

Competition policy for conglomerates, platforms, and eco-systems

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This article only reflects the views of the authors and should not be construed as expressing the practice or opinions of the European Commission. The authors are grateful for the helpful comments of the referee.

Abstract:

We discuss the economics of eco-systems, distinct from other industrial structures but currently without an agreed definition. Our aim is to clarify the discussion around eco-systems by organizing the issues and pointing out where an eco-system approach could be useful. We begin by drawing a distinction between eco-systems and other structures that share some of their features, such as platforms and conglomerates concentrating on the level of control, the importance of externalities, the importance of access fees or taxes, and the presence of multiple ‘entry points’. Building on this discussion, we identify theories of harm that are likely to apply to eco-systems. These include blocking entry paths and ‘defensive foreclosure’. We then exposit the eco-system dimensions in a series of recent cases around *Microsoft*, *Google-Alphabet*, *Facebook-Meta*, *Amazon*, and *Apple*. We see that defensive foreclosure has been a common denominator in eco-system theories of harm and that an eco-system approach can be fruitful to understand the harms—and benefits—in such cases.

Keywords: eco-system, theory of harm, conglomerate, platform, foreclosure, entry path, merger, case study, competition policy.

JEL codes: K19, D4, L12, L22, L4, O34

I. Introduction

Competition policy has long been interested in the behaviour of companies selling multiple products, whether or not there is an obvious demand or supply-side link between the products offered. Indeed, much of the debate surrounding the adoption of the US Sherman Act revolved around the danger of ‘bigness’ *per se* without a systematic link to markets and the firm’s position in such markets. There is also a long tradition of looking into the behaviour of ‘conglomerates’ and into practices designed to leverage a firm’s product line, such as bundling or various types of discount schemes.

Over the last 30 years, economists have paid increasing attention to so called ‘platforms’, which are essentially companies offering products or services to various constituencies whose valuation of the platform is interdependent. While the competitive analysis of platforms remains challenging, there is now a solid body of literature exploring both their profit-maximizing strategies and the effect of such strategies on competition in the marketplace.

More recently the attention has shifted to so called ‘eco-systems’, broadly seen as a more or less organized federation of various suppliers which, for some reason, makes buying several products within this set of suppliers more attractive than freely mixing with products or services which are not part of this system. However, there is no agreed-upon precise definition of eco-system and rather little analysis of how eco-systems might enable different strategies – including anti-competitive conduct—or how they might create efficiencies. This is concerning given the fact that, as we will see, competition authorities have recently put forth ‘eco-system theories of harm’ in a number of cases in the digital sector.

The purpose of this article is not to propose a complete analysis of eco-systems and their implications for competition policy. At this time, we still lack the body of theoretical analysis and systematic empirical evidence that

would make such a task feasible. More modestly then, we will attempt to organize what we do actually know in a manner that might be useful to policymakers, while pointing out the area where our current ignorance can only encourage us to proceed carefully.

The article is organized as follows. After a short introductory section, we begin with a discussion of what constitutes a ‘conglomerate’ and identify the main corresponding theories of harm (section III). In section IV we present the main differences between platforms and conglomerates, before turning to eco-systems in sections V and VI. We conclude by reviewing a number of, mostly recent, EU decisions, asking whether or not they contain elements of ‘eco-system’ theories of harm.

II. What is what?

What is an economic eco-system? Clearly the term eco-system comes from biology:

An ecosystem or biome describes a single environment and every living (biotic) organism and non-living (abiotic) factor that is contained within it or characterizes it. An ecosystem embodies every aspect of a single habitat, including all interactions between its different elements.¹

Because biological eco-systems have, per force, a spatial dimension, it is logical that the concept first migrated to mainstream economics in the context of economic geography where an eco-system is seen as ‘a dynamically stable network of inter-connected firms and institutions within bounded geographical space’². These definitions hardly apply to the new reality which has been emerging for some time in digital sectors, where geographical space loses much of its relevance. Moreover, a feature of what competition economists loosely refer to as eco-systems is that they are not in any dynamically stable state. If anything, they tend to be characterized by a constant state of flux and reorganization. We cannot therefore piggy-back on biology to help us clarify.

Rather than offer our own definition of what is after all a rather poorly understood object, we find it more constructive to explain what an eco-system is not and how its specificity matters for competition policy by comparing it to the better-established concepts of conglomerates and platforms.

III. Conglomerate theories of harm

In this section we review the theories of harms that can be raised against conglomerate mergers or conglomerate behaviour from a consumer welfare perspective, setting aside the issue of ‘bigness’ *per se*. We move progressively from the simplest type of conglomerate to the more complex forms. This helps emphasize which factual elements need to be present for specific theories of harm to be at all plausible.

(i) ‘Pure’ conglomerate

We will begin with the extremely simple benchmark of a ‘pure conglomerate’, where a company has activities in more than one sector even though there are no fundamental economic reasons, technological, managerial or on the demand side, for the company to do so. In other words, there are no economies of scope in production or in management and the demands for goods in the two sectors are completely independent of each other.³

This situation is illustrated in [Figure 1](#). The company sells products on multiple markets. There are, however, neither economies of scope on the production side (or in distribution) nor any substitutability or complementarity links on the demand side. Moreover, the set of consumers buying one of the products is completely distinct from the set of consumers purchasing the other products: a consumer buys at most one product from the company.

Under these assumptions, the conglomerate dimension does not significantly broaden the scope of our concerns in either merger control or antitrust enforcement. Beginning with merger, acquiring an additional ‘division’ which is similarly independent of the two others and caters to yet another group of consumers, would not affect the firm’s incentives when making decisions related to any of the three product lines. The only wrinkle coming from the conglomerate dimension is that it might lead to *multi-market* contacts: if other companies are also present in the same sectors and the relative market-shares of the firms vary across the two markets, then this multi-market contact can facilitate tacit collusion⁴.

¹ See <https://biologydictionary.net/>, accessed 25 August, 2024.

² Auerswald and Dani (2017).

³ Not only are the products neither substitutes nor complements, but also there are no firm-specific shopping costs or brand recognition.

⁴ See Bernheim and Whinston (1990).

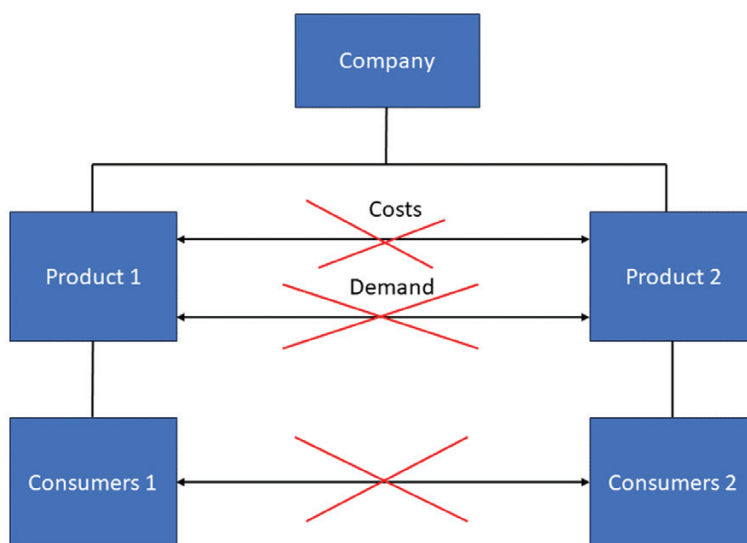


Figure 1: Benchmark structure: the 'pure conglomerate'

On the antitrust side, one might wonder whether having two product lines might create incentives to engage in tying across these product lines. Let us therefore briefly review the (abundant) literature on tying/bundling. Incentives to bundle rely on three broad families of mechanisms⁵.

