

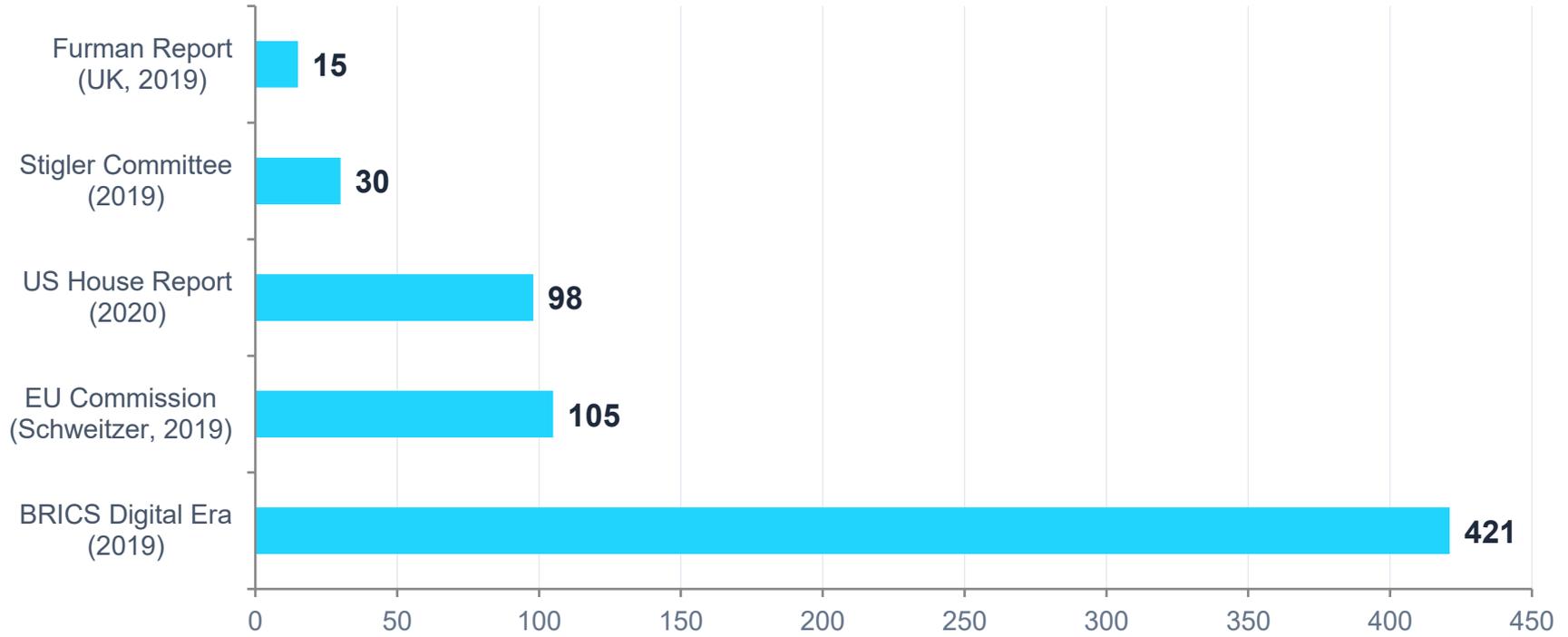
Ecosystem Competition

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Personal views
Do not represent the CAT

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Ecosystems: Comparative analysis across five major competition policy reports (2019-2020)



The BRICS report mentions 'ecosystem' 28x more than Furman and 4x more than the EU Commission report, with dedicated sections on ecosystem competition and 'vertical' power.

Complementarities & Ecosystems

Ecosystem Definition (Jacobides et al. 2018):

- Groups of firms dealing with unique or supermodular complementarities
- Requires specific structure of relationships and alignment to create value

Complementarities:

- Activities are complementary when doing more of one increases returns to doing more of another

Consumption-Side Complementarity:

- Willingness-to-pay for good B when already owning A exceeds WTP for B alone
- Example: Value from experiencing multiple connected goods/services on a platform

Production-Side Complementarity:

- Compatibility of interdependent system modules
- Integration of capabilities enabling supermodular value generation

