share) under a stable market environment where new entry seems impossible. A particularly strong negative impact emerges on R&D incentive because of strategic effects corresponding to this competition situation, which are the presence of a replacement effect and the loss of an escape competition effect and a pre-emption effect. Even though there are positive impacts such as an increase in appropriability and a synergistic effect, such a negative impact can prevail overall.

#### *3.1.2.2. Low product substitutability in product market*

40. When a product market has a feature of low product substitutability with a high level of product differentiation, an impact that changes in the competition situation of the product market have on R&D incentive (Group D) tends to be neutral even if a horizontal business combination is conducted. It is also considered that, in a product market having product substitutability, impacts through impact mechanisms tend to be suppressed in the aspect of changes in individual conditions within a combined firm (Groups A to C)<sup>10</sup>. However, if an increase in expected return does not necessarily need to come from customer stealing between products (between firms) and can be expected to come from production cost reduction within the firm, creation of new demand, and creation of a high-value-added product, R&D incentive may change within that scope.

41. Let us specifically suppose, for example, a case where, even though the features of products provided to users are differentiated, the production processes are fairly the same. Insofar as this case is concerned, a horizontal business combination results in an increase in production to which process innovation can be applied. Therefore, it can be considered that a margin expansion effect occurs. Furthermore, if improvements are expected with respect to the necessary inputs and capabilities for R&D (Group B), the chances of cost reduction, new product development, etc. may increase, and R&D incentive may change in this context. Therefore, these positive impacts may occur on the overall R&D incentive.

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<sup>10</sup>For example, in terms of appropriability, while spillover occurs and would be utilized in product development by another firm, profit to be earned from R&D results itself is not leaked and shifted into that firm because of the low product substitutability. Therefore, in this situation, sufficient appropriability has been secured before the horizontal business combination. As to the demand expansion effect, a high level of product differentiation means that the combined firm already possesses price controlling power over its own product, an incremental rent (price controlling power) generated by a horizontal business combination is limited.

### 3.1.2.3. Importance of spillover

42. When spillover of knowledge and other information from another firm serves as an important element in R&D (for example, when there is a technological characteristic such that one technology potentially serves as a base from which a number of firms cumulatively develop new technologies, when there is a high technological opportunity thanks to the spillover, or when the knowledge, information, etc. are interchangeably utilized because the technologies of firms are close to each other), if appropriability increases through a horizontal business combination, a negative impact on R&D incentive in a competitor due to a decrease in spillover tends to be relatively large. Furthermore, such a situation may lead to reduction in future competitiveness of a product of the competitor in a product market. This results in a decrease in or loss of the escape competition effect (and decreases in or loss of the escape competition effect and the pre-emption effect on a combined firm) in the competitor, whereby a negative impact that changes in the competition situation of the product market have on R&D incentive may be stronger.

### 3.1.2.4. Low technological opportunity and uncertainty of functions and utility value from R&D results

43. When a market share increases in a product market as a result of a horizontal business combination, a stronger replacement effect is likely to occur on R&D themes that have been found overlapping. Meanwhile, if there is any specific situation regarding these R&D themes such that the level of technological opportunity is low (R&D has a low chance of success) or that the uncertainty regarding specific functions and utility value of R&D results is high, this situation may be addressed through determination on resource allocation optimization in anticipation of expansions in business scale and business portfolio through a horizontal business combination. Therefore, the overlapping R&D themes may be maintained (Group B). As the risk of complete failure after streamlining and integrating the overlapping R&D themes into one increases, or as the uncertainty of the functions and the utility value is higher (possibility of the results of both sides evoking mutually complementary or differentiated demand is high, in particular), such decision makes the expectation for cannibalization to occur in the future smaller, and therefore, the replacement effect is less likely to increase despite a large market share (at least for the time being until the situation becomes clearer).

44. In this context, a state where an opportunity cost for the complete failure is fully considered means a state where, even after a horizontal business combination takes place, a combined firm keeps facing the high likelihood of having its customers stolen by a competitors once R&D fails<sup>11</sup>. Therefore, if the combined firm actually resorts to such decision-making, an escape competition effect and a pre-emption effect correspondingly occur in the combined firm, and a decrease in escape competition effect on the competitor is considered to be limited. Thus, the overall negative impact that changes in the competition situation (Group D) in the product market have on R&D incentive is likely to be relatively low.

