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Investigative Techniques and Digital Tools in a Modern Enforcement World

Presentation

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“Investigative techniques and digital tools in a modern enforcement world”

JFTC’s Activities on Bid-Rigging Screening



**Japan Fair Trade Commission
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Building an Anti-Trust Panopticon

A Proof-of-Concept for a healthy and strong market

Japan Fair Trade Commission

Takujiro Kono

Director, International Affairs Division

What is the Anti-Trust Panopticon

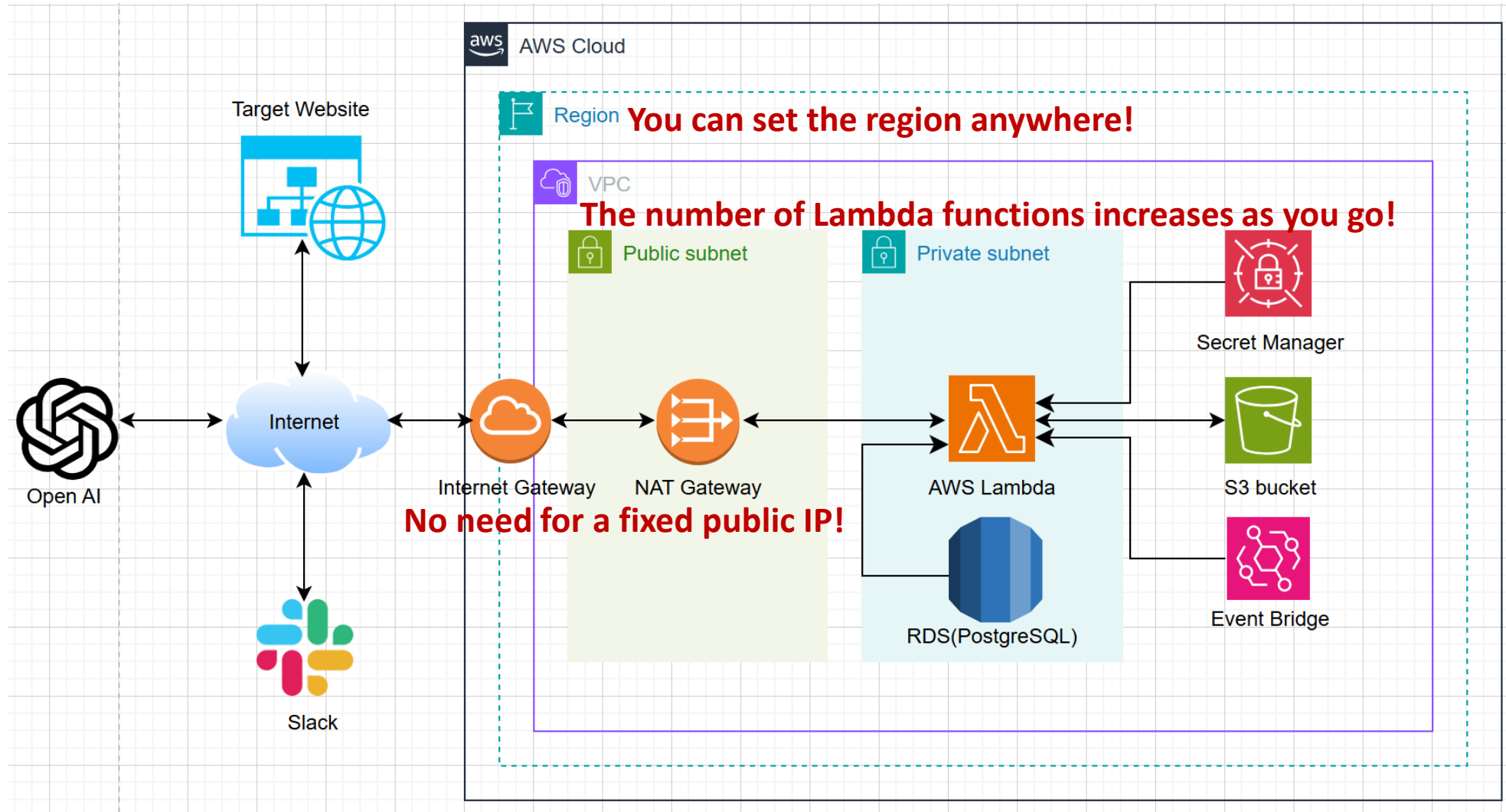
- Inspired by Jeremy Bentham's original 1790 design of the Panopticon.
- It was meant to deter misconduct and even rehabilitate inmates.
- Bentham argued that the layout would lower staffing costs.
 - Cells were brightly lit while the central tower remained dark, keeping inspectors hidden.
 - A ring of cells around a single inspection tower required fewer guards.
 - This "automatic" discipline acted as a deterrent even when no one was visibly watching.
- The Anti-Trust Panopticon is the digital version of the idea for competition authorities which could benefit from this concept.