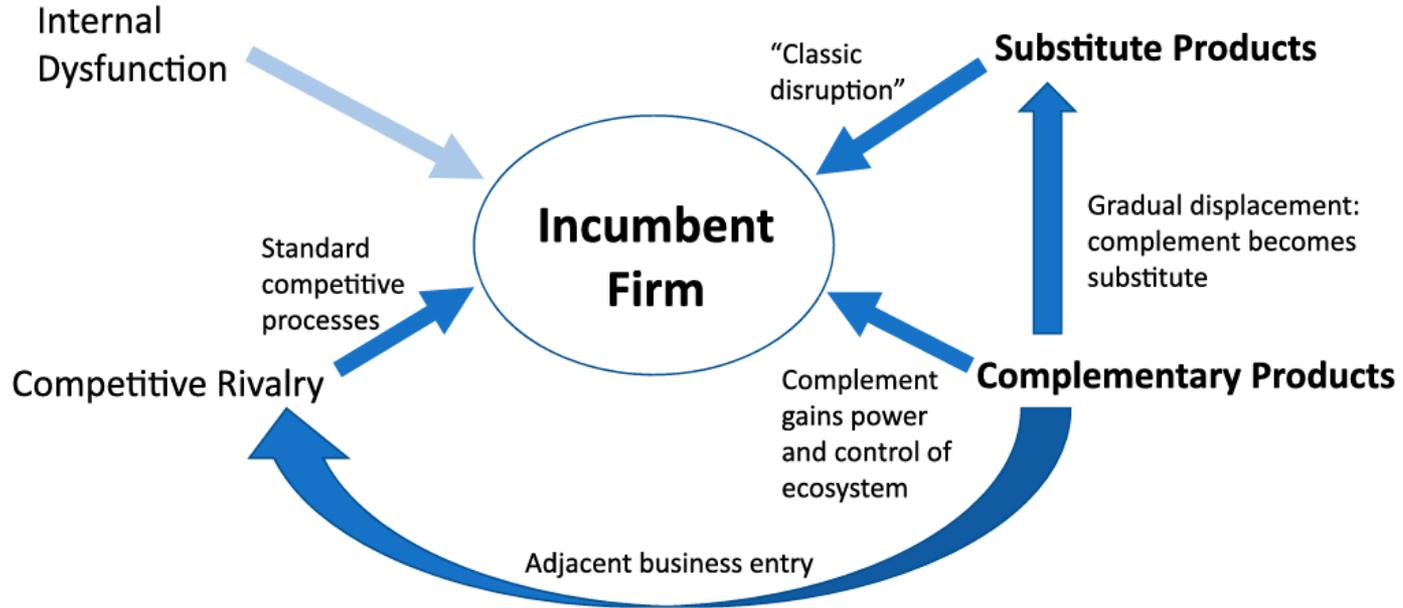
Milgrom & Roberts (1990, 1995):

- Supermodular function: increasing two variables together yields more value than separately
- Joint increases in complementary actions > sum of separate increases

Lattice Theory Application:

- Firms adopt clusters of complementary practices/capabilities together, not piecemeal

Threats to the Profitability and Market Share of Incumbent Firms



ECOSYSTEMS COMBINE THREE TYPES OF COMPETITION

WITHIN-ECOSYSTEM COMPETITION THROUGH SUBSTITUABILITY



Complementor 1



Complementor 2

Competition: not as substitutability but a social process through which economic actors (rivals) put on display their rivalry to conquer/convince an audience (the third actor) [tertium gaudens]

Audience: consumers, investors, labour etc

- **Competition for value capture**
- **Complementors are innovation/potential competitors**

WITHIN-ECOSYSTEM COMPETITION BEYOND SUBSTITUABILITY



Complementor 1



Orchestrator

ECOSYSTEM-VS-ECOSYSTEM COMPETITION

PLAYSTATION'S ECOSYSTEM



XBOX'S ECOSYSTEM



Partly inspired by Bruno Carballa's presentation London June 2025

Dynamic Lattice Reconfiguration

Ecosystem Orchestrators Shape the Lattice:

- Actively construct lattice by deciding who does what and who gets what
- Lattice-construction, not just lattice-optimization

Orchestrator Strategies:

- Ensure all necessary complements exist and are aligned
- External: Expand network of complementors
- Internal: Integration to develop own complements/capabilities as ecosystem control levers
- Defend against complementors attempting to redefine and restructure supermodular relationships

Consequences:

- Lattice reconfiguration creates multiple equilibria
- Incumbent advantages may not transfer to new lattice structure
- Ecosystem bottlenecks can lock system in lower social value equilibrium

Barabási & Albert (1999) - Network Theory

- Growth: Networks expand continuously - new nodes added over time
- Preferential Attachment: New nodes connect to already well-connected nodes
- Graph theory/Network science

Need to define markets? Not necessary – focus is on power and/or (potential) anticompetitive effects (if competition law)

US Approach: Transaction Platforms (Ohio v. AmEx)

Focus on inter-ecosystem competition

Transaction Platforms:

- Complementarities as a reason to define a two-sided platform = single market (merchant + cardholder sides analyzed together)
- **Feedback loop of declining demand (death spiral)**
- Rejected separate one-sided market for merchants alone
- Must prove net harm across entire two-sided market

Justice Breyer's Dissent:

- Merchant and cardholder services are complements, not substitutes
- Should be separate markets (analogy: gasoline and tires)
- But see
 - US. V. Google AdX: “products that serve economic actors on one side of the industry and **can be sustainably sold by firms that specialize only in that side of the industry** are to be analyzed in markets that consist of reasonably interchangeable products on that side of the industry”
 - Epic Games, Inc. v. Google LLC, et al. (9th Cir. 2025): “the crux of this case is **Google’s anticompetitive conduct vis-à-vis many different brands *within* the Android ecosystem**”

Market Definition Approach: Ecosystems as Single-brand Aftermarkets?

