

# CPRC Discussion Paper Series

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Japan Fair Trade Commission

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# **A note on conglomerate mergers: The Google/Fitbit case**

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## **Abstract**

We consider conglomerate mergers using the Google/Fitbit case as an example. First, summarizing the importance of conglomerate merger control and the current enforcement standards for such mergers by competition laws, we briefly describe a review of the Google/Fitbit merger by the Japan Fair Trade Commission. Next, we explain the background of the merger and introduce Chen et al. (2022), who theoretically discuss a cross-market merger by considering the Google/Fitbit merger. Finally, we discuss the implications of Chen et al. (2022) for controlling conglomerate mergers. Specifically, personalized pricing based on data analytics can be a foreclosure device; in particular, merger-specific efficiencies can foster market foreclosure.

**Keywords:** Conglomerate mergers, Google-Fitbit, Personalized pricing, Law enforcement

**JEL codes:** K40, L13, L44

## 1. Introduction

Compared to horizontal mergers, conglomerate mergers have rarely been regulated by competition laws. Conglomerate mergers are generally defined as mergers in which the merging parties are neither competitors (horizontal) nor trading relationships (vertical). Competition laws generally prohibit conduct that restrains competition, harming other trading parties who otherwise would benefit from competition in the market. Since the merging parties to conglomerate mergers do not compete with each other in the same market, the effects of conglomerate mergers on competition are not apparent in the merger itself. In recent years, however, we have witnessed increasing calls for greater vigilance against acquisitions by digital platform companies, especially those with enormous market capitalization. As Bourreau and de Streel (2019) describe, “One of the main and most intriguing characteristics of the digital sector is the resurgence of conglomeralism.” Among the policy proposals, there are calls for tighter control against mergers that expand the scope of network effects and strengthen “the (conglomerate) ecosystem” (Crémer et al., 2019), updating Merger Guidelines for “Toning down the existing text that suggests non-horizontal mergers will typically be benign,” (Furman et al., 2019) and introducing a presumption of illegality against startups’ acquisitions by dominant firms (Stigler Committee, 2019; Subcommittee, 2020). In addition to platforms, an increasing number of businesses are collecting a variety of data on consumer behavior, which has been newly available owing to technological advances and are using it for business insights and marketing purposes. Firms that collect and use such consumer data are generally able to sell goods and services directly to consumers; therefore, mergers in this sector are likely to be both non-horizontal and horizontal.

### 1.1. Conglomerate control in practice

At least four theories of competitive harm constitute the basis for prohibiting conglomerate mergers:

- (1) The merged entity forecloses competitors in one or both markets by tying or bundling its products.<sup>1</sup>
- (2) The merged entity forecloses competitors from the market for related products by deteriorating its product’s interoperability with competitors’ related products.<sup>2</sup>

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<sup>1</sup> European Commission (2008, paras. 93, 95-97); ACCC (2008, para. 5.26); JFTC (2019, VI.2(1)A); DOJ (2020, §4.a, Example 6); CMA (2021, para. 7.30). The 2020 Vertical Merger Guidelines were initially adopted by both the DOJ and the Federal Trade Commission (FTC), but the FTC withdrew the Guidelines on September 15, 2021. <https://www.ftc.gov/news-events/news/press-releases/2021/09/federal-trade-commission-withdraws-vertical-merger-guidelines-commentary>.

<sup>2</sup> JFTC (2019, VI.2 n.15). Other jurisdictions treat this competitive harm as an input foreclosure: European Commission (2008, para. 33); CMA (2021, para.7.11). The FTC has also addressed interoperability degrading as an

(3) By gaining access to competitors' commercially sensitive information, the merged entity reduces competitors' competitive efforts.<sup>3</sup>

(4) Conglomerate mergers eliminate potential competition between the merging parties.<sup>4</sup>

While this is not exhaustive of all the negative effects of such mergers on competition,<sup>5</sup> they have been relatively well analyzed. Because of rising concerns that acquisitions of startups may be wiping out the last remaining sources of "future disruption," recent emphasis is put on the loss of "potential and dynamic competition," as exemplified by the newly updated Competition and Markets Authority (CMA)'s Merger Guidelines (CMA 2021). The Japan Fair Trade Commission (JFTC) updated its Merger Guidelines in 2019. The JFTC emphasized that it will scrutinize the significance of data that the merging parties have when addressing the loss of potential competition.

Control of conglomerate mergers has been a controversial area of competition law on both sides of the Atlantic.<sup>6</sup> Among those who are skeptical about competitive harm from conglomerate mergers, Robert Bork was the most critical and writes, "Basic analysis shows that there is no threat to competition in any conglomerate merger..."<sup>7</sup> Phillip Areeda and Donald Turner, who were among the most thought-out writers of antitrust, were also critical of regulating tying in the context of merger control, insisting that "The only plausible reason for worrying about mergers creating a tying potential is the difficulty of detecting and controlling the more 'subtle' inducements by which the purchaser of one product also buys more of a second product than he otherwise would." and that "the conditions necessary for a substantial foreclosure through 'subtle' tying are relatively rare; the possibility of its occurring could wisely be ignored in appraising conglomerate mergers."<sup>8</sup> Although those who endorse a more active role in conglomerate merger control can counteract these passivists, there seems to be a tricky obstacle in activating conglomerate merger control. This obstacle is our general perception that conglomerate mergers are rarely regulated. Such a proposition appears to be an innocuous statement, just describing an objective fact. However, once we accept this proposition, competition agencies or courts can unconsciously believe that they should cautiously regulate conglomerate mergers. If enforcers or courts adopt this approach, fewer conglomerate cases will be challenged. As we see fewer cases of enforcement actions, the

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input foreclosure. See, e.g., *In the Matter of Silicon Graphics, Inc.*, 120 F.T.C.928 (1995); *In the Matter of Cadence Design Systems, Inc.* (1997).