The first mechanism is second degree price discrimination: by offering two products exclusively as a bundle (pure bundling) or as a bundle as well as separately (mixed bundling), a firm can capture a greater share of consumer surplus and hence achieve higher profits⁶. This basic mechanism underlies a vast literature looking at the competitive consequences of bundling or tying.⁷ A second reason for (pure) bundling is the presence of cost savings on either the producer side (producing or selling tied goods is cheaper than producing or selling them separately) or on the consumer side.⁸ These two mechanisms are ruled out by our assumptions. The second mechanism would require economies of scope, while the self-selection on which the first mechanism relies presumes that the two products are sold to the same group of potential consumers.

A third mechanism looks not at bundling/tying itself but at the *commitment* to do so. Such a commitment can be used to deter entry in the market for some of the products involved⁹ or may affect the innovation incentives of rival (single product) firms.¹⁰ The first formal presentation of such a mechanism is found in [Whinston \(1990\)](#). There are two markets A and B. The company is a monopolist in market A but faces a potential competitor in market B. The company then commits to only selling its two products together. This means that consumers who want good A, for which there is no alternative, must also purchase the company's version of good B. In turn, this implies that the company can only sell A, and collect its monopoly rent on A, if it also sells B. This means that the company would be willing to set a very low implicit price for B. This prospect keeps the rival producer of B out of the market. If consumers were not interested in buying both A and B, this strategy would not make sense as it would only force consumers to also purchase something that they do not want. Again, then, there would be no incentive to tie under our assumptions. Overall, then, moving from a single product company to our 'pure conglomerate' does not affect the firm's incentives to bundle or tie.

(ii) Cost linkages

If we allow for economies of scope in research, production, distribution or management, then a conglomerate company can find itself at an advantage compared to its single sector rivals. Moreover, as we have just seen, bundling

⁵ See [Fumagalli, Motta and Calcagno \(2018\)](#) for a broader, accessible, discussion of 'leveraging'.

⁶ See [Stigler \(1968\)](#), [Adams and Yellen \(1976\)](#), [McAfee et al. \(1989\)](#), [Matutes and Régibeau \(1992\)](#), [Salinger \(1995\)](#).

⁷ See, for example, [Nalebuff \(2004\)](#).

⁸ See [Evans and Salinger \(2008\)](#).

⁹ See [Whinston \(1990\)](#).

¹⁰ See [Choi and Stefanadis \(2006\)](#).

itself might involve some cost savings, providing the conglomerate firm with an incentive to bundle or tie and gain a further advantage.

(iii) Demand linkages

For demand linkages to play any role, we must relax the assumption that each product targets completely separate groups of consumers. So, let us assume that the two product lines appeal to the same set of consumers or, at least, that there is significant overlap between the two sets.

Since there is still no complementarity or substitutability link between the two sectors, moving from a single-sector firm to a pure conglomerate has no effect as long as the company charges separate prices in sector A and B. However, the very fact that the same potential clients are present in both sectors now creates incentives to bundle or tie based on two of the mechanisms discussed above: strategic commitment and second-degree discrimination. Hence, as soon as there is a sizeable overlap between the two clienteles, competition authorities must be aware of potentially anti-competitive bundling/tying behaviour as well as of the fact that mergers creating or expanding the conglomerate dimension of a company can *enable* such strategies.

Introducing substitution or complementarity between the two sets of products considerably expands the set of potential theories of harm to be considered, both in terms of mergers and in terms of abuse of dominance. Most obviously, letting a single product company acquire another firm selling a substitute product creates an incentive to raise prices, decrease quality and, most likely, decrease innovation. These incentives must be weighed against potential merger-specific efficiencies. By contrast, mergers between suppliers of complementary products can be presumed to be welfare improving as it creates incentives to lower prices, improve quality and increase innovation. While this basic principle remains true, competition authorities have recently increased their scrutiny of mergers involving complements, including vertical mergers, where a company merges with the producer of one of its inputs. The main reason for this trend is the authorities' fear that the merged entity might enjoy an unfair advantage which might have a chilling effect on competition. Such a chilling effect can indeed arise through two different mechanisms. First, while independent companies would have no reason to refuse to deal with any potential customer, an integrated company might prefer not to supply one of its products to rivals, or to the rivals' customers, or at least might choose to do it on less favourable terms¹¹. In other words, the merged entity might have the ability and incentive to engage in some form of foreclosure. The second mechanism is entry deterrence: following the merger, entry by single-product firms might be less profitable, forcing potential rivals to enter as fully-formed multi-product suppliers. This increases the cost of entry.

While these two theories of harm are often considered separately, they have much in common. First, both theories require that at least one of the two products involved be difficult to acquire, i.e. that there be some form of *scarcity*. For foreclosure this takes the form of significant market power for the merged entity. To get increased entry barriers, it must be that potential single-product entrants would find it hard to purchase reasonably priced acquisition targets to turn themselves into multi-product companies. So, similar acquisition targets must be scarce. Second, it must be that supplying both goods offers some significant advantage. One such advantage is common to both types of theories of harm: becoming a conglomerate extends the set of strategies available to the company. In the case of foreclosure, the merged entity can decide to raise input prices to rivals, raise prices to consumers who only purchase one of the two products from the company (bundling, joint fidelity discounts over both product lines,...), or degrade the interoperability between its products and those provided by rivals. Such strategies are simply not available to single-product entities. More subtly maybe, single-product rivals might be unable to match the prices offered by the merged entity, *even if those prices are set with no intention to exclude*. This is because the merged company internalizes the complementarity links between its products, while independent firms do not. This is one of the reasons why a conglomerate merger might make single-product entry less tempting. Of course, single-product firms could, in principle, reach agreements whereby a consumer buying product A from company 1 would get a discount if it also buys the other product B from single-product company 2, but such arrangements would be hard to monitor and hence enforce. Indeed, such schemes are hardly ever observed in the market.

A second type of advantage arises if consumers have some preference for purchasing both products from the same supplier. Let us refer to such a preference broadly as a 'shopping cost': 'visiting two stores' is more costly than visiting a single store. This is another reason why single-product entry might be less profitable post-merger. Moreover, the very presence of shopping costs changes the set of profitable strategies available to the conglomerate company, but not to its rivals. Since this aspect has been fleshed out only recently in the literature and the arguments seem relevant to a number of recent cases, it is worth spending a little more time on the issue.

¹¹ This might mean higher prices, lower quality, or imperfect ability to operate with a product supplied by another company.

