ASSESSMENT OF MARKET POWER IN DIGITAL MARKETS: CONCEPTUAL FRAMEWORK AND EMPIRICAL STRATEGY

TIAGO S. PRADO

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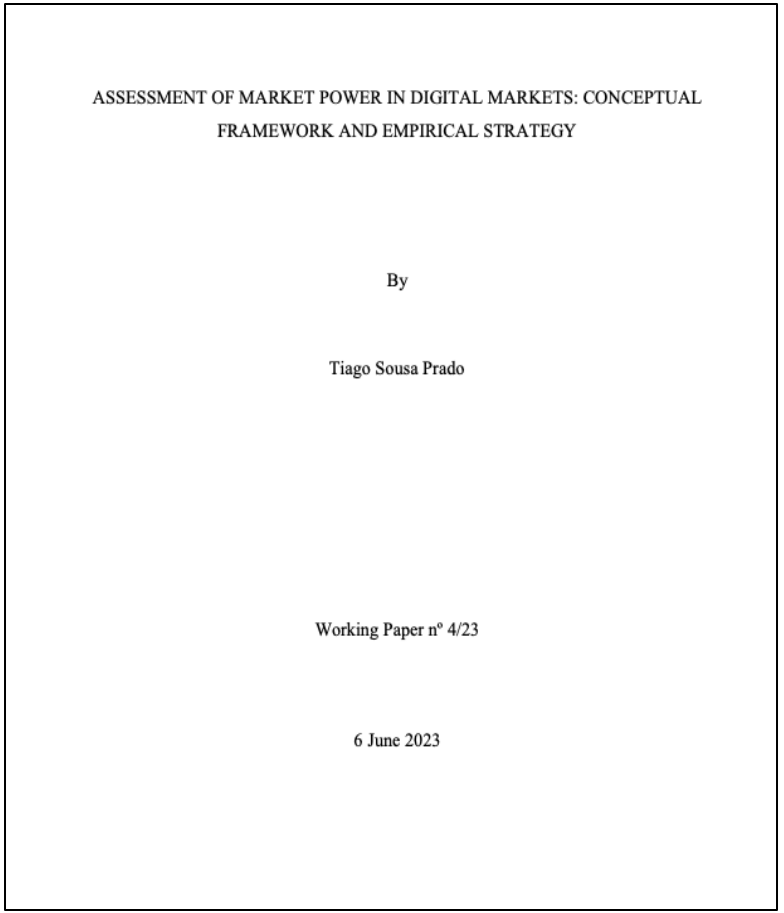
Agenda

1. Motivation
2. Research Questions
3. Main contributions
   - Market Power Assessment
4. Concluding Remarks



ASSESSMENT OF MARKET POWER IN DIGITAL MARKETS: CONCEPTUAL FRAMEWORK AND EMPIRICAL STRATEGY

By

Tiago Sousa Prado

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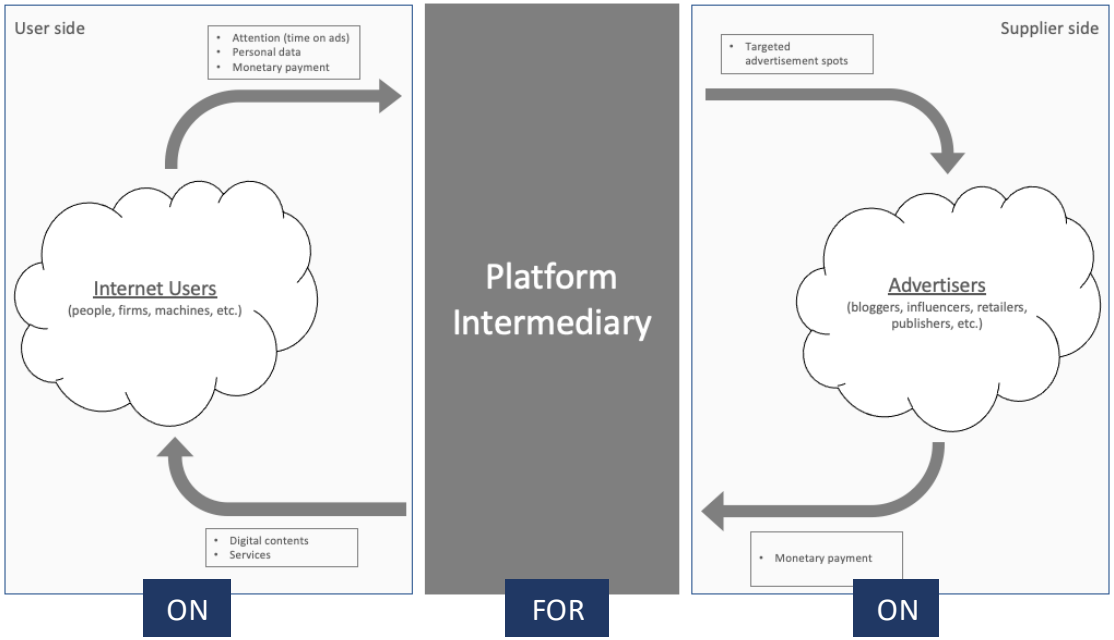
MOTIVATION