<sup>3</sup> ACCC (2008, para. 5.47); JFTC (2019, VI.2(1)B); DOJ (2020, §4.b); CMA (2021, para.7.3).

<sup>4</sup> European Commission (2008, para. 7); JFTC (2019, VI.2(2)); DOJ (2020, §1.); CMA (2021, paras. 5.1-5.24).

<sup>5</sup> Other types of harm to competition include facilitating coordinated interaction by multi-market contact and softening competition. For the law and economics of conglomerate mergers, see Church (2004, 2008).

<sup>6</sup> For detail, see Church (2008).

<sup>7</sup> Bork (1978) at 246.

<sup>8</sup> Areeda & Turner (1980) at 206-207 & 213. See also Areeda & Hovenkamp (2016) at 203.

general proposition is reinforced, combined with another proposition that conglomerate mergers rarely harm competition and become a self-perpetuating assumption. Such an assumption is difficult to revise, leading to status-quo bias. If we want to change this mindset, competition agencies should actively challenge conglomerate mergers<sup>9</sup> or propose a rule in court that conglomerate mergers presumably harm competition in certain circumstances.

This study argues that conglomerate mergers involving consumer data and data analytics will likely harm competition through personalized pricing. This new theory of harm is uncommon in legal practice. We consider the Google/Fitbit merger as our example of interest. Before discussing the details of this case, we provide a simple nomenclature for non-horizontal mergers.

## **1.2. Vertical or conglomerate**

Vertical and conglomerate mergers are often confused in practice. Indeed, it is often difficult to decide whether the relevant merger is vertical or conglomerate with respect to specific markets. As explained in 1.1., degradation of interoperability has been addressed as either conglomerate or vertical, depending on jurisdiction. The CMA, while updating its Merger Assessment Guidelines, made it clear that it adopts a wider concept of a vertical merger: “The CMA may use the same framework in similar situations where the merged entity could use its presence in one market to directly harm the competitiveness of its rivals in another, even if there is not a conventional supplier/customer relationship.” The boundaries of the vertical and conglomerate are determined by how we define vertical mergers. If vertical mergers are narrowly defined as those between parties in a supplier-customer relationship, the rest are conglomerate mergers, and, therefore, the sphere of the conglomerate is large, and vice versa. We adopt a narrow definition of vertical mergers because it matches the legal definition of a relevant market in which buyers and sellers meet to buy and sell specific products or services in a specific geographic area. We do not argue that our definition is better because legal categorization should not determinatively change the ultimate competitive analysis. We intend to provide only one perspective, which might alleviate the confusing aspects of the residual concept.

We propose to judge vertical or conglomerate this way:

- (1) Specify two or more products (including services) of interest (e.g., products A and B).
- (2) Identify direct customers for each product.
- (3) Check whether the direct customers of each product are the same.

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<sup>9</sup> For recent enforcement cases, see Witt (2022).

(a) If the direct customers of each product are different, and one product (e.g., A) is necessary for the supply of the other product (B), it is a vertical merger.

(b) If the direct customers of each product are different and one product (e.g., A) is not necessary for the supply of the other product (B), it is a conglomerate merger.

(c) If the direct customers of each product are the same, this is a conglomerate merger.

The above method is akin to the explanation that “the main difference between the two types of mergers is that in the case of vertically related goods, it is the downstream firm that combines the two products, whereas, in a complementary relationship, the integration of the products is left to the consumers.”<sup>10</sup>

In the Google/Fitbit merger, the European Commission addressed the concern that wrist-worn wearable suppliers competing with Fitbit would be foreclosed from access to Google Play after the merger (Case No COMP/M.9660). The Commission examined this as input foreclosure theory. More specifically, the Commission examined the possibility that Google treats competing wearable devices unfavorably in the app store by lowering the rating of rivals’ companion apps required for competing wearable devices to connect to smartphones or by delaying the approval of rivals’ updates of companion apps. The app store is an upstream market, and if app developers who develop companion apps for competing wearable devices are treated unfavorably, competing wearable-device vendors in the downstream market will be foreclosed. This vertical concern can also be seen as a conglomerate concern because the focus is on deteriorating the interoperability between smartphones running on Android OS and competing wearables. In markets where vertically integrated firms (e.g., Apple) and vertically separate firms (e.g., Google and Fitbit) compete, focusing on the markets from the competitors’ perspectives might be justified. That is, from Apple’s perspective, smartphones and wrist-worn wearable devices are relevant markets. Indeed, the Commission examined a larger market of smartphones, noting “degradation strategy would have no impact on the wearable OEMs’ sales prospect with iPhone users.”