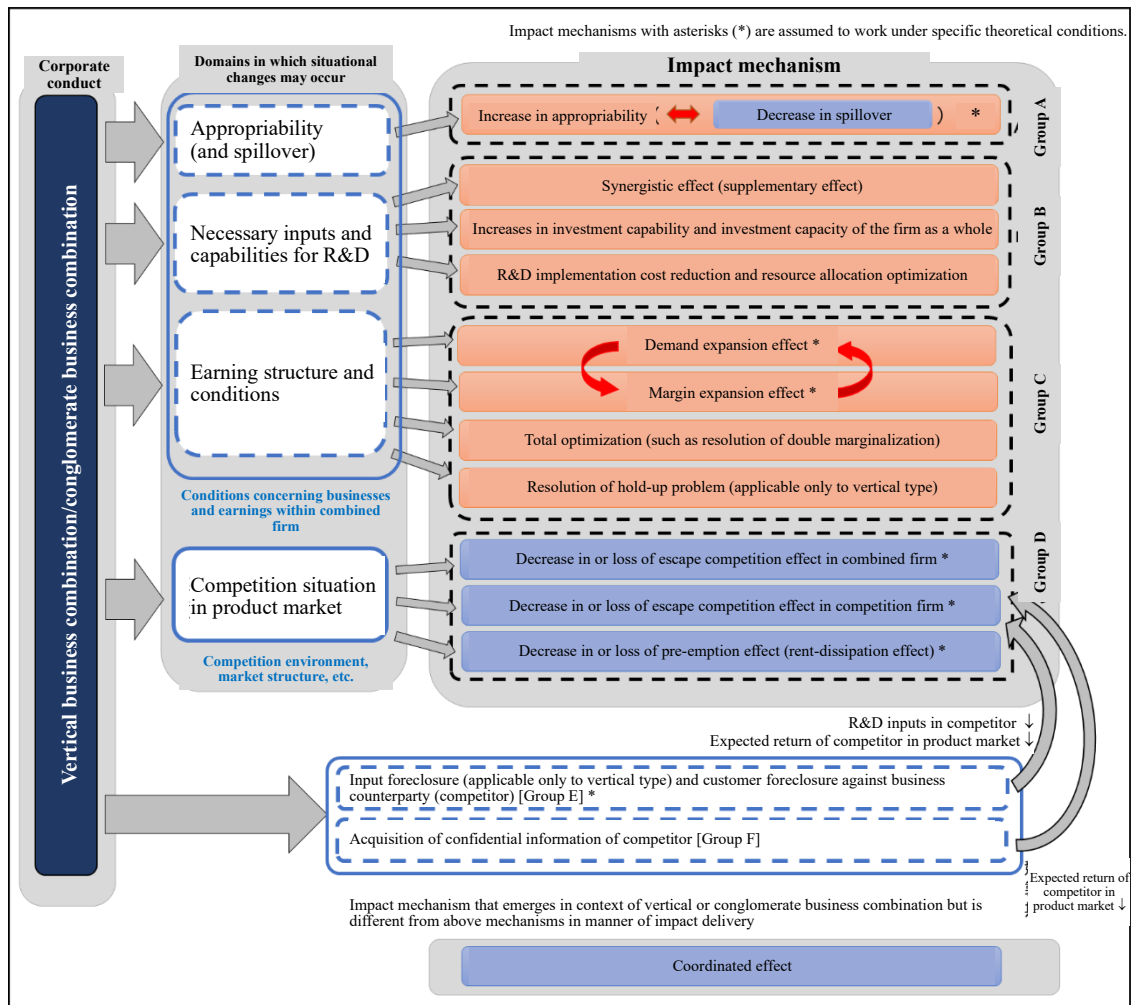
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<sup>11</sup>Conversely, a state where such a cost is not considered (the complete failure poses no problem in terms of profit even if it actually occurs) means that the combined firm is in a stable monopolistic state. In this state, a negative impact attributable to the competition situation of the product market including a replacement effect may appear rather strongly (see 3.1.2.1 above).

### 3.2. Vertical business combination and conglomerate business combination

45. Figure 2 provides an overview of the main impact mechanisms in vertical business combinations or conglomerate business combinations.