- Digital technology has transformed peoples' lives in the last few decades
- Platform intermediation has risen as a very successful business model
- Prevailing policies to keep the digital economy free from traditional regulation are being reconsidered
- The adoption of the DMA in the EU pushed countries worldwide to consider similar measures

Two-sided digital markets



More competition *on*, and *for* the platforms is seen by scholars and policymakers as a remedy for most of the (potential) negative effects of digital platforms market strategies

MAIN CONTRIBUTIONS

- My research expands the knowledge frontier in four, interrelated areas:

1) Theoretical and empirical investigation of the potential **harms** created by digital platforms for dynamic efficiency of digital markets

2) Development of a conceptual framework for the assessment of **market power** in situations when large digital platforms are present in several digital markets

3) Design and implementation of a robust, **empirical path** for one investigating the channels through which big digital platforms may exploit their market power

4) Comparative analysis of different **policy** and regulatory regimes aimed at promoting competition in digital markets

Publications

MARKET POWER ASSESSMENT

Conceptual framework for market power assessment when large, incumbent platforms are present in several digital markets

Design and implementation of a robust, empirical path for investigating the channels through which platforms may exploit their market power

MARKET POWER ASSESSMENT

2 Which digital platforms and markets should be targeted by pro-competitive remedies?

- **Motivation:** Current approaches to market power analysis pay too little attention to multi-market presence. Competition policy research suggests a need to **review the tools used to identify** market power
- **Objective:** Propose a framework for market power assessment in digital markets, where platform ecosystems prevail, and services are commonly offered free of a monetary price

Conceptual framework for market power assessment when large, incumbent platforms are present in several digital markets

Design and implementation of a robust, empirical path for investigating the channels through which platforms may exploit their market power

Main takeaways:

1. Incumbent, **multi-market platforms enjoy an exogenous competitive advantage**, and so they could sustain market-inefficient levels of ads and data collection
2. To promote true competition, **a multi-market, coordinated assessment** of market power is needed
3. Modified versions of the price-based, SSNIP test should be used to analyze the **response of users to different levels of ads and data collection procedures** bundled with digital services

MARKET POWER ASSESSMENT

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Conceptual framework for market power assessment when large, incumbent platforms are present in several digital markets

Design and implementation of a robust, empirical path for investigating the channels through which platforms may exploit their market power

Approach/Methods:

1. Model market power as function of a platform's market-shares and presence across several digital markets
   - Outline a general utility model for internet users and advertisers in digital markets
   - Derive own-demand elasticities and market power functions dependent on multi-market presence
2. Investigate whether the assumptions made for the utility model are supported by empirical data
   - Users' nuisance costs to digital ads and data-privacy concerns are a function of the platform's size and multi-market presence

MARKET POWER ASSESSMENT

2 Which digital platforms and markets should be targeted by pro-competitive remedies?

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Conceptual framework for market power assessment when large, incumbent platforms are present in several digital markets