### **1.3. The JFTC’s Google/Fitbit merger review**

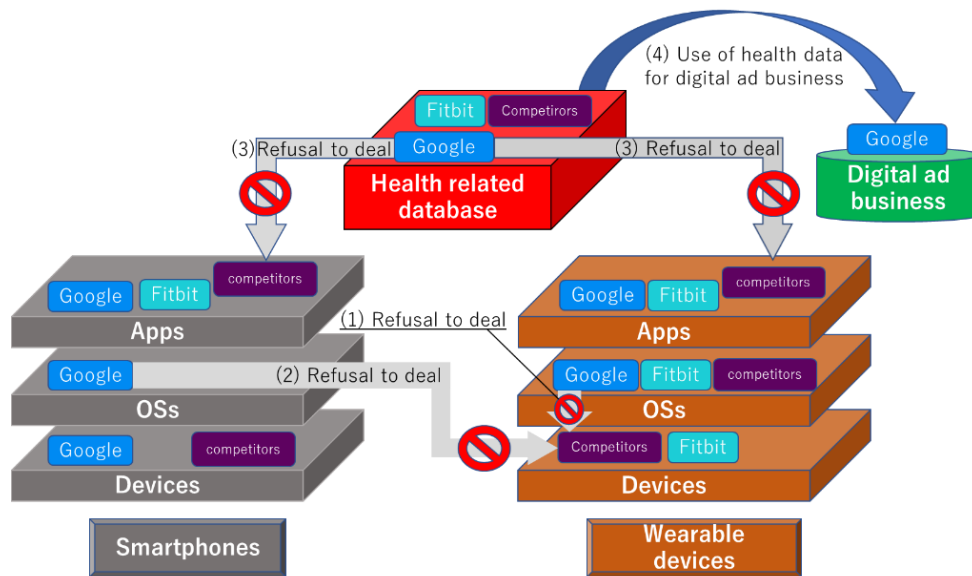
The JFTC released an outline of the Google/Fitbit merger review on January 14, 2021.<sup>11</sup> The JFTC approved the merger subject to Google’s remedies. Competitive concerns in three relevant markets were examined: wrist-worn wearable devices, mobile apps, and digital advertising businesses.

Figure 1 below shows the four theories of harm the JFTC examined:

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<sup>10</sup> Bishop et al. (2005, para. 2.1).

<sup>11</sup> <https://www.jftc.go.jp/en/pressreleases/yearly-2021/January/210114r.pdf>



**Figure 1**

(1) Competition concerns in the market for wrist-worn wearable devices.

Fitbit was the third-largest supplier of wrist-worn wearable devices in Japan, with a 10 percent market share. Fitbit owns its proprietary wearable OS. Two larger suppliers of wrist-worn wearable devices, with 55 percent and 20 percent market share, licensed wearable OS for free (Results of Review, p.19).<sup>12</sup> The JFTC examined whether Google would refuse to supply its wearable OS, which is an indispensable input for wrist-worn wearable devices, to wrist-worn wearable suppliers competing with Fitbit, thereby foreclosing them from the wrist-worn wearable devices market (input foreclosure, see (1) in Fig. 1). Noting that two larger suppliers license wearable OSs for free, the JFTC concluded that even if Google refused to license its own Wear OS, competing wrist-worn wearable device suppliers would have other sources of wearable OSs; therefore, input foreclosure is unlikely. The JFTC also examined whether Fitbit would refuse to purchase wearable OSs supplied by Google’s competitors (customer foreclosure). Because Fitbit does not purchase a wearable OS, this concern is unlikely (Results of Review, pp.19-20).

The second concern was that Google would degrade the interoperability between the Android OS for smartphones and competitors’ wrist-worn wearable devices after the merger, thereby foreclosing them from the wrist-worn wearable devices market (see (2) in Fig. 1) (Results of Review, p.21). Such degradation can be achieved by refusing access to the Android API, which enables the Android OS to connect to and synchronize with wrist-worn wearable devices, or by offering poor technical support. On the other hand,

<sup>12</sup> Results of review on the Proposed Acquisition of Fitbit, Inc. by Google LLC. <https://www.jftc.go.jp/en/pressreleases/yearly-2021/January/210114r.pdf>



Google submitted a vertical arithmetic analysis that compares gains and losses from foreclosure to support the view that Google has no incentive to degrade interoperability. However, the JFTC criticized this analysis, noting that the critical switching threshold is arbitrarily small and that some worldwide data differ significantly from those of Japan (Results of Review, pp.22-23). The JFTC approved the remedy proposed by Google, which makes Android APIs available without charge for access and on a nondiscriminatory basis (Results of Review, p.23-24).

(2) Competition concerns in health-related app markets.

Both Google and Fitbit provide access to their health-related databases through the Web API, and each of them also provides health-related apps for wrist-worn wearable devices and smartphones. Competing health-related app providers can access the health-related databases owned by Google and Fitbit through the Web API. The JFTC was concerned that the merged entity would treat competing health-related app suppliers unfavorably, thereby foreclosing them from the markets (see (3) in Fig.1) (Results of Review, p.25). Such treatments could include refusing access to health-related databases through the Web API or setting disadvantageous access charges. The JFTC approved the remedy proposed by Google, which makes access to the health-related database available without charge for ten years.

(3) Competition concerns in the market for digital advertising businesses.

Google has a leading position in the digital advertising market. Google and Fitbit provide access to their health-related databases through the Web API; however, they currently do not provide digital ad businesses with the data. Since the health-related database can be a useful input for digital advertising, the JFTC was concerned that after the merger, Google could aggregate health-related data from the merging parties and would thereby strengthen its position in the digital ad business market (Results of Review, p.27). Particularly, Google could combine its health-related data with those provided by Fitbit and improve the precision of targeting, which would further enhance Google's position. In response, remedies were submitted that Google would not use certain health-related data for the digital ad business and that Google would maintain separation of health-related data from other datasets. The JFTC accepted these remedies as being appropriate for addressing competitive concerns (Results of Review, p.28).

Although the JFTC's review seems reasonable, one might argue that competitive concerns related to data aggregation could arise in health-related markets other than the digital ad business market. Based on the theoretical analysis of Chen et al. (2022), we explore another theory of competitive harm that could arise when a firm that collects data merges with a firm that provides data-application services.

## 2. The business domain affected by the Google-Fitbit merger

The JFTC approved the merger remedy proposed by the constituent firm in the merger review: it promises not to apply health data to digital advertisement businesses (p. 28). This remedy does not seem to restrict data usage by the firm to other business domains, as in the EU case.<sup>13</sup> However, Bourreau et al. (2020) express concern over the possibility that the merged entity will exert monopoly power in the business domains of life science and healthcare in the near future. In addition, using a simple model, Chen et al. (2022) theorize their concerns.<sup>14</sup> Given these facts, we briefly summarize Google's entry into the health industry and then graphically explain Chen et al. (2022), who theoretically consider the cross-market effects of data-driven mergers by considering the Google Fitbit merger. Finally, using these summaries, Section 3 investigates the implications of Chen et al. (2022) on Japanese competition law.