A conglomerate merger extends the strategic options of the merged entity, either by enabling various bundling strategies or by pricing in a manner that helps to separate multi-product buyers from single-product buyers. [Chen and Rey \(2012\)](#) consider a set-up where a two-product firm with significant market power for one product faces competition from small, more efficient firms for the other product. We already know from our previous discussion that, in such a set-up, the multi-product company might use tying to exclude its one-product rivals. Chen and Rey take a different tack and focus on *exploitative* abuse, not exclusion. The two key assumptions are that consumers face shopping costs, creating a preference for one-stop shopping, and that the magnitude of these shopping costs differs across consumers. The presence of the one-product rivals makes it credible for the conglomerate to engage in loss-leader pricing, setting a low (below cost) price for the competitive good and a higher price for the other one. Consumers with low shopping costs buy one good from the rivals and one good from the conglomerate, while those with higher shopping costs only buy from the conglomerate. This allows the conglomerate to engage in second-degree price discrimination and increase profits at the expense of consumers. Interestingly, the conglomerate can be more profitable if it faces small one-product rivals than if it were to monopolize both markets. There is then an incentive *not* to exclude rivals, but consumers still suffer. The same mechanism applies if shopping costs are replaced by complementarity between the two products.

In a similar spirit, [Chen and Rey \(2023\)](#) consider a merger between two single-product firms to form a conglomerate. Post-merger, the conglomerate faces competition from single-product firms in both markets. Again, consumers vary in their preference for buying both products from the same supplier. Unlike [Chen and Rey \(2012\)](#), where the conglomerate does not offer a formal discount for buying both, the post-merger situation leads to mixed or pure bundling. In both cases, bundling leads to lower prices for consumers purchasing both products from the conglomerate but can lead to higher prices for consumers only buying one product from the conglomerate. Significant price increases are more likely if the single product markets are highly concentrated. Overall, the authors show that consumer surplus can be lower after the merger only if the merged entity engages in pure bundling.

(iv) Efficiency offences

In the previous sections, we have presented a number of potential theories of harm arising from the conglomerate nature of a company. While several of these were couched in terms of mergers, many of them are also useful when investigating allegations of abuse of dominance. However, one should not disregard the fact that conglomerate mergers, or conglomerates themselves, offer many potential benefits to consumers that extend beyond the supply-side efficiencies traditionally considered in merger control. In particular, the acquisition of complements requires careful analysis as there are often two first-order, pro-consumer effects: the internalization of complementarities leading to lower prices and the benefits from one-stop shopping which are a form of quality improvement for consumers eager to purchase both products.

One cannot over-emphasize that improvements in the offering of the merged entity or dominant firms cannot in themselves form the basis of a theory of harm. Ignoring this principle would lead to *efficiency offences* and lower consumer welfare both statically and dynamically. As we have seen, for valid theories of harm to emerge, other elements *must* be present. It might therefore be useful to present a simplified decision algorithm based on the economics literature reviewed so far. It is presented in terms of mergers, where a single-product firm A acquires a single-product firm B. We further assume that A has significant market power. Other things equal, the transaction increases the attractiveness of the merged entity's products. This is illustrated in [Figure 2](#).

The first step must be to determine whether or not the target is scarce, i.e. to look at the market structure (and potential entry) in market B. If it is scarce, then one must look into foreclosure. Moreover, if there are well identified entrants, one should also assess whether potential entrants already have their own 'B' dimension and, if not, whether, despite the increased scarcity following the merger, they can still find attractively priced B targets.

In the absence of scarcity, the most credible theories of harm come from the expansion of the merged entity's strategic possibilities. One could possibly also build a theory of harm based on externalities between customers. In the presence of network effects, for example, the increased attractiveness of the merged company might result in a magnified shift of customers: some would move to enjoy the better quality while others would only move because of the resulting network effect.¹² As we know from the work of [Farrell and Saloner \(1986\)](#), such switching can be socially excessive. However, measuring the direction and magnitude of the network effect and weighing it against the initial increase in product quality is a daunting challenge.

¹² One could think of a stylized situation where only some consumers care about quality, but all consumers care about network size.

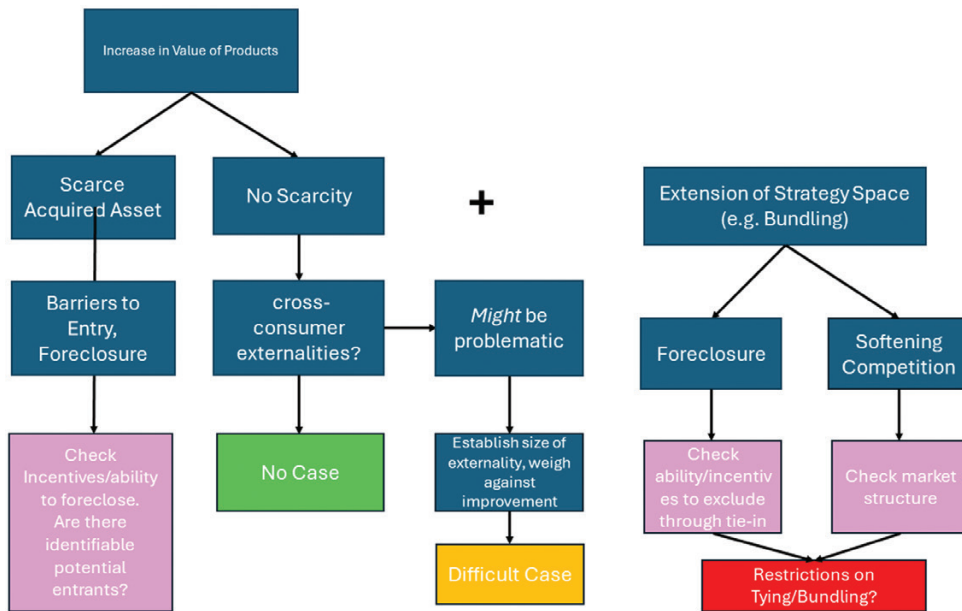


Figure 2: Decision algorithm to determine harm where benefits also present

(v) Dynamic aspects of substitutability/complementarity

In our discussion so far, we have assumed that we know whether the products involved are substitutes or complements. This is not always so clear, especially when an acquisition target, or the target of a given conduct by a dominant firm, is in the early stages of its development. There are two reasons for this. First, the target company might have a new technology or a new idea, but no products, or at least no well-developed products. There is then genuine uncertainty as to which market(s) the products will eventually compete in and hence about the overlap with the market presence of the acquirer. For example, laser technology can have applications across a broad set of markets. So can the development of AI algorithms to apprehend the chemical structure of molecules.

Second, even if the nature of the target’s current products can be established, we are bound to be uncertain as to the type of products that the company is likely to introduce in the near to medium term. In other words, we need to also worry about potential overlap between the *abilities* of the acquirer and the target. Significant overlap at this more upstream level would suggest that the parties are likely potential competitors even though they do not face each other in any well-defined markets yet. Such an approach is consistent with the EU’s recent practices in *Dow–Dupont* and *Bayer–Monsanto*, where the Commission examined overlap between merging parties in ‘innovation markets’, i.e. in innovation capabilities.