Utility model for internet users in digital markets:

$$U_{i,k,m} = q_{k,m} - \alpha_k t_{k,m} - \beta_k d_{k,m} - \gamma_k p_{k,m} + \xi_{k,m}$$

$$\alpha_k = \alpha_0 - \alpha_1 S_{k,-m}$$

$$\beta_k = \beta_0 - \beta_1 S_{k,-\mathrm{m}}$$

$$\gamma_k = \gamma_0 - \gamma_1 S_{k,-\mathrm{m}}$$

with $\alpha_k, \beta_k, \gamma_k \geq 0 \; for \; \forall \; S_{k,-m}$

$$S_{k,-m} = \ln(1 + n_{k,-m} \sum s_{k,-m})$$

Market power (Lerner Index) using a discrete-choice demand model (Berry, 1994)

$$\Omega_{k,m}(t_{k,m}) = \frac{-1}{\eta_{k,m}(t_{k,m})} = \frac{1}{\left[\alpha_0 - \alpha_1 \ln\left(1 + n_{k,-m} \sum s_{k,-m}\right)\right] t_{k,m}(1 - s_{k,m})}$$

MARKET POWER ASSESSMENT

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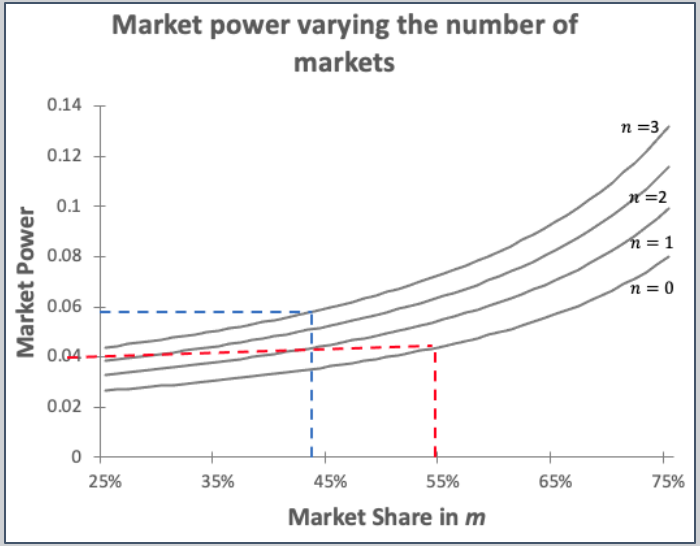

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MARKET POWER ASSESSMENT

2 Which digital platforms and markets should be targeted by pro-competitive remedies?

Design and implementation of a robust, empirical path for investigating the channels through which platforms may exploit their market power

Approach/Methods:

2. Investigate whether users' nuisance costs to digital ads and data-privacy concerns are a function of the platform's size and multi-market presence

$$U_{i,k,m} = q_{k,m} - \alpha_k t_{k,m} - \beta_k d_{k,m} - \gamma_k p_{k,m} + \xi_{k,m}$$

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$$S_{k,-m} = \ln(1 + n_{k,-m} \sum s_{k,-m})$$

Empirical strategy

- Collecting responses of online video users to different levels of digital advertising, and their data privacy-related concerns
- Convenience sample of 550 participants randomly split into two groups, all watched the same four videos with ads
- After each video, participants answer questions to measure their ad avoidances and data-privacy concerns

High vs. Low market share
(between variation)

YouTube ZenVideos

X

4 types of ads, with different lengths and positions
(within variation)

15s, beginning
5s, beginning
30s, middle
15s, middle

MARKET POWER ASSESSMENT

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Design and implementation of a robust, empirical path for investigating the channels through which platforms may exploit their market power

Empirical strategy - Semi-elasticities (response) of participants' ad-avoidances and privacy concerns with respect to:

1. Variation of the on-line platform (β_0^v)

$$RESP_{i,j}^v = \varepsilon_i \exp\left(\alpha^v + \beta_0^v str\_plt_i + \beta_1^v ad\_dur_j + \beta_2^v ad\_pos_j + \boldsymbol{ATTR}_i \boldsymbol{\gamma}^v\right)$$

2. Variation in the user - platform engagement in other digital markets (θ_0^v)

$$RESP_{i,j,str\_plt=1}^v = \epsilon_i \exp\left(\delta^v + \theta_0^v n\_serv\_goog_i + \theta_1^v ad\_dur_j + \theta_2^v ad\_pos_j + \boldsymbol{ATTR}_i \boldsymbol{\omega}^v\right)$$