### 2.1 Google's entry into the health industry

Alphabet, Google's parent company, has invested a lot of money in life sciences and healthcare. We introduce Google's strong interest in entering these fields by borrowing the Appendix in the preliminary version of Chen et al. (2022) (Chen et al., 2021).

Alphabet established two independent subsidiaries in these fields. Verily and Calico, established in 2015 and 2013, respectively, focus on life science research and health, welfare, and longevity. A corporate venture capital arm of Alphabet, GV (the former Google Venture), invested 36% of its funds in health management and life sciences in 2014.<sup>15</sup> Although Google Health was reestablished in 2018 and closed again in 2021, Google revealed that it still has a strong interest in health cases.<sup>16</sup>

Given its strong interest in health, it is natural that Google acquired Fitbit for \$2.1 billion. Mr. Sundar Pichai, the CEO of Alphabet and Google, says that "health care offers the biggest potential over the next five to ten years for using artificial intelligence to improve outcomes" (CNBC, 2020).<sup>17</sup>

Project Nightingale, established in 2018 by Ascension, one of the largest private healthcare system companies in the US, and Google Cloud, is a project to establish a bridgehead to enter the healthcare market. Ascension and Google Cloud followed the Health Insurance Portability and Accountability Act (HIPAA) and transferred the patient

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<sup>13</sup> The merger review in the EU prohibits the usage of health data to any online advertising (Case No. COMP/M.9600 Google/Fitbit [2020], para 966(c)).

<sup>14</sup> Considering the concern, Regibeau (2021) explains the plausibility of the merger review in the case.

<sup>15</sup> <https://money.cnn.com/2014/12/16/smallbusiness/google-ventures-funding/index.html>

<sup>16</sup> <https://www.cNBC.com/2021/10/21/google-is-all-in-on-health-care-again.html>

<sup>17</sup> <https://www.cNBC.com/2020/01/22/google-ceo-eyes-major-opportunity-in-health-care-says-it-will-protect-privacy.html>

data from Ascension to Google Cloud under the agreement that Google uses it only for services offered to Ascension; however, this causes ethical issues regarding the manner of treating patient data.<sup>18</sup> In 2019, Google signed a 10-year contract with Mayo Clinic, a general hospital in the US, regarding information management on genetic, medical, and financial records.<sup>19</sup> Although Google also proposed a storage service for a huge amount of health data to Cerner Corporation (currently Oracle Cerner), the matter ended with Cerner choosing Amazon's AWS. Moreover, according to the Wall Street Journal (2020), Google signed alliance contracts with several major companies that managed devices for hospitals and advanced healthcare services, and Google was able to see and analyze information on more than 10 million patients.<sup>20</sup>

Verily launched Project Baseline in 2017 to conduct comprehensive research on health problems worldwide. Along with the project, it produced its smartwatch, Study Watch, to track participants' health information. The project's purpose is to "create Google Maps for health care," according to an interview with Jessica Mega, Verily's chief medical officer, by CNBC (2017).<sup>21</sup> In addition, Verily has alliances with various healthcare organizations (e.g., Atrius Health, Blue Cross Blue Shield Association, and Veterans Affairs Palo Alto Health Care System) to conduct data-oriented prescriptions by analyzing health information. It also started an alliance with John Hancock, a health insurance company, to suggest health insurance to customers and conduct information technology-based illness management (e.g., diabetes).<sup>22</sup> Verily and Swiss Re Corporate Solutions, an Swiss Re Group insurance department, performed similar challenges in 2020. In an interview with CNBC (2020), Verily's President of Health Platforms said: "We're hoping to be more personalized in the way we offer health solutions."<sup>23</sup>

While Google has been interested in the health industry, it bought Fitbit in 2021. The competition authorities reviewed the Google Fitbit case in many countries and regions. The authorities in the EU and Japan approved the merger with the remedy of the restriction on the usage of health data for advertisements and securing access to the web API of Fitbit and the Android API. However, Google completed its merger process without approval from the Australian Competition and Consumer Commission (ACCC) and the Department of Justice (DOJ) in the US (the two authorities continued their investigations at least until the end of 2021).

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<sup>18</sup> Following the issues, Schnebel et al. (2020) suggest about ethical issues in the treatment of patient information.

<sup>19</sup> <https://www.wsj.com/articles/google-s-secret-project-nightingale-gathers-personal-health-data-on-millions-of-americans-11573496790>

<sup>20</sup> <https://www.wsj.com/articles/paging-dr-google-how-the-tech-giant-is-laying-claim-to-health-data-11578719700>

<sup>21</sup> <https://www.cnbccom/2017/04/18/alphabet-verily-project-baseline-longitudinal-health-study.html>

<sup>22</sup> <https://www.fiercehealthcare.com/payer/alphabet-s-verily-breaks-into-stop-loss-health-insurance-market-backed-by-swiss-re>

<sup>23</sup> <https://www.cnbccom/2020/08/25/alphabet-verily-enters-stop-loss-insurance-market.html>

## 2.2 Data-driven mergers: A theory by Chen et al. (2022)

We introduce Chen et al. (2022), who propose a theoretical model to consider the Google/Fitbit case. They argue for the impact of a data-driven cross-market merger on profits and welfare.