In the face of such uncertainty, a traditional review of the acquisition of ‘start-ups’ by a company with significant market power can easily lead to bad decisions because products that initially look like complements might turn out to be substitutes, because there is as yet insufficient evidence to establish that the firms’ products would belong to the same antitrust market or because, even if the start-up is not yet a direct rival of the acquirer, it has the potential to become one.

The last concern can be addressed by analysing ‘innovation markets’ carefully, but the other two issues are harder to deal with. The lack of evidence is an unavoidable obstacle when an authority reviews ‘early acquisitions’. This has been magnified by the recent application of article 22 by the European Commission as it makes it possible to review transactions that would normally fall below any of the usual ‘thresholds’, European or national. Per force, the theories of harm considered in the context of such mergers will be more speculative. We come back to the question of evidential standards in section VII. The issue of ‘complements becoming substitutes’ is discussed in section VI.

IV. Platforms

There is a vast literature about the competition policy treatment of platforms.¹³ For our purpose, we only need to draw attention both to the diversity of platforms and to some of their more common features. The first one is that

¹³ For a review that also includes an extensive reference list please see [Jullien and Sand-Zantman \(2021\)](#).

most platforms, virtual or not, are meeting places. This is obvious for matching platforms such as dating apps, but it is also true for sales platforms, where sellers and buyers must sign onto the platform in order to transact with each other. The terms of the platform access are set by the platform owner. In our view this ‘getting onto the platform’ is essential and rules out looser organizational forms such as independent producers linked by a common standard. The second necessary feature is that various access fees, or ‘taxes’ on transactions form a significant part of the platform owners’ revenues. In that sense Android is not a platform as it is an open standard that can be accessed easily without much control by Alphabet.

The third necessary feature is that at least two distinct—and distinguishable—sets of agents seek access to the platform. This is clearly true for platforms where sellers meet buyers and advertisers might join the mix, but it also applies to matching platforms where, for most clients, there is a meaningful distinction based on type (e.g. sexual orientation). Finally, the various sets of agents must care about the numbers, variety, or quality in at least one *other* agent group, creating cross-platform externalities.

In terms of competition policy, platforms raise several issues, which have been well documented.¹⁴ They include market definition (should we define a market for each side of the platform?), the additional anti-competitive strategies that are enabled by the interdependence between the multiple sides of the platform, and the changes in pricing practices and contractual agreements linked to the emergence of ‘zero prices’ on some sides of the platform.¹⁵

V. Eco-systems

For the greater public, eco-systems seem to evoke a rather loose confederation of independent producers providing a set of products which are broadly complementary. Of course, there can be various versions of one specific type of product—and hence substitution—within the system, but the overarching architecture is one of complementarity.

The main difference between eco-systems and conglomerates is the ownership structure. While a conglomerate can control all of the decisions about the products and services provided to consumers, eco-systems are made up of a number of independent suppliers offering products that can be substitutes or complements for each other.

While eco-systems are not characterized by complete ownership, they do have a *centre*. Otherwise, they would just be a specific type of market structure, not a distinct mode of organization. This centre is a product, or a set of products, supplied by a given company which serves as a necessary entry point into the system, at least for most potential customers. For example, Apple has created an eco-system where the entry point is the iPhone. This centrality gives the centre-company the ability to impose certain rules. The scope for such rules depends on the reason why eco-systems arise in the first place.

To fully understand the nature of eco-systems—and how they relate to platforms—we must also ask why eco-systems are useful to suppliers, consumers, or both. If they did not offer some advantage, they would not exist. While an eco-system might include a large number of complementary products, this does not by itself lead to lower prices, since the eco-system does not affect the pattern of ownership of the complements and hence the degree of internalization of the complementarity links. In other words, while complementarities are often found within eco-systems, it does not explain their success.

One possible advantage of joining an eco-system might be to help disseminate technical knowledge, improving the quality of the products belonging to the eco-system. It might also help concentrate some types of innovation in the centre and help coordinate innovation arising in other parts of the system or the adoption of new technology across the system. Such advantages are especially likely when the eco-system is based on some form of technological standard. The Apple eco-system is again a good example. The networks of suppliers and sellers of add-on goods that gravitate around some car brands also seem to fit the bill. Another potential benefit of belonging to an eco-system is the potential sharing of consumer data. Notice that these innovation-related benefits and data-related benefits require some active intervention from the company at the centre of the system. They do not occur spontaneously.¹⁶

Another common attraction of eco-systems is that they contain products that work better with each other than with products outside the system. This requires the existence of at least some form of compatibility standard. The amount of control that the centre exerts on this feature of the eco-system depends on the ownership of the

¹⁴ See, for example, Jenny (2021).

¹⁵ On this last point, see Bisceglia and Tirole (2022).

¹⁶ Of course, eco-systems can also present some disadvantages. In particular, in the absence of interoperability across eco-systems, users can find themselves locked into an inferior technological environment; however, to the extent that this is anticipated by joiners, one would assume that observed eco-systems offer some form of net benefit.

intellectual property rights (IPRs) reading on the relevant technology as well as to the business model (open versus closed) chosen by the main IPR owners.

Finally, just like platforms, eco-systems can harness the benefits of network effects. However, network effects only matter if consumers find it more advantageous to source several products from the eco-system than to spread their purchases inside and outside the system. This draws us back to an interoperability advantage. Indeed, without some form of interoperability advantage, there can be no relevant network effect.

Overall then, our view of eco-systems is similar to, but broader than, that expressed by Compass-Lexecon:¹⁷

The concept of ecosystem is loosely defined and flexibly used. It is predominantly used in digital markets to refer to multiproduct and multi-actor systems, where a constellation of products and services, often spanning multiple markets, are connected either through technical interoperability on the supply side or through demand-side complementarities. The economies of scale and scope and the network effects enabled by this combination drive the value of the ecosystem. Ecosystems tend to form around a single core product or service that the other products or components are specifically (and often exclusively) designed to work with.

The main difference is that for us, eco-systems are characterized both by a more complex structure and a lesser level of central control than ‘platforms’.

Overall, then, we would expect to find eco-systems more readily in technology-driven industries, where innovation and interoperability are important, than in other sectors as well as in some data-driven sectors. The scope of influence of the centre would then be limited to promoting innovation across the eco-system, the pricing of its own ‘gateway’ products and possibly, the licensing of the underlying interoperability technology. This last point is important. If the centre does not have significant control over the IPR reading on the source of interoperability within the system, or if it has declined to assert these rights, then the ‘eco-system’ is quite distinct from a platform. If, on the contrary, the centre holds a majority of the relevant IPRs and decides to get significant revenues from licensing this technology, then it exerts a tighter control on the access of suppliers to the eco-system and this eco-system starts looking much more like an IPR-based platform. A good example is Apple, which can be seen as an iOS-based platform levying significant access charges (with ownership of some of the related products) or as a looser eco-system. Indeed, there might be benefits in considering both angles depending on the precise issues in the case at hand.

The relationship between conglomerates, platforms, and eco-systems described above can be subtle. It can be represented schematically as in [Figure 3](#).