**Figure 2. Impact mechanisms for Vertical Business Combination or Conglomerate Business Combination**



46. Regarding the main influence mechanisms of vertical business combinations or conglomerate business combinations, the interrelationships among each impact mechanism, and how the overall impact emerges, the same basic concepts as for horizontal business combinations are valid. There are also different influence mechanisms than horizontal business combinations, and we have organized the overall picture by focusing on these differences.

### 3.2.1. *Impact mechanisms*

47. The main influence mechanisms of vertical business combinations or conglomerate business combinations that differ from horizontal business combinations<sup>12</sup> include, for example, the following.

48. Regarding profit structure and conditions, when the firm in the downstream market supplies a product that includes a component procured from a firm in an upstream market while these firms both have market power in the respective markets, their production volumes are determined so that their demand and supply reach equilibrium where the respective firms make the maximum profits, and this situation may lead to underinvestment (double marginalization problem). When there has been such a situation, it internalizes vertical externalities between products (resolution of double marginalization) and moves toward an increase in production volume, whereby R&D incentive may increase. Besides, with the presence of a hold-up problem<sup>13</sup>, a vertical business combination serves to integrate decision-making and resolve a business relationship that causes a hold-up problem, whereby R&D incentive for the relationship-specific asset may increase in a combined firm

49. Regarding competition situation in product market, after a vertical business combination, in a case where a combining firm in an upstream market refuses to supply a technology which serves as an input to its R&D to a competitor in a downstream market or a combining firm in a downstream market refuses to buy a product from a competitor in an upstream market, the competitor's R&D incentive may decrease. The same is true where a conglomerate business combination allows the parties to supply a combination of complementary products.

50. In a vertical or conglomerate business combination, combining firms may share confidential information (e.g., plans and details of R&D) on R&D within a competitor, which is obtained through the position as a business counterparty to the competitor and through a venture investment, among others. In such a case, the competitor may have a decreased chance of success prior to the success of the combined firm's success even if it conducts R&D (or if the competitor expects so), the competitor's R&D incentive may decrease (acquisition of confidential information of competitor).

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<sup>12</sup> The influence mechanisms marked with an asterisk (\*) in Figure 2 are basically unrelated because the parties to a vertical business combination or conglomerate business combination are not in a horizontal competitive relationship, but they may occur under certain conditions. there's a possibility that.

<sup>13</sup> For example, in a case where a manufacturer of a component develops production equipment conforming to specification of a manufacturer of a final product (equipment that cannot be diverted to other production), if trading with the final product manufacturer is terminated, the component manufacturer cannot shift to sales to other customers, and the R&D costs for the production equipment turn into a sunk cost. Such a specific asset based on customer relationship (relationship-specific asset) provides a final product manufacturer with strong negotiation power against a component manufacturer after the start of R&D (after the incurrence of costs), whereby the component manufacturer may be forced to accept unfavorable requests such as price reduction. When predicting that the final product manufacturer would conduct such opportunistic behavior, the component manufacturer avoids making an investment (R&D investment) in such a relationship-specific asset. Such a problem is called a hold-up problem.

### ***3.2.2. Overall summarization and mutual relationships among impact mechanisms***

51. Regarding how the overall impact emerges on each impact mechanism of vertical business combinations or conglomerate business combinations, there are some characteristics that differ from horizontal business combinations as follows.

#### ***3.2.2.1 Low product substitutability in product market***

52. The impact of input foreclosure or customer foreclosure tends to be larger, and a negative impact of the competition situation of a product market (Group D) may be larger in a case where the product market is with a high level of product differentiation, a low level of product substitutability, and no segregation of business relationship between products of combining firms and competitors. Besides, as in the case of a horizontal business combination, when the level of product substitutability is low, the impact mechanisms of changes in conditions within the combined firm (Groups A to C) tend to deliver limited impacts in principle<sup>14</sup>.

53. Therefore, overall, a negative impact from Group D may prevail.

#### ***3.2.2.2. Strength of complementarity between products or technologies***

54. In a vertical or conglomerate business combination, when there is strong complementarity between products of respective combining firms or technologies possessed thereby, a combination of these products or technologies can increase the chance of having a product improved in quality or function or conducting novel technology development that has a high value. Therefore, the stronger this complementarity, the improvement in product competitiveness or R&D advantage of a combined firm is further enhanced, whereby the gap thereof with competitors may be further enlarged in the product market. In such a case, decreases in R&D incentive in the combined firm and the competitor may be more remarkable through decreases in or the losses of an escape competition effect and a pre-emption effect.

