

Data Linkage between Markets: Does the Emergence of an Informed Insurer Cause Consumer Harm?

Claudia Herresthal¹

Tatiana Mayskaya²

Arina Nikandrova³

¹University of Bonn

²HSE University

³City, University of London

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Motivation



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- ▶ Google/Fitbit merger could create an **informed insurer**.
- ▶ Some commentators argue that it could be detrimental for consumers.

Google/Fitbit will monetise health data and harm consumers

Mimi Bourassa, Cristina Cifariis, Zhen Chen, Chengwei Choe, Gregory S. Crawford, Tommaso D'uso, Christos Gerasimos, Paul Heideman, Martin Peitz, Thomas Rappold, Alexandra Schwaner, Nicolas Schmitt, Michelle Sovinsky, Giancarlo Spagnolo, Oksa Toivanen, Tommaso Valletti and Tibkand Verge

The European Commission alongside other regulators is conducting an in-depth investigation of the Google/Fitbit deal. At stake, conventional wisdom suggest limited issues from a merger of complements. Yet unarticulated concerns arise when one sees that allowing for Fitbit's data gathering capabilities to be sold to Google's hands creates major risks of "platform envelopment": extension of increasingly power and consumer exploitation. "Health lock" is a major growth area, and the combination of Fitbit's health data with Google's other data creates unique opportunities for discrimination and manipulation of consumers in healthcare, health insurance and other sensitive areas, with major implications for privacy too. And as wearables are becoming a "point of access" to our "realities", we need to worry about incentives to pre-empt competitors that could threaten Google's data collection dominance. As the concerns are now there that preventing bad mergers is a key task for competition policy even in a digital platform, the European Commission and other authorities should be very careful of this deal, and realistic about their limited ability to design, impose and monitor appropriate remedies.

"Google's dominance in non-health data, combined with health data, will enable them to uniquely identify good risks and extract surplus from them (e.g. offering them only slightly lower prices), causing higher prices or lack of cover for bad risks and, in the extreme case, market unravelling over time."

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- ▶ But insurance market suffers from **adverse selection**.

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Research question

How does the data linkage between markets affect the welfare of different consumer groups?

Model Preview

Product market
(market for wearables)

Insurance market
(health insurance market)

Model Preview

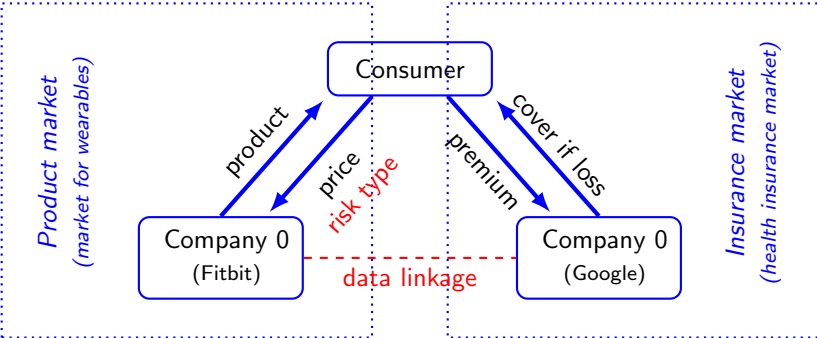
Product market
(market for wearables)

Company 0
(Fitbit)

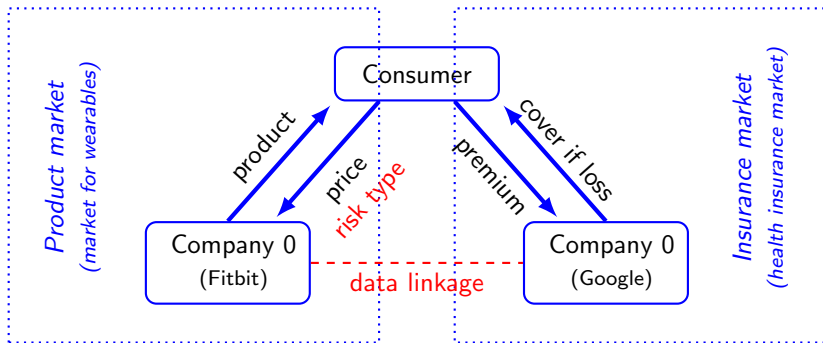
Insurance market
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Model Preview



Model Preview



Our aim

Compare consumer welfare with and without data linkage.

Results Preview

Both high- and low-risk consumers

- ▶ benefit from data linkage when share of high-risk consumers is large,

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Both high- and low-risk consumers

- ▶ benefit from data linkage when share of high-risk consumers is large,
but
- ▶ may suffer when share of low-risk consumers is high.

Literature

Data linkage: *Argenziano and Bonatti (2021)*, *Condorelli and Padilla (2021)*, *de Cornière and Taylor (2021)*, *Cong and Matsushima (2023)*, ...
Chen, Choe, Cong and Matsushima (2022), *de Cornière and Taylor (2024)*

Our paper:

- ▶ Negative externalities between different consumer types across markets.
- ▶ Welfare results depend on composition of consumer pool.