The outline of the model is as follows. Market  $A$ , a digital health market, consists of two firms,  $A_1$  and  $A_2$ , which supply horizontally differentiated products for this market. Market  $B$ , a wearable market, consists of two firms,  $B_1$  and  $B_2$ , which supply horizontally differentiated products for this market. If firms  $A_1$  and  $B_1$  merge, turning to firm  $C$ , it can acquire customer information in market  $B$  and use it in market  $A$ . Each consumer in the market purchases a unit of products supplied in the two markets. Consumer preferences in the two markets are perfectly correlated. Note that the perfect correlation assumption is not essential in their study (see Section 6 in Chen et al. (2022)).

We explain the structures of the two markets. Each market consists of a line segment of length one (see Figure 2). The distribution of consumers in the line segment in each market is uniform, with a density of 1.<sup>24</sup> Firms  $A_1$  and  $A_2$  are at the edges of the line segment of market  $A$ , and firms  $B_1$  and  $B_2$  are at the edges of the line segment of market  $B$ . Each consumer purchases one unit of a product in each market, and the intrinsic utility of each product is sufficiently large. As a result, each consumer purchases from one firm in each market.

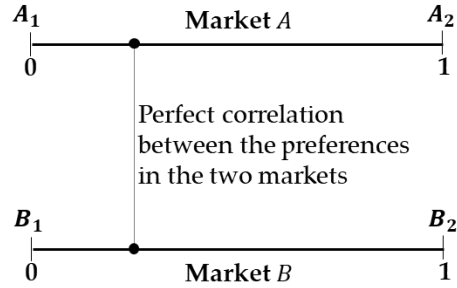


Figure 2: Market structure

Consumers on the line segment recognize their location  $x \in [0,1]$  as the degree of taste mismatch for the products in the line segment. Concretely, consumers at point  $x \in [0,1]$  in market  $M$  ( $M = A, B$ ) consider the degrees of taste mismatches for firms  $M_1$  and  $M_2$  are respectively  $x$  and  $1 - x$ , and the utility levels for the products decrease by degrees.

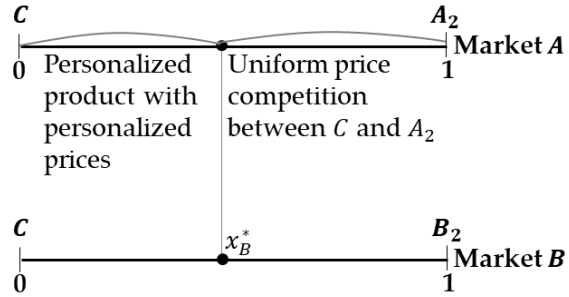
As explained earlier, if firms  $A_1$  and  $B_1$  merge, they become a merged firm  $C$ . The merger allows firm  $C$  to do the following. First, by using the data collected in market  $B$ , firm  $C$  can offer personalized products in market  $A$  to consumers who purchase from firm  $C$  in market  $B$ . These personalized products eliminate those consumers' taste mismatches for firm  $C$ 's product and provide additional personalized benefits to those consumers. They assume that these personalized benefits are sufficiently large such that

<sup>24</sup> Several papers on health markets also adopt the model formulation (e.g., Biglaiser and Ma, 2003; Olivella and Vera-Hernández, 2007; Katz, 2011).

firm  $A_2$  in market  $A$  cannot supply to consumers who purchase from firm  $C$  in market  $B$  in equilibrium.<sup>25</sup> Second, firm  $C$  can supply personalized products in market  $A$  to its customers purchasing from firm  $C$  in market  $B$  under personalized prices. The personalized prices discussed here are for personalized products, which depend on consumer preferences, and we should distinguish those prices from those for a standardized product or service. We believe that consumers' complaints about personalized pricing (e.g., unfairness) are weaker if products and services are consumer-specific. Of course, it is natural to question the feasibility of offering personalized prices due to consumers' fairness concerns for pricing; for instance, Li and Jain (2016) theoretically investigate price discrimination by incorporating consumers' fairness concerns for the discriminatory pricing of a standardized product.

When firms  $A_1$  and  $B_1$  merge, the game proceeds as follows: In the first stage, firms  $C$  and  $B_2$  compete in uniform price in market  $B$ . We explain it later. In the second stage, based on the outcome in market  $B$ , firms  $C$  and  $A_2$  compete in price in market  $A$ , and firm  $C$  can supply personalized products at personalized prices in market  $A$  to customers who purchase from firm  $C$  in market  $B$ .

Figure 3 shows the competition modes of the two segments in market  $A$ . The segment lengths depend on the outcome in which firm  $C$  supplies consumers in segment  $[0, x_B^*]$  in market  $B$ . In segment  $[0, x_B^*]$  in market  $A$ , firm  $C$  can supply personalized products, whose qualities are higher than in the no-merger case, under personalized pricing to consumers on  $[0, x_B^*]$ . In segment  $[x_B^*, 1]$  in market  $A$ , firms  $C$  and  $A_2$  supply consumers at uniform prices. As firm  $A_2$  is closer to consumers in the segment, it has a competitive advantage over firm  $C$ .



**Figure 3: The relationship between markets B and A**

The resulting outcomes in the two segments of market  $A$  are as follows. In segment  $[0, x_B^*]$  in market  $A$ , firm  $C$  monopolizes the segment owing to higher-quality personalized products under personalized prices, which are useful for maintaining consumer demand. In segment  $[x_B^*, 1]$  of market  $A$ , firm  $A_2$  has a competitive advantage mentioned above.