55. Meanwhile, this complementarity may work to enhance positive impacts, such as a synergistic effect (complementary effect), mainly from the necessary inputs and capabilities for R&D. It is accordingly considered that it may increase R&D incentive in the combined firm in some cases.

56. However, when this complementarity is considerably strong (typical examples of which include a strong positive network effect), the competition situation of a product market changes in such a manner that, while the position of the combined firm is cumulatively and irreversibly strengthened, competitors (including potential competitors) are deprived of resisting power. In the situation where such a market controlling position is entrenched, the negative impact on R&D incentive in the combined firm and the

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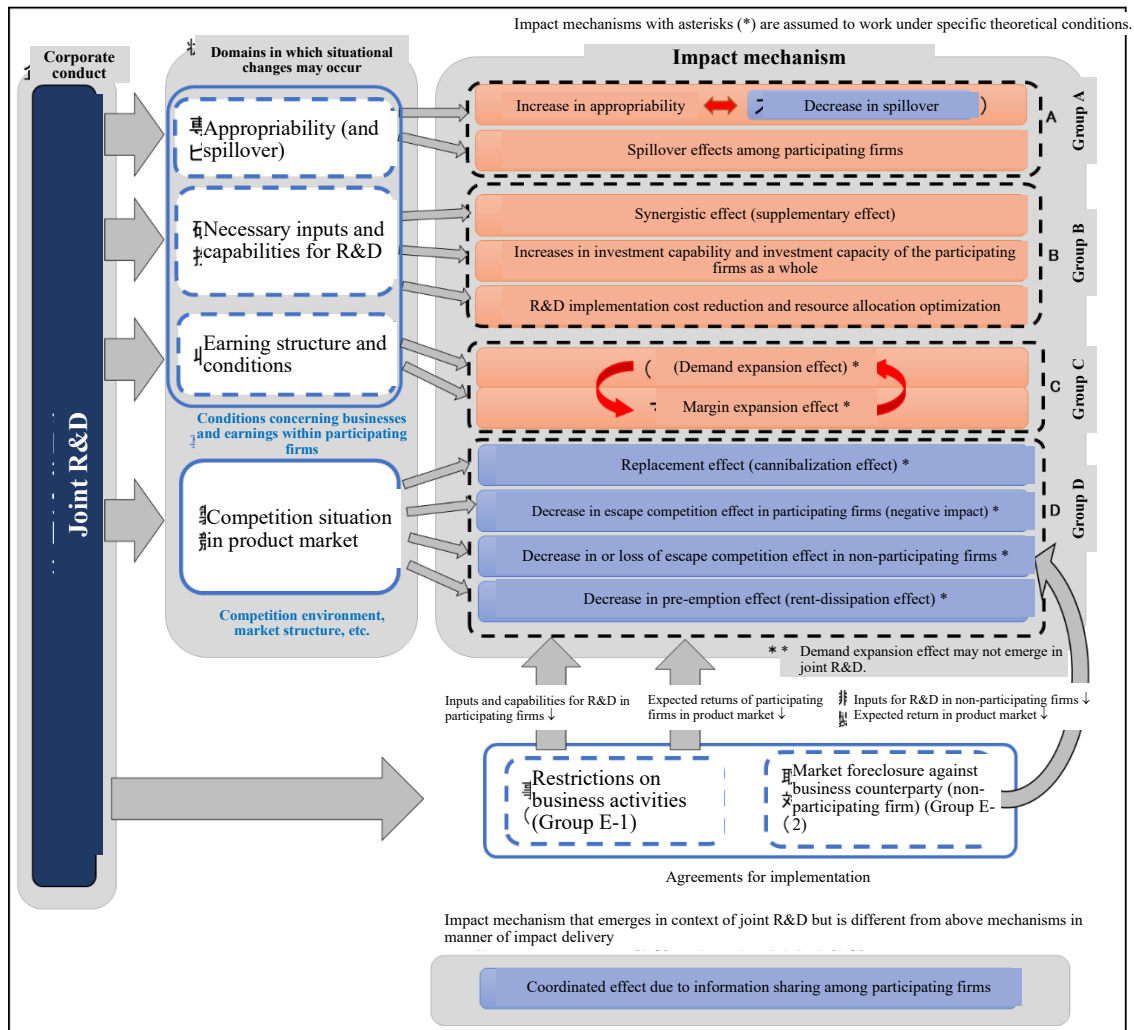
<sup>14</sup>However, double marginalization problem may be present in a case where the level of product substitutability is low both in an upstream market and in a downstream market. This is because combining firms can be considered to virtually have market power within their respective scope of business as the intensities of competition are relatively low in the respective markets. It should be noted here that, if the respective combining firms in the upstream market and the downstream market undergo a vertical business combination in such a situation, a positive impact may arise thanks to resolution of double marginalization (Group C) between their products.