What does it do?

1. **Continuously crawls arbitrary sources of information. Compares each new crawl with the previous version of the same source, automatically at a scheduled time.**
2. **Produces a diff file (which shows the differences between two files, highlighting additions and deletions) for easy review.**
3. **Uses an large language model (LLM) to flag potential anticompetitive issues (e.g., MFN clauses, exclusivity, words pertaining to lock-in).**
4. **Sends both the change and a concise summary to Chat Services(Slack, Google Chat, and so on).**
5. **You can also use Generative AI to point out potential issues and areas of debate.**

What does it look like when it is deployed?

Demo time!



STEP 1

MAKE DIFF FILE

Only requires a single line prompt

```
{"prompt": "The terms have changed from old_version to new_version. What has changed?"}
```



- **Added section on Wi-Fi Aware Framework (3.3.7 G) with requirements around secure storage/transmission of Wi-Fi Aware Information and limitations on its use.**

STEP 2

LLM MAKES FLAGS

From a competition perspective

{"prompt": "You are a legal analyst with expertise in competition law. Review the following diff between two versions of a user agreement. Identify any clauses or changes that may raise competition law concerns"}



In-App Purchase API (Section 3.3.9):

- **The requirement to use XYZ Inc.'s In-App Purchase API for digital goods and services sold within apps remains.**
- **This has been a point of contention in competition law discussions, as it requires developers to use XYZ Inc.'s payment system and pay XYZ Inc.'s commission.**