Specifically, there are three types of outcomes in market  $A$ , which depend on the

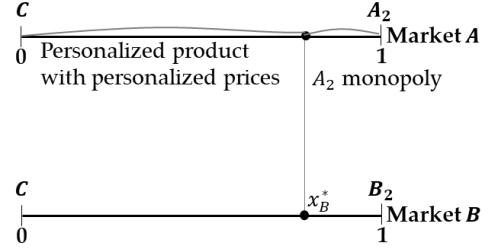
<sup>25</sup> Chapter 3 by Chen et al. (2022) investigates the relationship between personalized products with personalized prices and competition in market  $A$  under the no-merger case by assuming that the benefits of personalized products and the range of firm  $A_1$ 's customer base in market  $A$  are exogenous. We omit this argument here.

outcome in market  $B$ . First, as shown in Figure 3, firm  $C$  monopolizes  $[0, x_B^*]$ , and firms  $C$  and  $A_2$  compete in uniform pricing in segment  $[x_B^*, 1]$ . In the latter segment, owing to its disadvantage, firm  $C$  sets a low uniform price, inducing firm  $A_2$  to set a low uniform price. The low price of firm  $A_2$  forces firm  $C$  to set low personalized prices in segment  $[0, x_B^*]$ . The competitive disadvantage of firm  $C$  worsens as  $x_B^*$  increases, leading to lower personalized prices in segment  $[0, x_B^*]$ .

In the first type, an increase in  $x_B^*$  has a trade-off between (i) expanding the segment to which firm  $C$  offers personalized prices and (ii) decreasing personalized prices at each point. The former gain dominates the latter if and only if  $x_B^*$  is smaller than a threshold value. However, the outcome in segment  $[x_B^*, 1]$  changes when  $x_B^*$  exceeds a threshold value (which is different from the threshold value mentioned right before).

Second, as in Figure 4, firm  $A_2$  monopolizes segment  $[x_B^*, 1]$  when  $x_B^*$  is higher than the threshold value mentioned right before.

In this case, an increase in  $x_B^*$  increases the price of firm  $A_2$  because the distance between firm  $A_2$  and consumers  $x_B^*$  becomes smaller. The price increase allows firm  $C$  to offer higher personalized prices to consumers in segment  $[0, x_B^*]$ .



**Figure 4: Monopolization in the segments (market A)**

In the second type, an increase in  $x_B^*$  generates two gains from expanding the segment to which firm  $C$  offers personalized prices and increases personalized prices at each point, benefiting firm  $C$ .

Third,  $x_B^* = 1$  and firm  $C$  offers personalized products with personalized pricing to all consumers in market  $A$ . Firms  $A_2$  and  $B_2$  are excluded from the market.

In this case, firm  $C$  can exploit the gains from personalized products through personalized pricing, thereby deteriorating consumer welfare in market  $A$ .

Considering the above three outcomes in market  $A$ , we discuss the competition in market  $B$ . Firm  $C$  competes with firm  $B_2$  and anticipates high profits in market  $A$ , inducing firm  $C$  to set a low-cost price in market  $B$ . There are three types of equilibrium outcomes in market  $B$  that correspond to the three types in market  $A$ . The key factor influencing the outcomes in market  $B$  is the (common) additional benefits of personalized products. If the additional benefit of each personalized product is small, the outcome in Figure 3 appears; if the benefit is large, the outcome in Figure 4 appears; and if the benefit is large enough, monopolization by firm  $C$  appears.

We explain pricing in market  $B$  for the three types of equilibrium outcomes. Under the

first-type outcome (Figure 3), the profitability of personalized pricing is not sufficiently high, weakening firm  $C$ 's incentive to acquire demand in market  $B$ . Then, firm  $C$  needs to consider the trade-off of increasing  $x_B^*$  mentioned above, and as a result, the realized value of  $x_B^*$  is small. Under the second type of outcome (Figure 4), an increase in  $x_B^*$  from the threshold value has two gains from segment expansion and increments in personalized prices. Whether firm  $C$  monopolizes the market depends on the gain from personalized prices in market  $A$  and the loss from below-cost pricing in market  $B$ . If the additional benefit of personalized products is sufficiently large, firm  $C$  monopolizes the market; otherwise, it does not.

From the discussion, we find that, as the additional benefit of personalized products increases, monopolization is more likely to appear because of the higher profitability of personalized pricing. Additionally, because firm  $C$  exploits the gross surplus from the additional benefit through personalized pricing, the merger reduces the total consumer surplus. Contrary to monopolization, if the additional benefit of personalized products is not large, leading to an outcome in Figure 3, then a low price for firm  $C$  in market  $B$  and low prices through uniform price competition in market  $A$  benefit consumers.

The implication of Chen et al. (2022) is that competition authority should be more likely to carefully inspect a merger with consumption synergies under market environments in which personalized pricing is acceptable, contrasting to the following tendency of merger reviews. When a merger has social benefits from synergies, the competition authority tends to approve such a merger.

Chen et al. (2022) also consider the following three merger remedies.

First, Chen et al. (2022) discuss the following data-sharing remedy: Firm  $C$  shares firm  $C$ 's customer information acquired in market  $B$  with firm  $A_2$ , allowing firm  $A_2$  to offer personalized prices in segment  $[0, x_B^*]$ . Data sharing captures Firm  $C$ 's opening of API access to its database for firm  $A_2$ , making it possible to offer personalized prices. Because firm  $C$  is closer to segment  $[0, x_B^*]$  and has the advantage of offering personalized products, firm  $A_2$ 's ability to offer personalized prices creates competitive pressure on firm  $C$ , reducing the profitability of firm  $C$ . The data-sharing remedy dampens the incentive of firm  $C$  to acquire customer information in market  $B$ , mitigating competition in market  $B$ . Mitigation of competition benefits firm  $B_2$  but harms consumers in market  $B$ . However, the outcome in Figure 3 is more likely to appear, meaning that consumer welfare in market  $A$  improves. We must compare the loss in market  $B$  with the gain in market  $A$ . If the market share of firm  $C$  is higher under no merger remedy, the data-sharing remedy helps maintain price competition, as in Figure 3, or changes the equilibrium outcome from Figure 4 to Figure 3, diminishing personalized

prices. Thus, a data-sharing remedy can improve consumer welfare.