competitor may prevail overall even with the above positive impact taken into consideration<sup>15</sup>.

### 3.3. Joint R&D

57. Figure 3 shows an overview of the main influence mechanisms in joint R&D.

Figure 3. Impact mechanisms for Joint R&D



58. Joint R&D can make R&D activities active and efficient and promote innovation, and is considered to have pro-competitive effects in many cases.

59. Meanwhile, joint R&D may have negative impacts on R&D incentive because of the following points: its characteristic similar to a business combination that decision-making and consequent behavior are integrated to a certain extent through collaboration among two or more firms; and agreements that are enforced for implementation of joint R&D and unilaterally or bilaterally restrict or control business activities of participants.

<sup>15</sup> This may also apply when there are strong economies of agglomeration (e.g. data in a data-driven business), or where there are strong economies of scope or scale between the parties' products (e.g. marginal costs decline significantly).

Taking these points into consideration, the Study Group organized the main impact mechanisms of joint R&D, the mutual relationships among impact mechanism, and how the overall impact of these emerge, focusing on the differences from horizontal business combinations.

### 3.3.1. *Impact mechanisms*

60. The main impact mechanisms of joint R&D that differ from horizontal business combinations<sup>16</sup> include, for example, the following.

61. Joint R&D can result in new (voluntary) spillover among participants on technology information possessed by these firms by facilitating information exchange among them during the course of the joint R&D. That is, in joint R&D, unlike a horizontal business combination where combining firms are completely integrated into one, participants are allowed to continue to independently conduct R&D, utilizing the knowledge acquired through the joint R&D, whereby R&D incentive may be increased (spillover effect).

62. It should be noted that spillover enjoyed by each participant from the other participants through joint R&D can be understood as serving to enhance necessary inputs or capabilities for R&D<sup>17</sup> in that participant<sup>18</sup>.

63. Besides, various arrangements associated with the implementation of joint R&D may have a negative impact on R&D incentives for participants and non-participants. For example, if an arrangement is made that restricts the R&D activities of participants, such as R&D on the same theme as joint R&D or R&D using results, this may reduce the R&D incentives of participants. In addition, if non-participants are unable to carry out R&D using the technology that is the result of joint R&D as input, due to restrictions on participation in joint R&D, R&D incentives of non-participants may decrease.

64. In addition, regarding R&D activities, it has been suggested that coordinated conduct is unlikely to occur in R&D activities because of characteristics of low predictability, high likelihood of having the results externally confidential etc. In contrast, in the case of joint R&D, firms participating therein share information on technologies and the progress of R&D of the individual firms, and converge and commonalize results and the consequences of the results—demand and profit—though joint undertaking of R&D. Therefore, if the above-mentioned condition changes and the mutual predictability between participants increases, it becomes easier for the participants to take coordinated conduct. Under such circumstances, when the expected return is higher if the level of results and the development pace of the R&D are held down than if the R&D is conducted aggressively to the extent technologically possible, the participants choose to take coordinated conduct.

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<sup>16</sup> The impact mechanisms marked with an asterisk in Figure 3 are based on the fact that joint R&D does not automatically lead to success, and competition among participants is maintained in the product market. It is thought that it is expressed only under certain conditions.

<sup>17</sup> It is considered appropriate that a mechanism through which information exchange between participating firms results in the enhancement of necessary inputs for joint R&D be described as a synergistic effect (supplementary effect). A spillover effect (supplementary effect) here can be described as what affects R&D in a field other than that of joint R&D.