STEP 3

LLM INSIGHTS

Potential concern and likely counterarguments

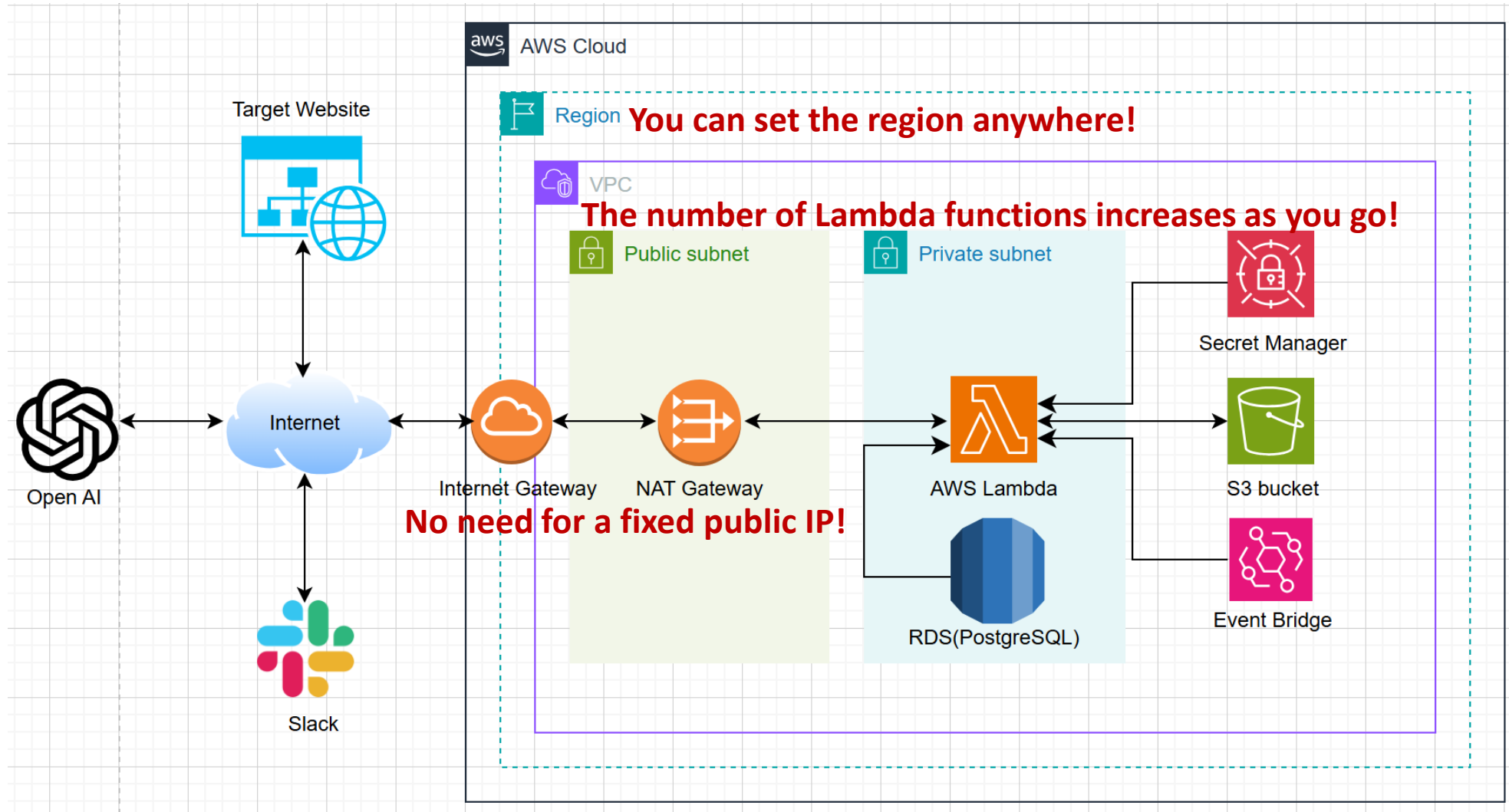
{"prompt": "Identify the clauses and changes that may raise competition law concerns and speculate on what counterarguments might be made to address those concerns."}



New restrictions on Wi-Fi Aware Framework (Section 3.3.7 G):

- **The new version adds limitations on how developers can use Wi-Fi Aware technology, restricting it to peer-to-peer connectivity and data transfer within the app only.**
- **Potential concern: Limiting interoperability or innovation**
- **Counterargument: XYZ Inc. may claim these restrictions are necessary for user privacy and security, preventing misuse of sensitive location data.**

What does it look like when it is deployed?



Key Takeaways

- The entire process, from data collection and analysis to notification, can be automatically executed on a regular schedule.
- Analysis results are stored in Amazon S3 and referenced by the LLM to ensure consistent responses.
- The LLM uses Retrieval-Augmented Generation (RAG) to reference legal information (e.g., laws and guidelines) stored in a Vector Database, enabling customization for different countries.
- Deployment is straightforward: once the infrastructure is in place, the system can be easily deployed using the provided Terraform code from the JFTC. The setup simply involves copying the code into AWS Lambda and specifying the target URLs to monitor.
- The system can support multiple languages, provided the underlying Generative AI model has multilingual capabilities.
- The architecture ensures security and prevents data leaks by rejecting all inbound connections from the public internet. It is designed to only allow responses to its own outgoing communications.

