

ASSESSING THE IMPACT OF VERTICAL INTEGRATION IN PLATFORM MARKETS



BY JEROME POUYET & THOMAS TRÉGOUËT¹



¹ Jérôme Pouyet: ESSEC Business School and THEMA-CNRS (Université de Cergy-Pontoise); Thomas Trégoût: Université de Cergy-Pontoise, THEMA.

CPI ANTITRUST CHRONICLE DECEMBER 2018

Google Android Antitrust: Dominance Pivots and a Business Model Clash in Brussels

Author By Randal Picker



The European Commission's Android Decision and Broader Lessons for Article 102 Enforcement

By Nicholas Banasevic



A Preliminary Assessment of the European Commission's Google Android Decision

By Pinar Akman



Google Android: Record-Breaking Fine on Anti-Competitive Practices Under Article 102 TFEU

By Anca D. Chirita



Assessing the Impact of Vertical Integration in Platform Markets

By Jerome Pouyet & Thomas Trégouët



Amazon and the Law of The Jungle

By Simonetta Vezzoso



With Uncertain Damage Theory Come Unpredictable Effects of Remedies: "Libres Propos" on The Android Case

By Frédéric Marty & Julien Pillot



Structuralist Innovation: A Shaky Legal Presumption in Need of an Overhaul

By Dirk Auer



Visit www.competitionpolicyinternational.com for
access to these articles and more!

CPI Antitrust Chronicle December 2018

www.competitionpolicyinternational.com
Competition Policy International, Inc. 2018[©] Copying, reprinting, or distributing
this article is forbidden by anyone other than the publisher or author.

I. INTRODUCTION

A number of voices have recently pleaded for an overhaul of the current antitrust doctrine. Some propose to "invigorate vertical merger enforcement" because competition authorities have put too much faith in the so-called Chicago doctrine, thereby leading to lenient enforcement.² Others doubt that there is enough ground for such a revision,³ arguing that, first, most empirical studies conclude that vertical mergers lead to efficiency gains that ultimately benefit consumers and, second, the theoretical literature does not provide robust enough principles to write such guidelines. Last, many have raised the question of whether antitrust policies should account for specificities of multi-sided platforms.⁴

Understanding the impacts of vertical mergers in platform markets is indeed an important question because antitrust authorities are confronted more and more frequently with mergers in so-called two-sided markets. Software platform industries have, for instance, recently witnessed many sudden changes in the nature of the relationship between software and hardware producers. Traditional suppliers of operating systems have notably ventured into the hardware market, and, at the same time, prominent hardware manufacturers have developed their own operating systems. These changes have raised the issue of foreclosure of nonintegrated competitors in a context where network effects are endemic.

The academic literature has already brought several important insights on vertical relations in two-sided markets.⁵ We content ourselves here with a brief description of our own research on this topic.⁶ Our main results may be stated as follows. First, indirect network effects create a form of demand complementarity at the downstream level that softens the anticompetitive effects of vertical integration. This effect depends on the overall strength of the indirect network effects. Second, vertical integration creates various sources of market power. How such market power is exerted, and its impact on competition, depends on how the integrated firm balances its price instruments to harness the indirect network effects. This depends, in turn, on how each side of the market values the participation of users from the other side, or, in short, the structure of indirect network effects. We show, in particular, that there is no systematic correlation between stronger upstream market power and foreclosure of competitors or consumer harm.

² Salop (2018), "Invigorating Vertical Merger Enforcement," Yale Law Journal (127).

³ See the FTC Hearing #5 regarding "Vertical Merger Analysis; the Role of the Consumer Welfare Standard in U.S. Antitrust Law" (www.ftc.gov/news-events/events-calendar/ftc-hearing-5-competition-consumer-protection-21st-century).

⁴ See, e.g. Katz & Sallet (2018), "Multisided Platforms and Antitrust Enforcement," Yale Law Journal (127).

⁵ See, among others, Evans (2013), "Economics of Vertical Restraints for Multi-Sided Platforms," CPI Journal, 9.