Conglomerates and platforms are distinct concepts: a conglomerate cannot be a platform and a platform cannot be a conglomerate. In our definition, a conglomerate does not grant any access to any third party and a platform-owner cannot exercise full control on all products linked to the platform. The distinction between conglomerate and eco-system or eco-system and platforms is less clearcut. An ecosystem can contain one or more independent conglomerates and/or one or more platforms. Moreover, some of these platforms or conglomerates might well be owned by the entity that lies at the centre of the eco-system. On the other hand, a conglomerate cannot be an

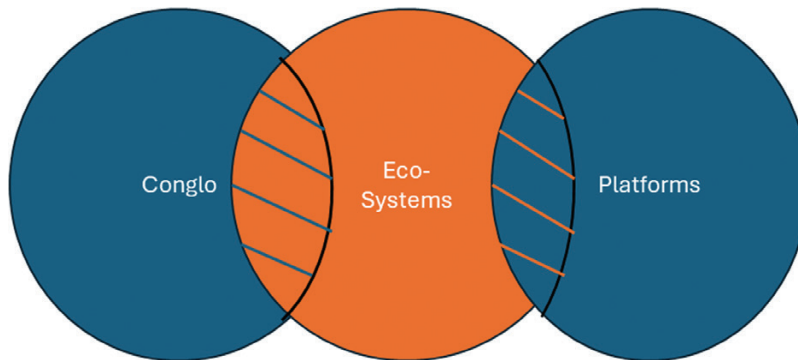


Figure 3: The relationship among conglomerates, eco-systems, and platforms

¹⁷ See ‘Ecosystem Theories of Harm—A New Risk or Just a New Word?’, a Compass Lexecon publication, <https://www.compasslexecon.com/insights/publications/ecosystem-theories-of-harm-a-new-risk-or-just-a-new-word>, accessed 25 August 2024.

eco-system because of the different degree of control involved. The distinction between platforms and eco-systems is, as we have already hinted, fuzzier. Essentially, for us, an eco-system has a more complex architecture than a platform, involves less central control than a platform and tends to have broader scope as it can easily include a number of platforms.

Of course, in practice, there are mostly mixed organizations: platforms where the platform owner also sells a number of products, conglomerates that allow a few independent suppliers access to their business-to-business systems or platforms which might themselves be at the centre of an eco-system. As always then, the point is to define a few benchmarks so that, when faced with a case, we can decide which of these benchmarks more closely reflect the observed situation and how any significant difference between the benchmark and the facts might call for modified conclusions.

Our discussions of the main differences and similarities between conglomerates, platforms, and eco-systems are summarized in Figure 4. As indicated in the lower right corner of the figure, there is a continuum from platforms to eco-systems in the sense that we move farther away from platforms the less control is exercised by the centre(s) of the eco-system and the more (independently controlled) centres there are. Still, a basic difference is that it is hard to speak about platforms if the list of criteria in the middle of the graph is not satisfied, while one can still talk about eco-systems.

VI. Eco-systems theories of harm

Together with ‘tipping’ and ‘killer acquisition’, ‘eco-system theory of harm’ has become one of the favourite buzzwords in competition policy. Unfortunately, such indiscriminate usage of economic concepts has a cost, as buzzwords can be used to dispense with careful analysis and tend to hide the strong economic links between seemingly separate theories of harm.

The main point of exploring the relationship between conglomerates, platforms, and eco-systems is to try to identify genuine ‘eco-system’ theories of harm, i.e. theories of harms that are at least somewhat distinct from those already identified in the context of conglomerates or platforms. This does not mean that some of the theories of harm that can be applied to conglomerates or platforms are no longer relevant, but many of them become less appropriate when we move to eco-systems. For example, since the centre of an eco-system does not control the pricing of most components of the system, the scope for bundling/tying is more limited than in a conglomerate.

Because one of the main ‘glues’ holding eco-systems together stems from some form of interoperability, theories of harm based on shopping costs do not apply either. However, *switching costs* become an important factor since consumers experience some degree of lock-in once they have started acquiring components within the system.

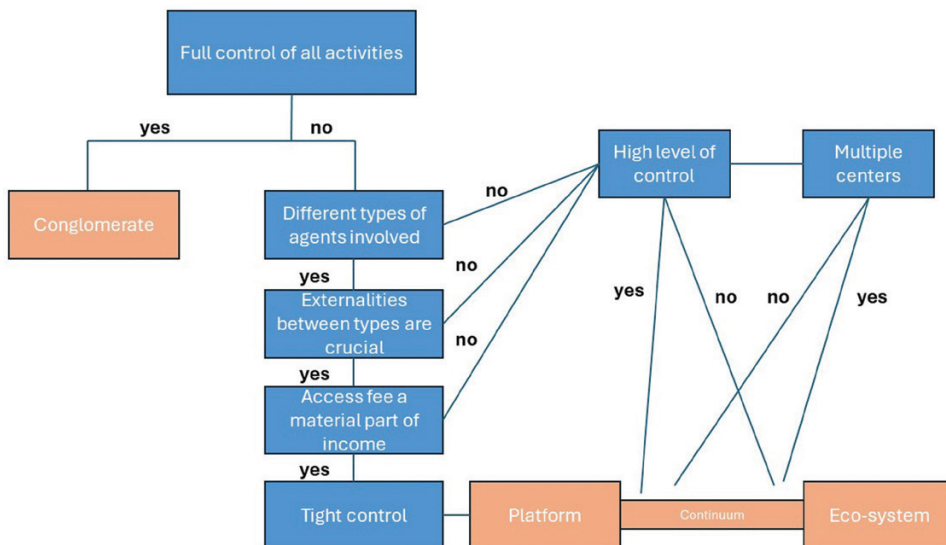


Figure 4: The differences and similarities among conglomerates, eco-systems, and platforms

While the competitive consequences of switching costs have been studied thoroughly,¹⁸ the literature has almost exclusively looked at situations where prices are centrally determined within each system.¹⁹ We therefore know rather little about the effect of (endogenous) switching costs in the presence of less centralization. One can however venture some hypotheses. For example, because of decentralized pricing, the ‘centre’ of the eco-system, which acts as a gateway is the only actor with an incentive to internalize complementary links to any significant extent. Hence, the centre is the only one with a reason to follow the usual ‘low introductory prices’ strategy associated with switching costs. However, because the centre has a limited ability to levy ‘access charges’ to the members of the eco-system it can only capture a relatively low share of the subsequent benefits of lock-in. Similarly, the centre of an eco-system is less able to collect on the benefits of fostering network effects than the owner of a platform. Therefore, we would not generally expect the centre to charge very low prices to consumers.²⁰ In turn, this means that the theories of harm grounded in the existence of zero prices no longer apply.

Before reviewing possible theories of harm that are (somewhat) specific to eco-systems, it is important to note that eco-systems often have a positive impact on consumer welfare. Because the centre of an eco-system does not centralize the pricing or quality decisions of the products and services that it includes, this efficiency does not come from the traditional internalization of complementarities. Instead, they take the form of better interoperability and, possibly, greater innovation, two of the factors that also make eco-systems attractive for suppliers. On the other hand, the potential sharing of consumer-related information has ambiguous effects on consumers.

An important feature of eco-systems is that they are inherently dynamic as the number and type of products available within the eco-system keeps changing. Furthermore, while eco-systems are, as we discussed, centred around a company whose products form a sort of gateway into the system, this gateway aspect, and the power that follows from it, is weaker than for a platform where the platform owner has complete discretion—exercised or not—as to who can join the platform and under what conditions. The combination of these two features suggests some new(ish) theories of harm as well as a different approach to merger review.