How it's built

- ✓ **Total annual cost: Under \$1,000 US dollars**
 - **AWS cloud environment (e.g., Amazon S3, AWS Lambda, Amazon EventBridge)**
 - **An API-enabled Generative AI service (the JFTC utilizes Amazon Bedrock)**
- ✓ **Leveraging Generative AI from the initial system architecture phase**
 - **Base code (provided by the JFTC)**
 - **Can be run by A trained staff member (non-engineer), with training available from the JFTC**
- ✓ **A passion for digital competition policy**
 - **A collaborative framework among participating countries**

Next steps!

- ✓ Going forward, the JFTC will work on customizing the program using AWS Lambda for enforcement of the MSCA(Mobile Software Competition Act).
- ✓ We are eager to collaborate with any interested countries.
- ✓ We aim to enable the tracking and analysis of various types of historical data, not just changes in terms of service.
- ✓ We hope to Create an international community of competition experts and technologists.
 - Set up a shared repository and community for exchanging ideas and code.
 - Host ideathons and hackathons to collaborate on new approaches, methods, and mechanisms.
- ✓ We can also provide hands-on coding guidance during international conferences and other similar events.
- ✓ Contact for inquiries: the following JFTC address

platform2019@jftc.go.jp



JFTC's Activities on Bid-Rigging Screening

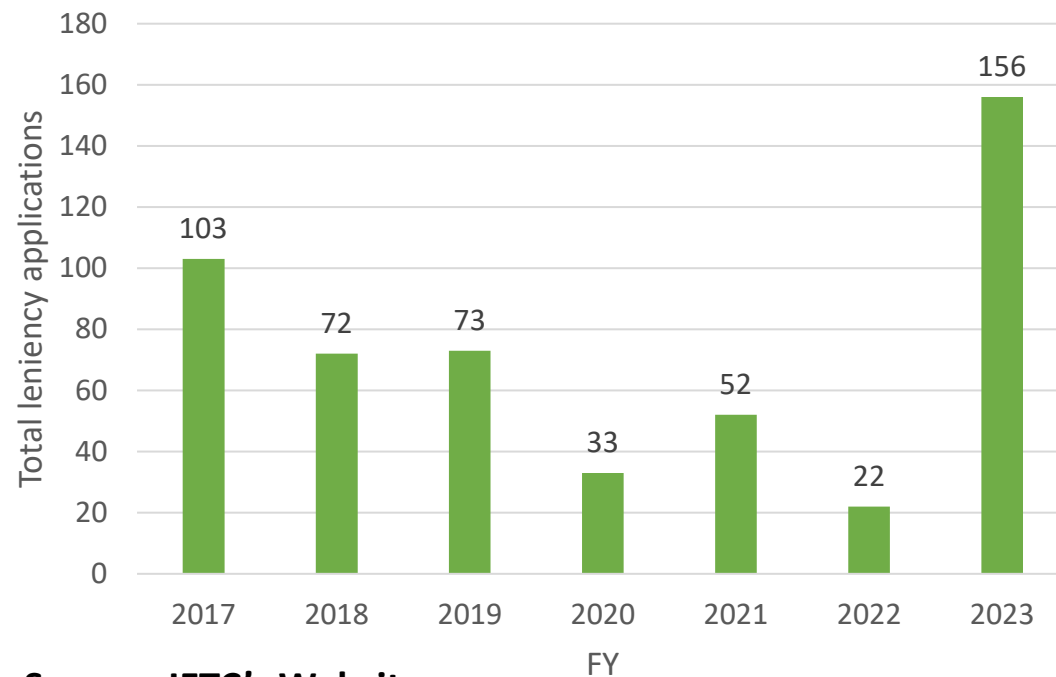
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- Empirical Method to detect bid riggings through analysis of large bidding data
- Some foreign competition agencies have developed the methods and used in practice
- Reasons ➔ Decline in Leniency Applications
- Bid-riggings still exist in Japan