<sup>18</sup> It is considered that a joint R&D contract can secure a certain level of synergistic effect (supplementary effect) by calling for the obligations to disclose information on relevant technologies and to keep information confidential among participating firms.

Thus, it is considered that their R&D incentive may remarkably decrease (coordinated effect).

### ***3.3.2. Overall summarization and mutual relationships among impact mechanisms***

65. The mutual relationships among impact mechanisms of joint R&D and how the overall impact emerges are basically the same as in horizontal business combinations.

## **4. Elements that affect how specific impacts emerge through impact mechanisms**

66. Regarding impact mechanisms of each corporate conduct on R&D incentives, each of the specific impacts based on the respective impact mechanisms does not always occur with the same strength. Instead, it occurs in a different manner depending on various elements. The Study Group broadly summarized elements that affect how specifically R&D incentive with respect to each impact mechanism. Examples of elements are as follows.

### **4.1. Significance as innovator**

67. Regarding increase in appropriability (secondary decrease in spillover), when two among a limited number of competent innovators are combined in a horizontal business combination or conduct joint R&D, spillover is internalized; accordingly, the degree of decrease in R&D incentive in competitors, etc. is likely to be relatively large.

68. Regarding replacement effect, in a horizontal business combination or joint R&D conducted between leading innovators directly competing with each other, an impact delivered by a replacement effect tends to be large if there is no other leading innovator.

### **4.2. Degree of market concentration (market share of combining firms or participants in particular)**

69. Regarding replacement effect, in a horizontal business combination, the higher the market share and the degree of market concentration, the more strongly a replacement effect (cannibalization effect) with the existing product of a combining firm would occur and the more likely R&D incentive is to decrease. In the case of monopoly, a negative impact of a replacement effect prevails against a positive impact of appropriability, a synergetic effect (supplementary effect), and a pre-emption effect (rent-dissipation effect), and R&D incentive is unlikely to arise. In the case of duopoly, the replacement effect is still likely to occur, and it is considered that a negative impact prevails. As the degree of market concentration decreases further, the replacement effect is increasingly less likely to occur. However, when the number of firms has increased to reach a certain number, the increase in R&D incentive stagnates.

70. Regarding decrease in or loss of escape competition effect if a combined firm has a large market share in a horizontal business combination, competitive pressure decreases, whereby an escape competition effect decreases in a combined firm. At the same time, the advantage of the combined firm is enhanced, whereby an escape competition effect is less likely to occur in competitors. In joint R&D, if participants collectively have a large market share, competitive pressure from non-participants decreases. Particularly when competitive pressure from non-participants is small and competition in the product market is dominated by competition among the participants, escape competition effects in participants may be more likely to decrease in a case where the results of the joint R&D work to equalize quality



and cost structures. Furthermore, due to the increased advantage of the participants in joint R&D, escape competition effects in non-participants are less likely to occur.

## 5.5. Basic perspectives to assessment of impacts on innovation

71. The summarization and understanding stated above include underlining knowledge and viewpoints that are more or less common to corporate conduct in general when observing and assessing impacts on innovation. The perspectives summarized below are considered to be useful as basic and common viewpoints in studying impact of various types of corporate conduct on innovation.

### 5.1. Focus on R&D competition

72. In order to appropriately assess impacts of corporate conduct, etc. on innovation, it is necessary to directly focus not only on product market competition but also on R&D competition<sup>19</sup> and then understand what actions the firms take and what impacts these actions have on the R&D incentive of the respective firms.

### 5.2. Perception of competitive relationships in R&D competition

73. Unlike a product market competition, R&D competition is not necessarily clear at present in terms of what relationships competitors are in and what they are competing for. Regarding this issue, considering that firms conduct R&D activities as part of their profit gaining activities, it is appropriate to focus on the point that there occurs a relationship where entities compete for profit gained from the technology, that is, to understand it as a competition for utility value and functions of a technology in a potential product. Thus, the extension of competition is also defined based on whether this competitive relationship is present or not

### 5.3. Importance of considering quality aspect in R&D competition

74. R&D competition is activities between firms intended to raise the level of them as much as possible. In addition, while the situation and the degree of this R&D competition depend on the R&D capabilities of respective competitors, it is considered that the axes for assessment of the competition situation from the perspective of competition policy may change depending on the forms, the phase, etc. of R&D. Furthermore, in terms of relationship with a product market, the scope of impacts of R&D on the product market differs depending on the nature of the R&D and the degree of impact of a technology to be developed, and it even may change the competition environment or the market structure of the product market.