Let us start with mergers. Consider a platform, or the centre of an eco-system. There is a company for sale which could transact on the platform or belong to the eco-system. Of course, concerns about horizontal overlap still apply, so one must still check whether the platform owner or the centre already (fully) controls products that rival those of the acquisition target. So, assume further that neither the platform nor the eco-system centre currently controls a product which competes with the acquisition target. Our main concern would then revolve around some form of foreclosure. The first type of foreclosure would be the incentive to favour the target over rival companies operating on the platform or in the eco-system. It is interesting to ask whether this issue is likely to be more prominent for platforms than for eco-systems. The comparison is in fact ambiguous. On the one hand, the platform has a greater ability to discriminate against the rivals of its acquisition. On the other hand, again because of its greater control, the platform is likely to be capturing a larger share of these rivals’ surplus. In other words, a platform is more able to discriminate but it might have lower incentives to do so than the centre of an eco-system.

The second type of foreclosure relates to the rivalry between platforms or eco-systems. If this rivalry is sufficiently intense, then the acquisition can be mostly motivated by the benefits from keeping the target away from the rival platform or eco-system rather than by the benefits from adding it to one’s own system. In extreme cases, this can lead to so-called ‘killer’ acquisitions where the target adds no direct value to the platform or eco-system of the acquirer.²¹ Other things equal, this motivation for merger is likely to be stronger for a platform than for an eco-system since the owner of the platform can extract a greater share of the benefits from defending its market power. On the other hand, the magnitude of network effects might sometimes be greater for an eco-system than for a platform.²²

Since *Microsoft (US 1998)* and *Microsoft (EC 2004)*, competition authorities have also been worried about dynamic defensive foreclosure, where the firm which is dominant in market A employs various tactics affecting market B, not for the sake of being present in that market but as a means to protect its dominant position in market A. As we explain below, we believe that the arguments advanced in those cases are inherently eco-system theories of harm, even though they were applied in a context with a very powerful centre and might therefore also be seen as an example of platform theories of harm.

¹⁸ See Farrell and Klemperer (2007).

¹⁹ Indeed, most of the literature concerns dynamic competition where consumers have exogenous switching costs, and the pricing concerns an initial purchase and an ‘after-market’ purchase from the same company.

²⁰ Of course, there can be exceptions, particularly where the firm at the centre of an eco-system is also a platform, as with Google and the Android eco-system (which Google licenses at no cost to equipment manufacturers).

²¹ See Cunningham *et al.* (2021).

²² As there are more different components benefiting from the introduction of a new complement.

The merger side of defensive foreclosure theories of harm emerges most clearly in the acquisition of Instagram by Facebook in 2012. This has become a *cause célèbre* of allegedly failed merger control. The basic argument was that, although the sharing of photographs was in a different relevant market from social networks, Instagram had the potential to eventually turn into a rival for Facebook: once a network of contacts is created for the purpose of sharing pictures, it can easily also be used for other types of interpersonal exchanges and for the posting of adverts. In a sense, this is an example of the ‘complements turning into substitutes’ discussed above. While *Facebook–Instagram* is probably better seen as a ‘platform case’ (see next section), similar theories of harm can also apply to eco-systems.

With eco-systems, such defensive foreclosure can take somewhat different guises and assume shades of entry deterrence. Consider the following two examples. The first one refers to what one of us has called the ‘kernel’ theory of harm:²³ even if the target will never itself turn into a substitute for any of the products directly controlled by the centre of the eco-system, indeed, even if it is not a substitute for any of the products currently available in the eco-system, it can constitute a threat if it might grow to be the centre of another eco-system which, as a whole, would compete with the current one. In the second example, the threat from the acquisition target comes from within: a company might offer products and services that enrich the eco-system, something that the centre would welcome. However, as preferences, technology and the set of products in the eco-system change (e.g. from fixed internet to mobile internet) the company’s offerings might become more central, progressively usurping the power of the initial centre. This creates an incentive for acquiring the target.

These ‘defensive foreclosure’ theories of harm are related to the concept of *entry path*. As [Caves and Porter \(1977\)](#) first underlined, entry into a market need not be frontal and can proceed via a more or less complex itinerary through increasingly related markets. Eco-systems seem to offer a fertile environment for such complex or unexpected entry paths as the relative importance of the system’s many components can evolve over time up to the point where rival centres emerge. By contrast, platforms revolve around a unique, closely controlled ‘meeting point’ which is difficult to challenge indirectly.

Incumbent centres can react to this threat in a number of ways, suggesting various theories of harm. First, they can try to discriminate against the likely challenger, making it harder to get a foothold in the eco-system. However, the effectiveness of this approach is limited as a centre does not have full control on the related eco-system. An incumbent centre might therefore prefer to simply buy out potential challengers. Such strategies call for a rather sophisticated merger review as the regulator needs to understand—and evidence—where in the system such centre-challenging entry might occur.

Overall then, the review of acquisition by the centre of an eco-system should involve a number of angles: traditional horizontal overlap, potential foreclosure of an existing, rival eco-system, elimination of a potential kernel for a new eco-system, and acquisition of a potential rival centre within the acquirer’s eco-system.

Incumbent centres can also increase their overall control over their eco-system and at the same time block likely entry paths by creating multiple centres. Examples of this approach are abundant: starting from online search, Google developed Android, Google Search, and Google Play, while Apple complemented its tight control of iOS with the Apple App Store and Apple Pay and Microsoft Windows was complemented by Microsoft Office. The control of multiple centres within an eco-system reopens the issue of bundling/tying as in the *Google Android* case (see below). This did not escape the authors of the recent *Digital Markets Act*, which forbids ties between ‘core platform services’, i.e. between important platforms that are part of the same eco-system.

Clearly, the profession’s understanding of eco-systems is still incomplete and evolving. In particular, we need to know more about the various ways in which the centre of an eco-system exerts influence in spite of enjoying less formal control than a platform owner. A good first step would be some description of the practices that we currently observe.

VII. Examples from the European Commission’s practice²⁴

While the expression ‘eco-system theory of harm’ is rather new, the European Commission has already investigated transactions and antitrust complaints involving eco-systems in a number of cases. It seems useful to review some of these cases, however succinctly. For each example, we briefly state the main facts, identify the elements that create an ‘eco-system’ dimension and present the related theories of harm. We do not discuss the conclusions reached by the European Commission.

²³ See [Régibeau \(2022\)](#).

²⁴ For a more systematic review of the evolution of merger theories of harm in EU practice, see [Duso et al. \(2024\)](#), in this issue.

(i) Microsoft

Some of Microsoft's products can legitimately be seen as platforms, but its overall business strategy only makes sense in terms of eco-systems with the Windows platform as a centre. Around this centre revolve PCs, tablets, the ever-expanding Office suite, a large number of third-party applications, Microsoft's cloud (Azure), the Xbox and compatible games, as well as Microsoft's own search engine and its fast-growing AI arm. Within these various parts of the constellation, some, like the Xbox, Azur and Bing, can legitimately be thought of as fully fledged platforms.