Insurance market:

- ▶ Rich literature on screening initiated by *Rothschild and Stiglitz (1976)* and *Stiglitz (1977)*
- ▶ Growing literature on symmetric information provision: *Farinha Luz et al. (2023)*, *Zapechelnyuk and Migrow (2024)*,...
- ▶ Our paper: asymmetric information provision.

Model

Insurance Market

- ▶ Risk-averse consumer with income:

$$x = \begin{cases} y, \\ y - l, \end{cases}$$

Insurance Market

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$$\text{High risk : } x = \begin{cases} y, & 1 - \pi_H \\ y - l, & \pi_H \end{cases} \quad \text{Low risk : } x = \begin{cases} y, & 1 - \pi_L \\ y - l, & \pi_L \end{cases}$$

where $0 < \pi_L < \pi_H < 1$.

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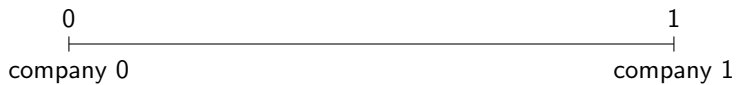
- ▶ Unit mass of consumers with share of low types equal to $\gamma \in (0, 1)$.
- ▶ For today's talk: company 0 is monopolistic insurer.
- ▶ Company 0 is risk-neutral and offers full insurance at premium p .
- ▶ Type i 's willingness to pay for the full insurance contract is w_i :

$$\underbrace{u(y - w_i)}_{\text{full insurance at premium } w_i} = \underbrace{\pi_i u(y - l) + (1 - \pi_i) u(y)}_{\text{no insurance}}$$

where $w_H > w_L > 0$, $w_i > \pi_i l$

Product Market

Hotelling duopoly



Product Market

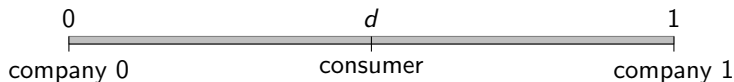
Hotelling duopoly



- ▶ Companies $n \in \{0, 1\}$ produce at $MC = 0$ and set prices t_n simultaneously.

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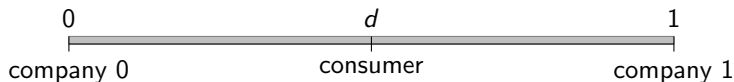
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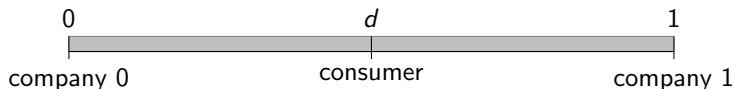
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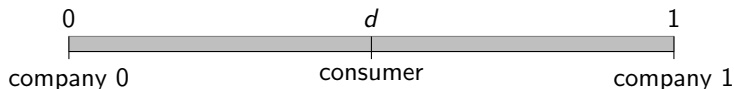


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- ▶ Consumer's utility from buying the product from company n is

$$\underbrace{B}_{\text{baseline utility}} - t_n - \sigma \cdot \underbrace{|n - d|}_{\text{distance to company } n}$$

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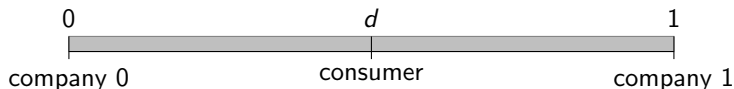


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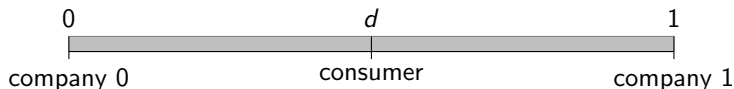


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- ▶ $\sigma > 0$ is the degree of product differentiation

Timing without data linkage

- ▶ Consumers privately learn risk type $i \in \{L, H\}$ and location d .

Product market:

- ▶ Companies 0 and 1 simultaneously choose prices t_0 and t_1 .
- ▶ Consumers select one product.

Insurance market:

- ▶ Company 0 offers a contract.
- ▶ Each consumer accepts the contract or remains uninsured.

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Product market:

- ▶ Companies 0 and 1 simultaneously choose prices t_0 and t_1 .
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Insurance market:

- ▶ Company 0 identifies risk type of each consumer it served in the product market.
- ▶ Company 0 can make different offers to identified high-risk, identified low-risk and unidentified consumers.
- ▶ Each consumer accepts the contract offered to them or remains uninsured.

Monopolistic Insurance Market Analysis

Benchmark: Without data linkage

◀ Details

Product market equilibrium without data linkage:

- ▶ Standard symmetric Hotelling duopoly.

Insurance market equilibrium without data linkage:

Low γ
(many high risks) If $\gamma < \gamma_M$, only the high-risks are served at $p = w_H$.

High γ
(many low risks) If $\gamma \geq \gamma_M$, both types are served at $p = w_L$.