MARKET POWER ASSESSMENT

2 Which digital platforms and markets should be targeted by pro-competitive remedies?

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Table 5.6 – Results of the Poisson estimation – Effects of variance on the streaming platform

Dependent variable	Ad Avoidance			Affective Ad Avoidance		
Model	(1)	(2)	(3)	(4)	(5)	(6)
Method	P-QLME	QR25%	QR75%	P-QLME	QR25%	QR75%
Str. Platform	-0.0655***	-0.0759**	-0.0510***	-0.0620***	-0.0251	-0.0569***
	(0.0193)	(0.035)	(0.0167)	(0.0204)	(0.0307)	(0.0171)
Ad duration	-0.0048***	-0.0074***	-0.0039***	-0.0053***	-0.0053***	-0.0030***
	(0.0014)	(0.0022)	(0.0012)	(0.00147)	(0.00198)	(0.00115)
Ad position	0.207***	0.296***	0.157***	0.255***	0.313***	0.182***
	(0.0248)	(0.0364)	(0.0206)	(0.0261)	(0.0365)	(0.0237)
Use of YouTube	-0.0506***	-0.0695***	-0.0271***	-0.0550***	-0.0835***	-0.0336***
	(0.0105)	(0.0179)	(0.0092)	(0.0112)	(0.0156)	(0.0083)
Taste for sports	-0.0788***	-0.108***	-0.0538***	-0.0821***	-0.0996***	-0.0517***
	(0.0096)	(0.0188)	(0.0078)	(0.0102)	(0.0169)	(0.0080)
Import. of Ads	0.0536***	0.0577***	0.0505***	0.0636***	0.0847***	0.0613***
	(0.0115)	(0.0173)	(0.0093)	(0.0123)	(0.0159)	(0.0093)
Observations	2120	2048	2048	2120	2000	2000

Results:

- Incumbent platform users' have lower nuisance costs to digital ads and data-privacy, even after controlling for digital ads and participant's attributes
- The higher the number of different digital services consumed by users that are provided by the incumbent platform, the lower their nuisance costs
- These associations are higher in magnitude for users with high levels of nuisance cost

MARKET POWER ASSESSMENT

2 Which digital platforms and markets should be targeted by pro-competitive remedies?

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Table 5.7 – Results of the Poisson estimation – Effects of engagement with Google in other markets

Dependent variable	Ad Avoidance			Affective Ad Avoidance		
Model	(1)	(2)	(3)	(4)	(5)	(6)
Method	P-QLME	QR25%	QR75%	P-QLME	QR25%	QR75%
Number of Google Services	-0.0212***	-0.0299***	-0.0206**	-0.0102	0.0051	-0.0165**
	(0.0078)	(0.0112)	(0.0080)	(0.0084)	(0.0157)	(0.0073)
Observations	1136	1089	1089	1136	1060	1060
Dependent variable	Behavioral Ad Avoidance			Cognitive Ad Avoidance		
Model	(7)	(8)	(9)	(10)	(11)	(12)
Method	P-QLME	QR25%	QR75%	P-QLME	QR25%	QR75%
Number of Google Services	-0.0303***	-0.0535***	-0.0187***	-0.0214*	-0.0176	-0.0346***
	(0.0079)	(0.0128)	(0.0054)	(0.0111)	(0.0237)	(0.0053)
Observations	1136	1050	1050	1136	965	965

Results:

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Table 5.8 – Results of the Poisson estimation – Effects of platform and engagement on privacy concerns

Dependent variable	Overall Privacy	Data collection	Privacy concerns	Misuse of data	Data storage	Data sharing
Model	(1)	(2)	(3)	(4)	(5)	(6)
Str. Platform	-0.0074	-0.0385**	-0.0322**	0.0281**	0.0213	-0.0156
	(0.0110)	(0.0157)	(0.0127)	(0.0128)	(0.0160)	(0.0143)
Observations	2120	2120	2120	2120	2120	2120
Model	(7)	(8)	(9)	(10)	(11)	(12)
Number of Google Services	-0.0113***	-0.0005	-0.0032	-0.0014	-0.0312***	-0.0215***
	(0.0041)	(0.0059)	(0.0055)	(0.0045)	(0.0061)	(0.0055)
Observations	1136	1136	1136	1136	1136	1136

THANK YOU!

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