⁶ Pouyet & Trégouët (2018), "The competitive effects of vertical mergers in platform markets."

II. A FRAMEWORK TO ANALYZE VERTICAL INTEGRATION WITH TWO-SIDED NETWORK EFFECTS

The existing literature on the competitive impact of vertical integration between an upstream input supplier and a downstream manufacturer (with no network effects) has highlighted a trade-off between the efficiency gains brought by the merger and its negative impact on competition on the buyers' market.⁷ The efficiency gains may come either from synergies created by the merger or from the removal of a double marginalization (that is, the integrated manufacturer is now able to get the input at a lower price). Thanks to these efficiency gains, the integrated manufacturer tends to behave more competitively on the buyers' market. The anticompetitive effect of vertical integration may be explained as follows: with respect to the pre-merger situation, and thanks to the efficiency gains associated to vertical integration, the integrated firm is able to charge the nonintegrated manufacturer a higher price for its input. Differently put, vertical integration creates some market power on the upstream market, that is, *vis-à-vis* the nonintegrated manufacturer. The increased input price has two impacts: it makes the nonintegrated manufacturer less efficient, which then tends to increase its downstream price; it also changes the pricing incentives of the integrated manufacturer. Overall, when the efficiency effect of vertical integration is sufficiently strong, both manufacturers' prices decrease and the merger increases the surplus of buyers. When, by contrast, the anticompetitive effect of the merger is strong enough, both prices increase and the merger reduces the surplus of consumers.

As an illustration of our framework, think of a market in which some manufacturers compete to sell some devices to consumers. Each device must be equipped with an operating system in order to be operational. Some platforms compete to license their operating systems to manufacturers. Devices provide buyers with some intrinsic benefits but also with the opportunity to buy applications running on the operating system installed on their devices. These applications are created by developers.

Observe the similarities with the literature mentioned just above: software platforms provide an input to device manufacturers and manufacturers compete to sell their devices to buyers. Our main departure from that literature is that we consider indirect network effects between buyers of devices and developers of applications: the larger the number of devices sold, the more interesting it is for developers to create applications; reciprocally, the larger the number of applications available on an operating system, the more interesting it is for a customer to buy a device running that operating system. As we will argue later on, two aspects of these indirect network effects are important, namely their overall strength and their structure. The structure of indirect network effects relates to how much one side of the market (say, buyers) values more or less the number of agents on the other side of the market (hence, application developers). The strength relates to the compounding effect of these valuations.

Observe that, in our framework, there are three different pricing instruments: (1) the prices charged by manufacturers on buyers for their devices; (2) the license fees set by platforms for the use of their operating systems by manufacturers; and (3) the developer fees charged by platforms on developers to make their applications available on their operating systems. The license fees can also be viewed as the means through which the monetization of user-generated data is shared between the manufacturer and the platform. The academic literature has emphasized that a merger changes both the competition between manufacturers on the buyers' market (which is the downstream market in our analysis) and the license fee charged by the integrated platform to the nonintegrated manufacturer for the sale of its operating system (which is the upstream market). In our framework, the merger between a platform and a manufacturer will also change the fee levied by platforms on developers, which impacts buyers because of the presence of indirect network effects.

III. ROLE OF THE *STRENGTH* OF INDIRECT NETWORK EFFECTS

How is the traditional competitive assessment of vertical integration amended in the presence of indirect network effects? To answer this question, let us first assume that platforms levy no fees from developers. While this assumption is unlikely to be satisfied in many real-world situations, it nonetheless helps understanding one particular role of indirect network effects. Observe that developers can make their applications available on any operating systems when platforms levy no fees from developers. This then implies that our model can be viewed as an extension of the standard framework used to analyze the impact of vertical integration, where we incorporate indirect network effects between buyers and application developers.

⁷ See, for instance, Ordover, Saloner & Salop (1990), "Equilibrium Vertical Foreclosure," *American Economic Review*; Chen (2001), "On Vertical Mergers and Their Competitive Effects," *RAND Journal of Economics*.