Second, Chen et al. (2022) discuss the effect of banning below-cost pricing on welfare in market  $B$ . The ban vanishes monopolization and mitigates competition in market  $B$ . However, the outcome in Figure 4 is less likely to appear, thus benefitting consumers in market  $A$ . The ban has a positive effect on welfare through a vanishing monopolization.

Third, Chen et al. (2022) consider the prohibition of firm  $C$ 's personalized pricing. The prohibition increases the profits of firm  $C$ 's rivals and consumer welfare in market  $A$  but decreases consumer welfare in market  $B$ . The effect of the prohibition was similar to that of the first remedy, and the effective situation was similar to that of the first remedy. However, the effect of monopolization prevention on welfare is weaker than that of the first remedy. In the first remedy, firm  $A_2$  can offer personalized prices in segment  $[0, x_B^*]$  that are independent of the uniform price in segment  $[x_B^*, 1]$ , inducing firm  $A_2$  to set the lowest feasible prices in segment  $[0, x_B^*]$ , diminishing the incentive of firm  $C$  to acquire consumers in market  $B$ . In the third remedy, firm  $A_2$  sets a uniform price in all segments of market  $A$ , allowing firm  $C$  to offer personalized products with a slightly high uniform price in segment  $[0, x_B^*]$  (of course, the high uniform price is lower than personalized prices without remedies).

In addition to these three remedies, we consider no merger approval. If we use consumer welfare as the standard to evaluate mergers, we must consider rejecting the merger when we expect the strong additional benefits of personalized products more likely to result in monopolization.

We briefly refer to related studies. The results of Chen et al. (2022) contrast with those of Choe et al. (2018) and Garella et al. (2021), in which personalized pricing accelerates competition in symmetric duopoly models but is similar to that in Chen et al. (2020), in which firms can achieve perfect price discrimination when each firm has customer information that does not mutually overlap with that of the rival firm.<sup>26</sup>

### 3. Legal perspective

Chen et al. (2022) show two related points that have significant implications for competition policy. First, they show that in a B2C conglomerate merger context,

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<sup>26</sup> In Chen et al. (2020), not only monopolistic data held by each firm but also consumers' abilities to actively escape personalized prices are important factors in deriving the perfect price discrimination. Intuitively, such consumers' abilities seem to benefit consumers owing to escaping high personalized prices, improving consumer welfare. However, Chen et al. (2020) show the opposite result. When a firm offers a low uniform price to consumers who are not recognized by it, its targeted customers respond to the low price, making profitable personalized prices for those targeted customers ineffective. When each firm anticipates the ineffectiveness of personalized pricing because of a lower uniform price, it abandons offering such a uniform price to its untargeted consumers and focuses on its targeted customers by offering personalized prices that are indifferent to no purchase. As a result, each firm successfully exploits consumer surplus through personalized pricing.



personalized pricing, a kind of price discrimination, could be a foreclosure device, depriving competitors of revenues and deterring entry of new firms. Second, they show that although aggregating data and data analytics could enable the merged entity to provide additional benefits to consumers, those benefits could be exploited by the merged entity. The latter point means that merger-specific efficiencies could be used to fuel foreclosure: when the additional benefits are large, both markets are monopolized. Since this theory is novel and has not been discussed in the literature on conglomerate mergers, we first discuss the important assumptions of Chen et al. (2022) from a legal perspective in Section 3.1. We then ask whether such a theory of competitive harm is recognizable in competition laws (3.2). Section 3.3 discusses the policy implications and limitations of Chen et al. (2022) when applying theory in practice.

### 3.1 Data analytics and competition

In their model, there are two relevant markets: Product *A* (digital health market) and Product *B* (wearable market). Consumer data are collected in market *B*, and utilizing the data collected, suppliers of product *A* can provide individualized/personalized products that better match each consumer's taste. Data analytics affect the merged entity's conduct in market *A* in three ways. First, by accessing the data collected in market *B*, the merged entity *C* has a better knowledge of consumers' tastes in market *A* compared to  $A_2$ . This enables *C* to provide personalized products. Although *C* can charge a higher price due to personalized offerings, the market price does not necessarily increase because  $A_2$  will price aggressively. Second, they assume that consumers who buy both products from the merger entity can obtain additional benefits (consumption synergy). *C*, therefore, can increase its price in market *A*. Thirdly, *C* can charge a different price to each consumer in market *A* based on data on consumers' tastes.

The additional benefits consumers obtain when they purchase both products from *C* correspond to the merger-specific efficiencies recognized in the merger review. Merger-specific efficiencies must be those benefits to customers that would not be brought about by other means, such as a licensing agreement.<sup>27</sup> Since Chen et al. (2022) assume that  $A_2$  can also offer personalized products if it obtains consumer data from *C* in the extension of the main model (Data sharing, Section 5), personalized offerings are not recognized as merger-specific, in contrast to the additional benefits.

### 3.2 Personalized pricing and competition law

As mentioned in the Introduction, competition laws generally prohibit conduct that

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<sup>27</sup> European Commission (2008, para. 53); Dep't of Justice & FTC, Horizontal Merger Guidelines (2010, §10); JFTC (2019, IV.2.(7)); CMA (2021, paras. 8.16-8.19).

harms competition. Because conglomerate mergers do not restrain competition between the merging parties (except in the case of potential competition), conglomerate mergers are prohibited when the merger entity engages in certain conduct that restrains competition after the merger.<sup>28</sup> We must determine whether personalized pricing in Chen et al. (2022) restrains competition in the market. According to their analysis, the merging entity's personalized pricing reduces competitors' profits in both markets  $A$  and  $B$ . More specifically, in two equilibria with the duopoly, the profits of competitors ( $A_2$  and  $B_2$ ) will decrease after the merger compared to those before the merger. In a monopoly equilibrium, both markets are dominated by the merged entity. Therefore, competitors' access to customers is foreclosed, and their profits are reduced, which has the same impact on competitors as observed in other foreclosure theories of harm in conglomerate mergers.