75. Given such characteristics of R&D competition, for appropriate assessment of impacts on innovation, it is increasingly more important to take into consideration not only quantitative variables such as the number and market share of each competitor but also the

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<sup>19</sup> “Competition” in this “competition in developing technologies (R&D competition)” is not necessarily limited to “competition” as defined in Article 2, Paragraph 4 of the Antimonopoly Act (competition in which multiple enterprise, within their business activities, supply the same or similar goods or services to the same user), but has a broader meaning where firms compete with each other to gain as much profit as possible.

quality aspects of respective factors constituting R&D competition, for example, in the following points.

- - The level of R&D capabilities of competitors (whether they are powerful and capable innovators)
- - The mode of R&D, such as whether the results of R&D are at an uncertain stage
- - Technical characteristics such as whether the technology is basic and versatile

#### **5.4. Fields and viewpoints that should be noted in assessment of impacts on innovation**

76. From the viewpoints of economics, the above relationship between corporate conduct and changes in expected return or R&D incentive is common to corporate conduct in general; accordingly, considerations on four fields stated in section 3 would generally apply to all types of corporate conduct in common. Therefore, when examining what impacts each type of corporate conduct has on innovation, the following perspectives and focuses are considered to be usable.

##### ***5.4.1. Appropriability***

77. In order to secure a competition environment that would facilitate innovation, it is necessary to take appropriate balance between R&D incentive in a corporate conduct actor, which increases through the securing of appropriability, and R&D incentive in competitors, which increases through spillover.

##### ***5.4.2. Necessary inputs and capabilities for R&D***

78. If a certain type of corporate conduct can reinforce and enhance necessary inputs and capabilities for R&D, such a change may push up an expected return from R&D, whereby a positive effect may work on the R&D incentive of the actor. At the same time, it is necessary to focus on the aspect that inputs and capabilities for R&D in competitors may also be affected by such corporate conduct. For example, if a competitor's R&D inputs become difficult to obtain, the competitor may suffer an increase in R&D implementation costs or a decrease in chance of R&D success.

##### ***5.4.3. Profit structure and conditions***

79. Corporate conduct of a certain actor may change the profit structure and conditions and if this change can increase the expected return per R&D investment unit, the R&D incentive of the actor may increase. However, the types of corporate conduct that naturally cause such changes in profit structure and conditions are considered to be limited.

##### ***5.4.4. Competition situation of product market***

80. Even if a positive impact on R&D incentive arises in the corporate conduct actor in the field described 5.4.1-5.4.3 above, it is considered that strategic decision-making reflecting the competition situation of the product market strongly affects whether the R&D incentive of the firm increases eventually.

81. It is important to have the following viewpoints when carrying out observation and analysis on changes in the competition situation in the product market due to the corporate conduct and what impacts such as 5.4.4.1-5.4.4.3 below occur on the R&D incentive of the actor and competitor as a result of the above changes.

#### *5.4.4.1. Enlargement of gap in competitiveness*

82. As a result of corporate conduct, the advantage and the R&D capabilities of an actor in a product market increases, the gap thereof with each competitor (including potential competitor) in a product market enlarges, and the contestability of the competitor decreases. In such a case, the competitor cannot expect a sufficient expected return, and may have lower R&D incentive. Furthermore, as a counter effect, the R&D incentive of the actor may decrease. As a result of the corporate conduct, if the actor can get strong supplementarity in product or in technology or if business activities of competitor are restricted and/or limited as described in 5.4.2.2 below, the above tendencies may become stronger.

#### *5.4.4.2. Restrictions and limitations on business activities of competitor*

83. Depending on the corporate conduct, it may result in some kind of restrictions and/or limitations on the business activities of competitor, either directly or indirectly via a business counterparty. Some of them have adverse impacts on the R&D incentive of the competitor and may further lead to a decrease in R&D incentive of the actor of the corporate conduct.

84. Restrictions and restrictions can be widely assumed in various aspects, including inputs necessary for R&D and access to customers, so it is important to observe and analyze such restrictive and limiting events that occur by corporate conduct or in a product market, also from the perspective of the R&D incentive of each firm.