The first impact of these network effects is that they create a form of demand complementarity at the manufacturers' level. To understand, suppose that a manufacturer decreases the price of its own devices. For a given number of application developers, the demand faced by the other manufacturer decreases, thanks to the substitutability between devices. This is the standard rivalry or competition effect, which leads that manufacturer to respond by decreasing its price. There is, however, another impact. Following the price decrease, there are more buyers of devices overall. Thanks to indirect network effects, there are thus more application developers, which increases the buyers' demands for both devices. As a result, following the decrease of the price of a manufacturer, the other manufacturer's demand may increase and that manufacturer may respond by increasing its own price. Therefore, when indirect network effects are strong (weak) enough relative to the degree of substitutability between manufacturers' devices (which is a proxy for the intensity of competition on the downstream market), manufacturers behave as if their products were demand complements (substitutes).

The case of substitutes is considered in the existing literature, and, as far as vertical integration is concerned, features the trade-off described previously. The case of complements leads to a different competitive assessment of vertical integration. We show, in particular, that there is never foreclosure of the nonintegrated manufacturer (that is, its profit always increases with respect to the pre-merger situation) even though vertical integration still creates some market power and allows the integrated platform to increase its license fee beyond the pre-merger level. The main difference is that the efficiency effect now works in favor of the nonintegrated manufacturer, which benefits from facing a more efficient integrated manufacturer when products are demand complements. In a nutshell, indirect network effects tend to scale down the intensity of product market competition at the manufacturers' level and antitrust authorities should be less concerned by the foreclosure effect of vertical integration when indirect network effects are strong.

A key policy issue in the competitive assessment of vertical integration is whether it should be sufficient to prove that the nonintegrated downstream competitor lose from the merger or whether it is necessary to show that it also harms customers of the downstream competitor. When products are demand complements, our analysis predicts unambiguously that the integrated manufacturer's downstream price decreases and that the nonintegrated manufacturer's price increases. To summarize, when indirect network effects are strong enough, the merger benefits the nonintegrated downstream competitor even if they pay a higher license fee, but it harms their customers. Our analysis therefore pleads for an approach that accounts carefully for the welfare of the customers of the nonintegrated downstream competitors.

IV. ROLE OF THE *STRUCTURE* OF INDIRECT NETWORK EFFECTS

The analysis undertaken so far has assumed that platforms levy no fees from developers. Assume that this is no longer the case: developers fees are endogenous. Let us consider, again, the impact of vertical integration between a platform and a manufacturer. Developer fees introduce several new aspects, which come from the two-sided aspect of our modelling.

To begin with, let us ask the following question: what is the socially optimal structure of prices? Clearly, the license fees should be set at the marginal cost of providing the operating systems. What about the manufacturers' prices and the fees charged on application developers? These prices should be set so as to harness the indirect network effects across both sides of the market, as it has been shown in the two-sided market literature.⁸ To illustrate, if buyers of devices value strongly the applications and developers value weakly the number of buyers to whom they can sell their applications, then application developers should be "subsidized," through a low or even negative fee, and buyers of devices should be "taxed," through high prices of the devices, so as to generate a surplus from the interactions between both sides of the market as large as possible.

The two-sided market literature tends to support the idea that, to some extent, a fierce competition limits the ability of platforms to implement asymmetric price structures. Differently put, a fierce competition between platforms prevents them from harnessing the indirect network effects between buyers and application developers. Some market power may restore that ability, thereby bringing the price structure closer to the one that would be socially optimal. A similar phenomenon emerges in our framework because platforms have no direct access to buyers of devices: competition between nonintegrated platforms does not allow to implement an asymmetric price structure and leads to developers' fees and license fees equal to the corresponding marginal costs.

⁸ See, for instance, Rochet & Tirole (2006), "Two-Sided Markets: A Progress Report," *RAND Journal of Economics*; Armstrong (2006), "Competition in Two-Sided Markets," *RAND Journal of Economics*.