The number of cease and desist order cases

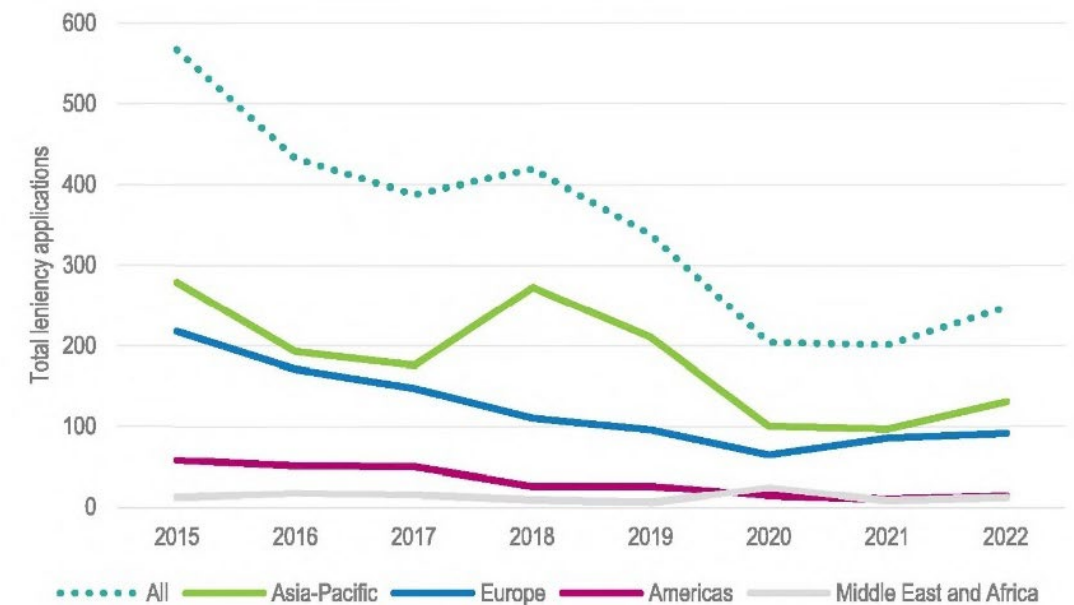
FY 2019	FY 2020	FY 2021	FY 2022	FY 2023
3	1	3	4	2

Leniency applications in Japan



Source: JFTC's Website

Figure 2.4. Total leniency applications, by region, 2015-22



Note: Data based on the 53 jurisdictions in the OECD CompStats database that provided data for leniency applications for eight years.
Source: OECD CompStats database.