The EU Microsoft (2004) case

This is one of the very first competition cases with strong platforms/eco-system overtones. We focus on the server side of the case. In a nutshell, Microsoft Windows was found to be dominant in the supply of operating systems (OS) for personal computers. This dominance was shored up by a huge advantage in the variety of application software packages available for its PC OS.

The case arose at a time when corporate clients found a need to connect a large number of PCs to a central 'server' which would not only allow for efficient communication between PCs but would facilitate the sharing of information and might even host sharable application software. To operate, servers need their own operating system. To be successful, these operating systems need to communicate seamlessly with the Windows OS found on most PCs. At the time of the case, Microsoft was not dominant in the supply of either servers or their operating systems. It faced significant competition from companies like Sun and HP, among others.

The complaint was that, by changing the interface between PC OS and server OS frequently, arbitrarily, and without diligently communicating the information required to ensure continued high-quality connectivity, Microsoft tried to degrade the quality of the server services offered by rivals.

In our view, the server side of Microsoft is best seen as an eco-system case (the first?). Of course, Windows has all the characteristics of a platform, including a rather tight control of access by its owner. However, the threat to Microsoft came from a technology which did not directly threaten Microsoft's dominance in the market for PC OS but created *an alternative centre* in an extended product space. One can therefore see the case as dealing with a potential move from a platform controlled by Microsoft to a broader eco-system, where PC, PC OS, servers, and server OS would all have their places and server OS would emerge as a rival centre whose status as a gateway—and hence its degree of control—might grow over time.

The theory of harm presented by the European Commission's Directorate-General for Competition (DG Competition) also highlights the eco-system dimension of the case. A simple leveraging argument, whereby Microsoft would use its dominance in PC OS to weaken or exclude rivals in a new market, would have had to overcome the traditional 'one-monopoly profit' defence.²⁵ Instead, the theory of harm relied on the crucial role of application software, proceeding in three steps. (i) Much of Windows' dominance comes from the existence of a huge variety of application software running on Windows. (ii) As servers become more important, it would become possible, or even desirable to write application software to be based on the servers and hence to be compatible with the server OS instead of Windows. (iii) If rival server OSs take hold, this would eventually deprive Windows of its indirect network effect advantage. In other words, technological evolution turned a platform into an eco-system (PC + servers + software) with two potential centres and Microsoft's conduct was aimed at also controlling the second centre.

Microsoft—Activision

In this transaction, Microsoft proposed to acquire one of the larger creators of videogames. The case revolved around the most successful of Activision's products, 'Call of Duty'. At the time videogames were mostly played on PCs, mobile phones, or on a dedicated game platform. Microsoft controlled the XBOX platform which held the third spot in the market behind the platforms of Sony and Nintendo.

The most obvious concern was one of foreclosure: would Microsoft have an incentive to withhold 'Call of Duty' from the two main rival platforms? This is a straightforward theory of harm with no eco-system element. However, both DG Competition and the Competition and Markets Authority (CMA) also investigated two more complex theories of harm. The first of these applies a similar foreclosure argument to cloud-based gaming: the deal would strengthen Microsoft's position in cloud gaming giving it the ability, and maybe the incentive, to keep its games away from rival cloud-gaming platforms. While this argument does not have much of an eco-system dimension either, the combination of these first two theories of harm does, as it emphasizes that Microsoft could use

²⁵ This defence argues that if a company is a monopolist in one market, it cannot increase its profits by leveraging this power in another market.

the acquisition to reinforce the position of several of the centres of its eco-systems. In other words, rather than an opportunity to weaken rivals in the game platform and cloud-based gaming areas, the transaction can also be seen as an attempt to shore up the overall Microsoft eco-system by firming its grip over several of its centres, which are also potential entry points. However, such a joint assessment of the two separate foreclosure theories of harm was not undertaken.

The last theory of harm considered had a strong eco-system flavour. It can be articulated in six steps. (i) The acquisition strengthens Microsoft's position in videogames. (ii) Reverting to the second theory of harm above, Microsoft would refuse to license its games to other cloud-based gaming services. (iii) Cloud-based gaming is the future of gaming. (iv) Gaming will be a significant part of cloud-based activities, so keeping Activision games away from other cloud services strengthens Microsoft's overall position in the cloud. (v) Just like servers and their OS were a potential threat to Windows, the Cloud and the Chrome and Apple OSs that it can rely on are a threat to Windows. (vi) Enhancing Microsoft's cloud position therefore protects Windows' dominance and might open the door to further exclusive strategies such as the bundling of PC-based and Cloud-based services.

Clearly, this last theory of harm contains some highly speculative elements ((iii) and (iv)) and presenting sufficient evidence to support each of the necessary steps would have been extremely challenging. It is therefore not surprising that this line of inquiry was eventually dropped by both DG Competition and the CMA.

(ii) Google-Alphabet

Google-Alphabet offers one of the best examples of a multicentred eco-system. This system has two main poles. The first one is the online search–advertising nexus, which can itself be characterized as a tightly controlled platform. The second major centre is Android, which Google controls much more loosely. Google has also created secondary centres like the mobile version of Google Search and Google Play, which have grown in importance. It is worth noting that, so far at least, Google-Alphabet has had a dominant presence in all the progressively emerging centres of the eco-system. So, while the Google universe is broader and not as tightly controlled as a platform, some of Google's strategic abilities, such as tying, are not yet as limited as in a more fully shared eco-system.

Google—Android

The case concerned contractual clauses in the licensing agreements between Google and the manufacturers of Android-based mobile phones. Some of these clauses required favourable treatment of the mobile version of Google Search in exchange for full access to other Google products like Google Play and Android. At one level, this can be articulated as a straightforward theory of harm either in terms of tying (the chosen route) or in terms of exclusive dealing.

If one takes a broader perspective, however, there are clear eco-system elements. Google's strategy involves a complex, dynamic interaction between the various centres of its eco-system. The original fixed internet search and Android centres were instrumental in launching and expanding Google's mobile business including Google Play. In turn, these new centres are used to help translate Google's dominance in search to the mobile sector. Indeed, more than an extension of market power, this can be seen as a defence of one of Google's two key centres in the face of the entry threat stemming from the increasing importance of mobile platforms.

The Android case also revealed that, while the Android OS is essentially 'open source', Alphabet retains some control by imposing fairly tight 'anti-fragmentation' agreements. These agreements essentially prevent the breaking up of Android into increasingly diverging versions ('forks'). There is of course an efficiency rationale for such clauses as they help prevent confusion and preserve interoperability. However, one cannot help noticing that the clauses also prevent the emergence of alternative Android versions, which could act as rival centres within the eco-system.

Google—Fitbit

In 2021 Google announced the acquisition of Fitbit, a well-known producer of health-monitoring watches. Though Fitbit had fallen on hard times, it still had a well-recognized wearable brand name and an effective operating system for digital wearables, two areas where Google was weak. *A priori* then, this transaction should not be problematic since it involves complements, the market for wearables would remain competitive and other eco-systems either already had equivalent products or could find alternative acquisition targets.