EU COMMISSION MARKET DEFINITION NOTICE (2024)

104. **(Digital) ecosystems** can, in certain circumstances, be thought of as consisting of a **primary core product** and **several secondary (digital) products** whose **consumption** is **connected to the core product**, for instance, by **technological links** or **interoperability**. When considering (digital) ecosystems, the Commission may thus apply **similar principles to those applied to after-markets to define the relevant product market(s)**. When the secondary (digital) products are offered as a bundle, the Commission may also assess the possibility of that **bundle constituting a relevant market on its own**. Although not all (digital) ecosystems fit an after-market or bundle market approach, the Commission takes into account, where relevant, factors such as **network effects**, **switching costs** (including factors capable of leading to **customer lock-in**) and **(single- or multi-) homing decisions** for the purpose of defining the relevant product market(s)

Ecosystem as a distinct operational concept?

General Court - Google Android (T-604/18)

116. Thus, in a **digital ‘ecosystem’**, which brings together several categories of **supplier, customer and consumer** and causes them to interact within a platform, **the products or services which form part of the relevant markets that make up that ecosystem** may overlap or be connected to each other on the basis of their **horizontal or vertical complementarity**. Taken together, the relevant markets may also have a **global dimension** in the light of the **system that brings its components together and of any competitive constraints within that system or from other systems**.

117 Identifying the conditions of competition relevant to the assessment of the position of economic strength enjoyed by the undertaking concerned **may therefore require multi-level or multi-directional examination in order to determine the fact and extent of the various competitive constraints** that may be exerted on that undertaking

TYPES OF POWER

See, I. Lianos & B. Carballa, [New Dimensions of Power in Competition Law: Theory and Metrics](#), JCLE (2022)

Power family	Type of power	Source of power	Modality of power exertion	Scope of power sourcing exertion in an economic context	Existence of metrics or modelling
Coercion	Coercion	Capacity to influence other actors' conduct and/or to affect outcomes directly in the context of a bargaining process	Absence of alternative 'reasonable choices'	Value chain/ecosystem and horizontal	No
Process-based	Process-based	Capacity to apply credible sanctions that affect another agent's gains	Credible sanctions that affect another agent's gains	Value chain/ecosystem and horizontal	Yes
Resource dependence	Standard market power	Market structure	Affecting equilibrium quantities or prices in a market	Horizontal	Yes
	Exclusionary/bottleneck	Supply-side (for example, an essential facility or input, a technology) and demand-side (for example, high switching costs, strong positive network effects) conditions creating a bottleneck	Exclusion from the bottleneck resource	Value chain/ecosystem	Yes
	Social exchange theory	Differential dependency between value cocreators	Obtaining a high share of the cocreated value through bargaining	Value chain/ecosystem	No
Positional	Panopticon	A position in the network of value cocreation that allows to collect valuable information	Strategic use of the information to obtain a higher share of value	Value chain/ecosystem	No
	Architectural	Capacity to influence the industry architecture by affecting at least one of its interphases (technological, institutional, social)	Influencing the industry architecture to obtain a higher share of the value created in the industry	Value chain/ecosystem	No

Ecosystem Protection as Objective Justification?

General Court - Google Android (T-604/18)

Google's Argument (Paras 815, 839-841):

- Anti-fragmentation obligations indispensable to protect 'Android ecosystem'
- Risk of fragmentation from open-source license model
- Non-compatible Android forks undermine interoperability
- Pro-competitive advantages of non-fragmentation exceed anticompetitive effects
- Market incentives alone insufficient - developers and OEMs wouldn't remedy incompatibility

Court's Rejection (Para 880):

- Extremely rapid growth of Android ecosystem from early 2010s onwards
- Makes implausible that fragmentation threat to ecosystem survival continued throughout
- Google's superior market power not seriously disputed

Proposed Greek Article 2A: Operational Framework

First Attempt at Statutory Recognition (August 2021)

Key Innovation - Ecosystem Definition:

- Nexus of interconnected, interdependent economic activities
- Platform connecting different undertakings serving same/different user groups
- Focus on 'ecosystem glue' - superadditive value of the whole

Structural Importance Criteria:

- Non-participation substantially affects third-party business activities
- Economic power, market share, access to users and data
- Presumption rebutted if 4+ independent viable alternatives exist

Greek Article 2A: Distinctive Features

Ecosystem Characteristics:

- Highly complementary technological, financial, and human resources
- Coherent, financially integrated offering across multiple actors
- Positive/negative feedback loops between user categories
- Sunk costs creating lock-in for complementors

Position of Power Indicators:

- Control of necessary resources and infrastructure
- Capacity to set rules for ecosystem operation and access
- Increased bargaining power vis-à-vis users
- User dependency with no alternative solution

Outcome:

- Withdrawn due to opposition from telecom oligopoly and business interests

Some (self-referential) bibliography

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