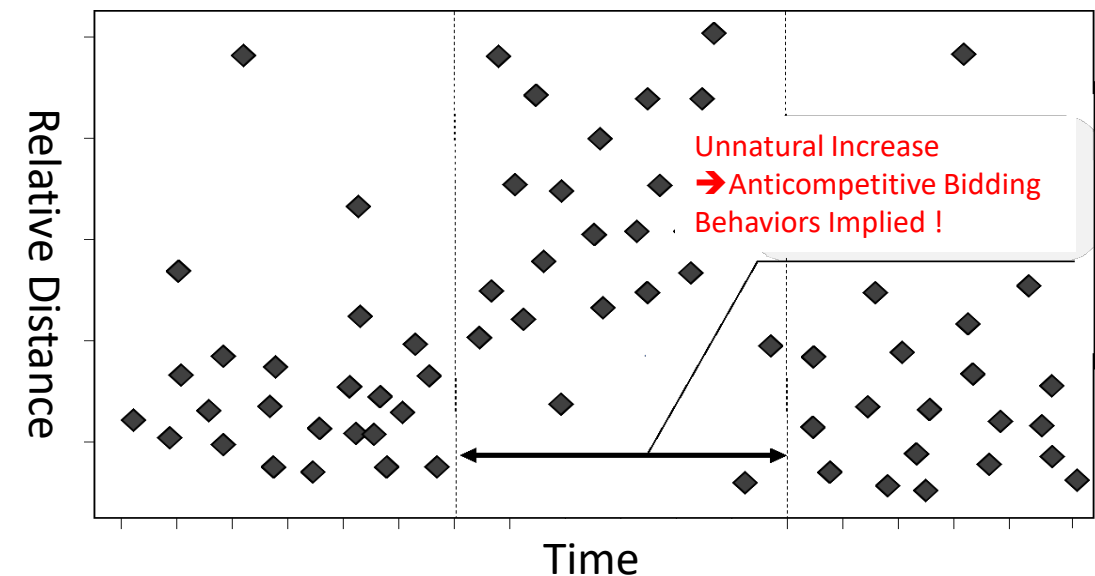
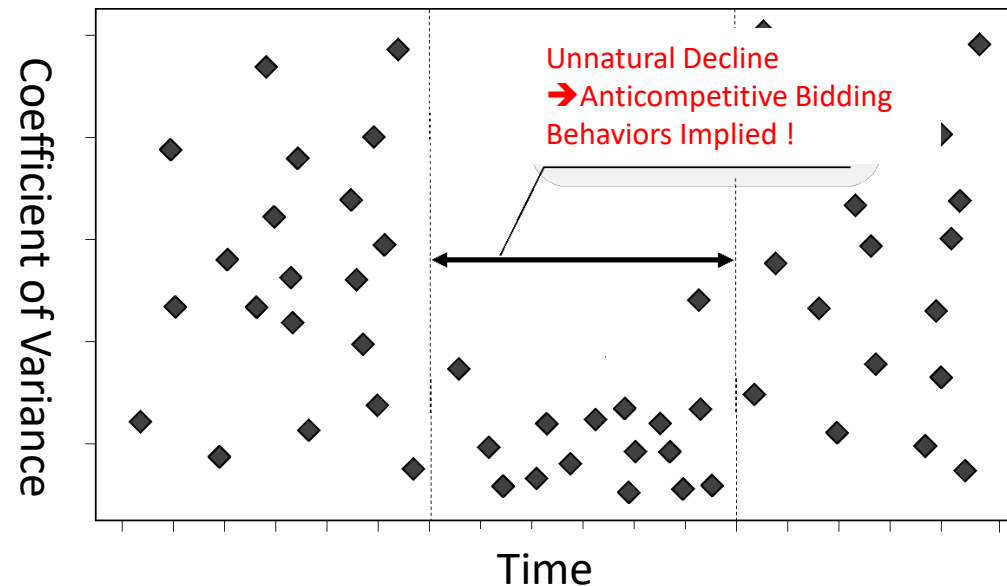
- Staffs of Economic Analysis Office
 - Economic Adviser (part time staff)
 - IT specialists (“Digital Analysts”) (part time staff)
-
- Review academic literatures and Foreign CAs’ Activities
 - Gather public procurement data through web scraping
 - Implement empirical data analysis

- Construction Sector / Non-Construction Sector

- Various Issues for Data Collection
 - Data Publishing Duration
 - Inconsistency of Data Formats
 - Each Agencies' Distinct Style and Format (ex. Scanned Image)
 - Target Price / Minimum Bid Price/ Designated Bidding

- Screening based on Statistical Indicators (e.g. Winning Rate, Relative Distance, Coefficient of Variance)
- Screening based on Econometric Analysis (e.g. Regression Discontinuity Design, Close Losing Bids)

Statistical Indicators	Definition	Explanation
Winning Rate	<i>Winner's Price / Target Price</i>	Traditionally used indicator. If there is the collusion, the winning rate tend to approach to 100%.
Relative Distance	<i>(Best Loser's Price – Winner's Price) / Standard Deviation of Losers' prices</i>	If “cover bid” happens, the gap between 1 st and 2 nd lowest bidders are larger than the others
Coefficient of Variance	<i>Standard Deviation of Bids / Mean of Bids</i>	If coordination happens, the variance may be lower