However, several alarmed observers raised concerns that DG Competition investigated within three theories of harm with systemic dimensions. The first theory was that Google could use the health data of Fitbit customers to further refine its advertising targeting and reinforce its extreme dominance in the search/advertising nexus. This is an example of how some strategies can be based on the 'glue' that holds an eco-system together. As we discussed

above, the main types of eco-system ‘glues’ are some form of interoperability and data. This is an example of the latter. Note however that this theory of harm could apply to a platform just as well as to a more complex eco-system.

The second theory of harm was a standard fear that Google might have the incentive to degrade the access of Fitbit’s rivals to the Android universe. Indeed, while this seemed farfetched in this case, one might also have looked at the possibility that Google would want to use such degradation or tying strategies to create a centre for the expanding wearable part of its eco-system.

The third theory of harm returns to the role of data, not to enhance or preserve Google’s existing dominance, but to help Google make its way into the growing market(s) for digital health services. According to this argument, Google would get a strong advantage in this new market because of its ability to pool Fitbit’s health data with its own huge inventory of data over other consumer characteristics. This is an example of the more complex entry-paths which can arise in a world of eco-systems. However, notice that, in this specific case, we are dealing with an entry strategy, not about blocking entry in a (set) of markets. This is one reason why this argument was not retained.

(iii) Facebook/Meta

For a long time Facebook was a simple ad-financed platform without any material ‘eco-system’ dimension. Its transition towards becoming an increasingly complex eco-system started with the development of Messenger and the acquisition of Instagram (2010) and Whatsapp (2014). It has continued with its huge investment in the metaverse/ AI and the creation of Facebook Marketplace.²⁶

Facebook—Kustomer

Kustomer helps companies manage their communication with their customers across several channels (customer relationship management—CRM), including email, calls, SMS, and messaging apps. Kustomer was a young company with few customers, but it was considered a leader in the emerging field of CRM. Given the small size of the company that was acquired and the lack of horizontal overlap, the amount of attention received by the transaction was unusual. At the simplest level, the concern was that Facebook, which has its own strong messaging services in Messenger, Instagram, and WhatsApp, would prevent rival CRM providers from including these channels in their offering. This is a straight foreclosure argument.

Interestingly though, a kind of ‘back and forth’ extension of this argument was also considered: the benefit from foreclosure would not just stem from the additional profits accruing to the Kustomer CRM, it also reflected the possibility that, once Kustomer had become dominant, it could discriminate against communication channels which are rivals of Facebook’s three main messaging services. This additional benefit arises from the eco-system dimension of Meta’s business and increases the incentives to discriminate against other CRMs in the first place.

Meta—Marketplace

Marketplace has been a successful, internally developed, addition to Meta’s eco-system. However, some of the tactics deployed to ensure this success are under investigation by DG Competition. There are mostly two sources of concern. The first one is simply that, by giving its own marketplace better visibility than rival marketplaces on Facebook, Meta is implementing a form of tying that helps leverage its social network dominance in the ‘market for marketplaces’. This is standard. More interesting from the perspective of eco-systems, is the allegation that, in order to let marketplace rivals access the Facebook platforms, these rivals have to supply information which can then be used advantageously by Facebook Marketplace. The eco-system aspect comes from the use of a strong position at the centre of the system to capture information (one of the ‘glues’ we discussed) in order to dominate another, emerging, centre.

(iv) Amazon

In, 2019, the EU began investigating complaints against Amazon. Amazon is best seen as a sales platform and is therefore not a clear example of an ‘eco-system’. However, one of the issues addressed is directly relevant to our discussion of eco-systems: sellers operating on the platform argued that, under the guise of managing the platform, Amazon obtained information about the offers of third-party sellers which was then used by the own-sales arm of Amazon to compete unfairly with third-party suppliers. This complaint is of interest because it raises the issue of

²⁶ We have not treated the Facebook/Giphy case here, although it is discussed in other sources, for example see <https://www.networklawreview.org/frameworks-dynamic-competition/>, accessed 25 August 2024.

how a centre (here a platform owner) might be able to specify platform participation and platform management rules in a manner that might be anticompetitive. While companies at the centre(s) of an eco-system have less power than a platform owner, they are still likely to be able to define rules about information sharing.

(v) Apple

The structure of Apple's business is somewhat ambiguous. Initially at least, it was a platform revolving around its operating system. One can also usefully think of the iPhone as a separate platform, where Apple charges high access fees or taxes and exerts high levels of control. For some types of analysis, this is probably the better framework to adopt. However, focusing on separate platforms would be missing an increasingly important dimension: that Apple can also be seen as an eco-system with multiple centres.

At a high level, there are currently two main centres: the mobile operating system iOS and the Macintosh operating system. Each of these two centres is a platform. However, iOS is a rather distinct platform in the sense that it has spawned a number of products, such as the Apple Store or the Apple Watch, which are still linked to iOS but have platform characteristics of their own and could potentially emerge as additional centres of the eco-system. Indeed, the Apple universe has already seen a migration of centres as the iPod has been absorbed progressively into the iPhone environment. As Apple is currently trying to increase its presence in digital health and in digital payment systems, this broader eco-system perspective is likely to become increasingly useful.

So far, however, the EU cases involving Apple have revolved around platform theories of harm with no significant 'eco-system' dimension. In *Apple-Spotify*, the EU is focusing on specific clauses in contracts for third-party access to the Apple App Store. In particular, the EU objects to the so-called 'anti-steering' clause that prevents app sellers from advertising within the apps sold on Apple App Store that apps-related products are available at lower prices through direct online sales. While not an eco-system theory of harm, this suggests, just like the Amazon agreement, that DG Competition will strive to ensure that consumers have the information they need to make rational choices. This is also likely to limit an eco-system's ability to control by controlling data/information flows.

It is also worth mentioning Apple's recent decision to allow rival app stores to operate within the EU part of its universe in response to the Digital Markets Act.²⁷ This can be seen as an attempt by regulators to prevent the proliferation of Apple-dominated centres within the Apple eco-system, thereby limiting the scope for tying strategies and opening up potential routes of entry into the system.

VIII. Conclusions

In this paper, we try to make sense of the emergence of so-called 'eco-system theories of harm'. We begin by identifying the differentiating features of conglomerates, platforms, and eco-systems, pointing out, among others, differences in the level of control, the importance of externalities between different groups of agents, the importance of access fees or taxes and the presence of multiple 'entry points'. From these differences we identify some theories of harm which are either specific to eco-systems or are more likely to apply to eco-systems. These include the blocking of entry paths and more complex forms of defensive foreclosure.

Reviewing recent EU decisions, we argue that, so far, defensive foreclosure has been a common denominator of 'eco-systems' theories of harm. We also point out that, while some cases could legitimately be looked at through either the 'platform' or the 'eco-system' lens, the current evolution in the digital sectors suggests that the eco-system approach is likely to be increasingly useful in the future as many dominant players enter new markets.

Finally, we want to stress that this is just an attempt at clarifying the current discussion, not a definite classification of organizational forms. Much more work is needed before we reach this point.

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²⁷ See <https://www.apple.com/uk/newsroom/2024/01/apple-announces-changes-to-ios-safari-and-the-app-store-in-the-european-union/>, accessed 25 August 2024.

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