Merged entity  $C$  does not sell below the cost in market  $A$ , but its competitor  $A_2$  faces reduced profits even though it reduces its price after the merger, which increases the costs of  $A_2$  to act competitively. If competitors face fewer customers, they might increase their prices to maintain their business scale. They may also reduce their investments in innovation. These impacts on competitors may be called raising rivals' costs, and because they reduce competitive pressure on the merged entity, conduct with such impacts can be said to restrain competition. Chen et al. (2022) note that, depending on the size of fixed costs for entry, a new entry would be deterred because personalized pricing makes those competitors, which otherwise would have been viable, harder to compete; such practice after the merger should be prohibited as a practice that would significantly restrain competition. In market  $B$ , the merged entity prices below its cost in both equilibria. This is made possible by personalized pricing in market  $A$ . If personalized pricing in market  $A$  is prohibited, below-cost pricing in market  $B$  will cease.

### 3.3 Implementing the theory in practice

If competition authorities accept the theory of Chen et al. (2022), how should they analyze personalized pricing concerns in conglomerate mergers, and what should be adequate remedies? In turn, we discuss these issues.

In Europe, the competitive effects of non-horizontal mergers have been analyzed by focusing on the merged entity's (i) ability, (ii) incentive, and (iii) impact/effect.<sup>29</sup> We applied this approach to personalized pricing.

In "ability," competition authorities would ask whether the merged entity could use

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<sup>28</sup> Some jurisdictions might go further than this and prohibit price discrimination as a practice that facilitates the exercise of market power or as an abuse of a dominant market position. However, since the Japanese Antimonopoly Law prohibits mergers that would significantly restrain competition in the market, we confine our analysis to the case in which price discrimination harms competition.

<sup>29</sup> As to tying and bundling concerns, see European Commission (2008, paras. 99-118); CMA (2021, paras. 7.33-7.37).

personalized pricing and whether competitors could take counter-strategies. Personalized pricing is possible when the merged entity knows each consumer's taste by analyzing the data collected in market  $B$ , when it can personalize the products to each consumer based on their taste, and when it can charge a personalized price to each consumer. These three conditions are cumulative, and all must be satisfied. Each merging party must not have all the necessary data analytics and personalization skills. It is sufficient that the merged entity will acquire these skills through the merger. Examining counter-strategies would be similar, asking whether competitors in both markets can combine their skills to use strategies that make the merged entity's personalized pricing ineffective. Another point to note with respect to ability is the merging parties' market positions before the merger. A typical scenario of anticompetitive conglomerate mergers is that a firm with market power in one market will leverage its power in another market. However, personalized pricing might be of concern with a lower degree of market position. In Chen et al. (2022), the market share of  $B_1$  was 18/43 in value; thus, the competitor of the merging parties was larger before the merger.

In "incentive," competition authorities examine the gains and losses (benefits and costs) of personalized pricing for the merged entity. Gains would include increased sales from the enlarged customer base of both markets  $A$  and  $B$ . Losses would include lost sales from customers in market  $A$  who dislike personalized pricing and switch away from  $C$ 's product ( $A_1$ ) to the product of  $A_2$ . In Chen et al. (2022), some consumers could buy  $B_1$  and  $A_2$ ; thus, lost sales are at least partially examined. Moreover, lost sales might be limited because the additional benefits belong to those consumers who buy both products from the merged entity.

The "impact/effect" prong examines the overall competitive effect on the market. Competition authorities examine whether the merged entity creates or strengthens market power through foreclosure and whether merger-specific efficiencies counterbalance the negative effects. We have already confirmed in Section 3.2 that personalized pricing after the merger can reduce competitors' profits and significantly restrain competition. One of the most frequently cited efficiencies of conglomerate mergers is the Cournot effect: compared to the situation in which two complementary products are supplied by different firms, the merged entity would, considering that the price of one product influences the demand of the other, reduce the aggregate price and supply more.<sup>30</sup> It is unclear whether the Cournot effect is also observed when personalized pricing is possible; this is left for future research. Personalized pricing could also increase overall output in the market, but balancing these efficiencies would be difficult.

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<sup>30</sup> See European Commission (2008, para. 117) and DOJ (2020, §6).

Regarding merger remedies, if the expected anticompetitive conduct after the merger is personalized pricing, it is natural for competition authorities to prohibit personalized pricing as a remedy. That said, the remedy should not be too broad to prevent competitive price discrimination. Prohibiting overly detailed personalized pricing is sufficient. Remedies prohibiting below-cost pricing are practically difficult because agreeing on the relevant cost benchmark and estimating the relevant costs take time in a limited merger control timetable. Chen et al. (2022) discuss data sharing as a merger remedy and show that monopolization equilibrium is more often deterred by data sharing than by the prohibition of personalized pricing itself. Data sharing underpins competitors' growth. It may be wise to maintain data sharing in stock as an alternative remedy.

#### 4. Conclusion

This article discusses competitive concerns related to data aggregation and data analytics in merger control. Based on the case of the Google/Fitbit merger, we showed that personalized pricing after the conglomerate merger could be a powerful foreclosure device, where the merged entity would absorb even merger-specific benefits. We examined how competition agencies should apply this theory of harm in practice and argued that prohibiting personalized pricing or requiring data sharing would be the preferred remedy.

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