We can now continue with the analysis of vertical integration. As usual, the integrated firm will recover some market power over nonintegrated manufacturers. But, most importantly, the integrated firm now controls the pricing on both sides of the market, namely the price for its device and the fee paid by developers. Vertical integration creates a new source of market power because the integrated platform can now charge developers a supra-competitive fee. This market power relates to the fact that the integrated firm has monopoly power over the access to the buyers of its devices, thereby implying that application developers may be willing to pay in order to interact with those buyers. An implication is that vertical integration now partially restores the ability of the integrated platform to choose an asymmetric price structure. How such market power is exerted depends on the structure of indirect network effects.

To illustrate, suppose that buyers of devices strongly value applications whereas developers weakly value the number of buyers, that is, network effects are asymmetric and stronger on the buyers' side. The integrated platform then wants to boost the number of applications developed and to charge buyers of devices to capture a fraction of the surplus thereby created. This is best done by, simultaneously, setting a high price for its own device, a high license fee, and a subsidy for developers. This improved, though imperfect, internalization of the interactions across the two sides of the market may bring some welfare gains since the price structure is closer to the socially optimal one. When indirect network effects are sufficiently asymmetric, vertical integration turns out to benefit the nonintegrated manufacturer (even though the license fee increases), buyers, and application developers. When, by contrast, indirect network effects are weakly asymmetric, vertical integration leads to foreclosure and harms buyers. This illustrates the role of the structure of indirect network effects.

If indirect network effects are skewed the other way around (that is, buyers of devices weakly value applications and developers strongly value the number of buyers), the integrated firm now wants to subsidize buyers and tax developers. This is best done by setting a low price for the integrated manufacturer's device, a low license fee for the integrated platform's operating system, and a high developer fee. Our analysis shows that even if the license fee charged by the integrated firm does not increase, the nonintegrated manufacturer may be hurt by the merger, mainly because the demand it faces depreciates. There are indeed fewer applications and competition on the buyers' market is stronger. Buyers and application developers may well benefit from the merger because, again, the integrated firm partially internalizes indirect network effects.

Whatever the structure of indirect network effects, foreclosure may emerge, both when devices are complements and when they are substitutes. Indeed, these results depend on the structure of indirect network effects rather than on their overall strength. Foreclosure may now be an unintended collateral damage of the internalization of indirect network effects through an asymmetric price structure implemented by the integrated firm and is no longer systematically the result of the nonintegrated firm facing a more efficient rival or being charged a higher royalty.

An interesting by-product of our analysis is as follows. Consider a vertical merger that does not bring any efficiency gains (either through a cost reduction or the elimination of a double marginalization) and creates some market power. That merger may still be cleared by antitrust authorities because the internalization of indirect network effects may be strong enough to benefit buyers, developers, and nonintegrated competitors. Perhaps paradoxically, in platform markets, the market power created by the merger may actually be the basis of an efficiency defense.

V. CONCLUSION

Our analysis provides a novel theory of competitive effects of vertical integration in the context of platform markets. What lessons can be drawn for antitrust authorities? First, the so-called "raising rivals' cost" theory and the "eliminating markups" theory have remarkably simple predictions when indirect network effects are strong enough and platforms levy no fees from developers. Second, there is no systematic correlation between a stronger market power for the integrated firm and foreclosure of competitors or consumer harm when platform developers' fees are endogenous; the analysis then depends on the structure of indirect network effects. As Michael Riordan pointed out "it is a mistake to suppose that only one theory of competitive effects can be valid in any given case" and accordingly "[courts and regulatory authorities] should provide evidence on factual conditions supporting the theories and on the actual importance of the theories for economic welfare."⁹ Our analysis emphasizes that this is especially true in platform markets.

⁹ Riordan (2008), "Competitive Effects of Vertical Integration," in *Handbook of Antitrust Economics*, edited by Paolo Buccirossi, 145–82. Cambridge, MA: MIT Press.

CPI Subscriptions

CPI reaches more than 20,000 readers in over 150 countries every day. Our online library houses over 23,000 papers, articles and interviews.

Visit competitionpolicyinternational.com today to see our available plans and join CPI's global community of antitrust experts.