#### *5.4.4.3. Exclusion of competitor*

85. When corporate conduct not only restricts the business activities of competitor, but also excludes (or controls) competing companies from the product market, it means that important countervailing power in R&D ceases to exist, whereby decreases in R&D incentive of the respective firms may be further notable

### **5.5. R&D in stage where R&D results, etc. are uncertain**

86. In terms of R&D characteristics, when R&D is still in a phase where the chance of success, specific functions and a utility value to be brought by its results are uncertain, it is difficult to determine which of the alternatives is more appropriate to select. In such an uncertain phase, it is considered desirable to ensure an opportunity for innovation by maintaining overlapping R&D until its results, etc. become clear to some extent, so that either of them may be then selected, not to select either to focus on efficiency and integrate and consolidate the R&D themes into one, or to maintain overlaps with emphasis on diversity, option value, etc., even if there are overlaps in R&D themes.

## **6. Situation after releasing the interim report**

87. This interim report provides a theoretical and systematic overview of the impact that corporate conduct has on innovation in the context of competition policy. In concrete operational practice based on Japan's Antimonopoly Act, Further consideration is required regarding how the arrangements in this interim report can be utilized in relation to legal and practical aspects such as operational interpretation, and whether there are any issues that need to be addressed in order to do so.

88. The JFTC is currently soliciting opinions from a wide range of parties, including from all relevant parties, and resumed the Study Group on 27 October to further deepen the necessary consideration of basic concept of the legal framework in applying the Antimonopoly Act while taking into account the opinions received. The specific points being discussed in the Study Group after the restart include, for example, how to assess positive and negative impacts on innovation, how to assess between short-term and long-term impacts, the sufficiency of requirements on long-term efficiency, the positioning of R&D competition in the application of the act, and the handling of evidence.

## 7. Analyses of the impact on innovation in an individual case

89. Finally, of the cases in which the JFTC analyzed the impact on innovation in the past, this note presents the case of the merger of Lam Research Corporation (Lam Research) and KLA-Tencor Corporation (KLA-Tencor)<sup>20</sup>. In this note, Lam Research, KLA-Tencor, and the merging companies are referred to as "Lam Research," "KLA-Tencor," and "the merging companies," respectively, including companies that were in a joint relationship, or combined, with one of them at the time of the merger review.

90. Of the merging companies, Lam Research manufactures and sells semiconductor fabrication equipment (SFE), and KLA-Tencor manufactures and sells metrology and inspection equipment (MIE). Semiconductors are manufactured through doing the necessary process with SFE, conducting inspection with MIE and, if there are any defects with the products, changing the settings of SFE. Semiconductor manufacturers purchase SFE and MIE for manufacturing and research and development of semiconductors, while SFE manufacturers purchase MIE for research and development of new SFE.

91. KLA-Tencor manufactures several kinds of MIE (hereinafter, "Specific MIE"), that are particularly important for research and development of SFE, with significantly higher performance than competitors' products. The JFTC found that there was a concern that the merging companies would refuse to supply, or do something like that, the Specific MIE to Lam Research's competitors after the merger (input foreclosure).

92. In addition, from the viewpoint of innovation, the JFTC found there would be the following concerns that:

- confidential information of semiconductor manufacturers regarding the manufacturing and of SFE manufacturers regarding research and development of SFE, shared with KLA-Tencor, would be used for Lam Research's development of SFE, thereby giving the merging companies unreasonable advantage in the market of SFE manufacturing, and
- concern about the conducts described in A) above would be held by semiconductor manufacturers and SFE manufacturers other than Lam Research, thereby decreasing incentives for joint research and development conducted by KLA-Tencor and semiconductor or SFE manufacturers.

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<sup>20</sup> Case 8 of the "Major Business Combination Cases in Fiscal Year 2016," available at <https://www.jftc.go.jp/en/pressreleases/yearly-2017/June/170614files/MajorBusinessCombinationCasesFY2016.pdf>. (Japanese)

In reviewing this case, the JFTC exchanged the necessary information with the Department of Justice, the U.S. See <https://www.justice.gov/opa/pr/lam-research-corp-and-kla-tencor-corp-abandon-merger-plans>.

93. The JFTC therefore found that the merger would substantially restrain the competition in the market of SFE manufacturing.
94. In this case, the merging companies ultimately withdrew their merger plan.