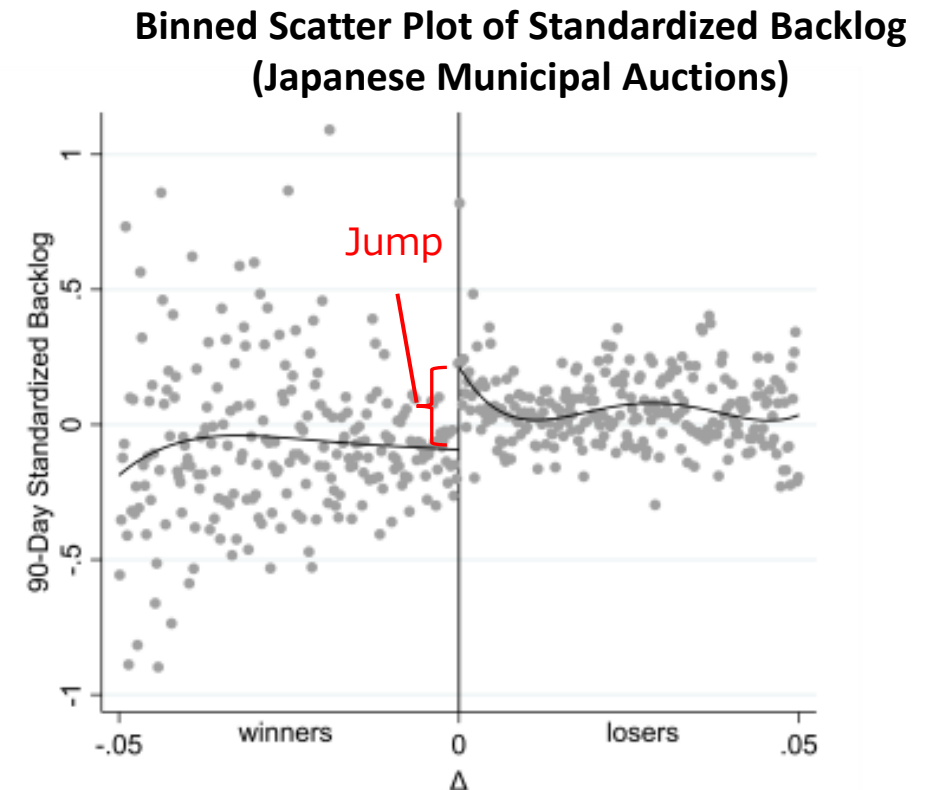


➤ Regression Discontinuity Design (RDD)

- Method used to study cause-and-effect when something changes at a specific cutoff point. In public bidding, we can look at the difference (Δ) between a bidder's price and the lowest price from other bidders. If Δ is below zero, the bidder wins; if it's above, they lose. When Δ is close to zero, it's like a tie.
- When a bid is just barely higher or lower than the lowest one (Δ close to 0), it means the bidder almost won or lost — their prices are nearly the same. In competitive auctions, small differences like this are usually due to chance, not underlying factors like how busy a company is. So, bidders who narrowly win or lose are expected to be similar in those respects. If we see a sudden change in such factors exactly at the point where bids go from losing to winning, it may suggest the auction isn't truly competitive.

➤ Regression Discontinuity Design (RDD) Using “Back-log”

- Used in Kawai, Nakabayashi, Ortner and Chassang (2023), *Review of Economic Studies*, 90
- Under competition, close winners and losers should be statistically similar
- If instead, close winners' backlog is consistently lower, this can be the evidence of collusive bid rotation



Source: Kawai et al. (2023), Figure 1

- Further Data Collection through web scraping
- Examine the effectiveness of existing methods and indicators
- Develop and implement suitable methods or tools



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