Low γ : Effect of Data Linkage on Consumer Welfare

Theorem 1

Suppose that $\gamma < \gamma_M$. Then

- ▶ data linkage **benefits both high- and low-risk consumers**, and
- ▶ welfare gains for both consumer types are the same.

Low γ : Monopolistic Insurance Market

Equilibrium with data linkage:

- ▶ Company 0 extracts all rents from *identified* consumers: $p_L = w_L$, $p_H = w_H$.
- ▶ *Unidentified* consumers of both types are served at $p_U = w_H$.

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Within the insurance market, data linkage

- ▶ leaves **low-risk** consumers **indifferent**,
 - ▶ Company 0 offers $p = w_L$ (accept/reject) or $p = w_H$ (reject),
- ▶ leaves **high-risk** consumers **indifferent**,
 - ▶ Company 0 offers $p = w_H$ with and without data linkage.

Low γ : Product market

Demand: no reason to avoid company 0 due to data linkage:

- ▶ Low-risk left with no rent in insurance market, identified or not.
 - ▶ High-risk offered insurance at $p = w_H$, identified or not.
- ⇒ Demand in product market unchanged with data linkage.

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Supply: Pro-competitive effect.

- ▶ Company 0 gets additional profit in the insurance market per each (low-risk) consumer it serves in the product market.
- ⇒ competes more aggressively in the product market.
- ⇒ ↓ prices ⇒ all consumers are better off.

Low γ : Summary

Consumer welfare change with data linkage:

- ▶ Insurance market: no welfare change.
- ▶ Product market: lower prices \Rightarrow higher welfare.

Data linkage **increases efficiency in insurance market**, but additional surplus accrues only to company 0.

Company 0 passes some of this additional surplus on to consumers via **lower prices in the product market**.

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Equilibrium with data linkage:

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Within the insurance market, data linkage

- ▶ leaves **low-risk** consumers **indifferent**,
 - ▶ Company 0 offers $p = w_L$ with and without data linkage,
- ▶ leaves **high-risk** consumers **worse off**,
 - ▶ Company 0 offers $p = w_H$ instead of $p = w_L$ to identified high risks.
 - ▶ Identified high risks **lose information rent**.

High γ : Naive Consumers

Naive consumer: does not anticipate that product choice affects subsequent insurance offer.

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- ▶ Company 0 gets additional profit in the insurance market per each (high-risk) consumer it serves in the product market ⇒ ↓ **prices**.

Proposition

If $\gamma > \gamma_M$ and consumers are naive, then data linkage

- ▶ benefits all low-risk consumers,
- ▶ harms high-risk consumers on average.

High γ : Sophisticated Consumers

Sophisticated consumers \Rightarrow Product market demand distortion

High risks lose $w_H - w_L$ in the insurance market if identified.

\Rightarrow may buy a product at a higher price and / or are ready to travel a longer distance to avoid company 0 in the product market.

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Product market supply:

Pro-competitive effect:

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Anti-competitive effect:

Demand by high risks less sensitive to price differences \Rightarrow \uparrow prices

High γ : Effect of Data Linkage on Consumer Welfare

Theorem 2

Suppose that $\gamma > \gamma_M$ and consumers are sophisticated. Then

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- ▶ data linkage **harms low-risk** consumers if $\gamma > \overline{\gamma}_M$ and $\underline{\sigma} < \sigma < \overline{\sigma}$ for some $\overline{\gamma}_M$, $\underline{\sigma}$ and $\overline{\sigma}$ such that $\gamma_M < \overline{\gamma}_M < 1$ and $0 < \underline{\sigma} < \overline{\sigma} < w_H - w_L$.

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Note: sophisticated high-risk consumers impose **negative externality** on low-risk consumers!

Competitive Insurance Market Analysis

Monopolistic insurance market

Competitive insurance market

Low γ

- ▶ In the insurance market, consumer welfare is **unchanged**
- ▶ No incentives to avoid company 0's product

High γ

- ▶ In the insurance market, identified high risks are **worse off**
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<p>Across markets, both high and low risks benefit from data linkage</p>		
High γ	<ul style="list-style-type: none"> ▶ In the insurance market, <u>identified high risks</u> are worse off ▶ High risks have incentives to <i>avoid</i> company 0's product 	<ul style="list-style-type: none"> ▶ In the insurance market, <u>all</u> consumers are worse off ▶ High risks have incentives to <i>avoid</i> company 0's product ▶ Low risks have incentives to <i>seek out</i> company 0's product

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Across markets, **both** high and low risks **may suffer** from data linkage

Conclusion

- ▶ We consider welfare consequences of data linkage between insurance and product markets.
- ▶ When the share of **high** risks is high, **consumers benefit** from data linkage.
- ▶ When the share of **low** risks is high, data linkage may make **all risk types worse off**:
 - ▶ In **monopolistic insurance market**, data linkage does not harm low risk consumers in the insurance market but their detriment arises through **higher prices in the product market**.
 - ▶ In **competitive insurance market**, cream-skimming by informed insurer makes **all insurance consumers worse off**.

Thank You

