

CURE

MANDATED  
INTEROPERABILITY:  
**THE CURE IS WORSE THAN  
THE DISEASE**



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### MANDATED INTEROPERABILITY: THE CURE IS WORSE THAN THE DISEASE

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Interoperability is an essential mechanism of modern communication. However, not all interoperability is benign or efficiency-enhancing. Interoperability has an alternative role as a tool of regulatory policy for granting access to a closed network. Mandatory interoperability comes loaded with regulations that supplant market prices. Network access price regulation and the no self-preference rule are two such regulations. These regulations are necessary for an effective mandatory interoperability regime. However, network access price regulation and the no self-preference rule also harm consumers by increasing prices, reducing output, stifling innovation, and degrading network service quality. Taken together, these two elements of mandatory interoperability are likely to produce far more harm than any potential benefit of mandatory interoperability.

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# 01

## INTRODUCTION

Roughly speaking, interoperability is the ability of different systems, devices, and applications to work together. Interoperability enables calls between users of Android and iOS cell phones and between customers of different cellular networks. It is also what allows Internet users to share data between different countries, operating systems, devices, and applications. Interoperability is an essential mechanism of modern communication. It works by adopting standard communication protocols that different systems or applications use to transmit and receive data.

However, not all interoperability is benign or efficiency-enhancing. Interoperability has an alternative role as a tool of regulatory policy for granting access to a closed network. For example, the FCC mandated interoperability to give long-distance carriers access to local exchange networks to spur competition in long-distance calling.<sup>2</sup> The Telecommunications Act of 1996 mandated interoperability that required incumbent local exchange carriers to give competitors access to local exchange networks.<sup>3</sup> A number of recent EU and U.S. legislative proposals include interoperability mandates as a regulatory solution to big tech competition. In particular, the Digital Markets Act (“DMA”), recently adopted by the European Parliament and the Council of the European Union, mandates interoperability in granting access to networks operated by designated “gatekeepers” or large online platforms.<sup>4</sup>

Mandated interoperability is very different from the type of interoperability that firms adopt voluntarily to facilitate communication among different systems, devices, and applications. The potential benefit of mandated interoperability is in enabling more firms to provide network services. However, this benefit comes at a great cost. Mandated interoperability comes with regulations that reduce efficiency.



*Mandated interoperability is very different from the type of interoperability that firms adopt voluntarily to facilitate communication among different systems, devices, and applications*

Interoperability has both costs and benefits. The benefits of interoperability include facilitating communication among different application, systems, and devices. The potential costs of interoperability include weakened incentives to innovate, less variety, entrenchment of incumbents, and loss of inter-network competition.<sup>5</sup> Interoperability may also result in loss of privacy and less secure networks.<sup>6</sup> The relative benefits of interoperability are small when multihoming costs are low and there is a high degree of differentiation across networks.<sup>7</sup> In addition to the downsides of interoperability, mandatory interoperability imposes significant regulatory costs that can harm consumers.

In this article, I consider two elements of mandatory interoperability: network access price regulation and the no self-preference rule. Network access price regulation is a necessary part of mandatory interoperability because it prevents the network operator from setting terms that would exclude outside (unaffiliated) firms from accessing the network. The no self-preference rule prohibits the network operator from favoring its affiliates over outside firms in providing network access. This rule is also necessary for mandatory interoperability because, by favoring its affiliates, the network operator may effectively exclude outside firms from accessing the network.

As I discuss below, network access price regulation and the no self-preference rule harm consumers. In particular, network access price regulation and the no self-preference rule may increase consumer prices, reduce output, stifle innovation, and degrade network service quality. Taken together, these two elements of mandatory interoperability are likely to produce far more harm than any potential benefit of mandatory interoperability.

2 See Howard A. Shelanski, *The Case for Rebalancing Antitrust and Regulation*, 109 MICH. L. REV. 683 (2011); and Laura Alexander & Randy Stutz, *Interoperability in Antitrust Law & Competition Policy*, CPI ANTITRUST CHRON. (June 2021).

3 See *Verizon Communications, Inc. v. Law Offices of Curtis V. Tringo, LLP*, 540 U.S. 398 (2004).

4 See [Regulation \(EU\) 2022/1925 of the European Parliament and of the Council of 14 September 2022 on Contestable and Fair Markets in the Digital Sector and Amending Directives \(EU\) 2019/1937 and \(EU\) 2020/1828 \(Digital Markets Act\)](#) at 14-15 [hereafter DMA].

5 See Jay Ezrielev & Genaro Marquez, *Interoperability: The Wrong Prescription for Platform Competition*, CPI ANTITRUST CHRON. (June 2021).

6 See Urs Gasser, “Interoperability in the Digital Ecosystem,” July 6, 2015, <https://ssrn.com/abstract=2639210>; and Wolfgang Kerber & Heike Schweitzer, “Interoperability in the Digital Economy,” JIPITEC 8, no. 1 (2017), [https://www.jipitec.eu/issues/jipitec-8-1-2017/4531/JIPITEC\\_8\\_1\\_2017\\_Kerber\\_Schweitzer.pdf](https://www.jipitec.eu/issues/jipitec-8-1-2017/4531/JIPITEC_8_1_2017_Kerber_Schweitzer.pdf).

7 See Ezrielev & Marquez *supra* note 5.

# 02

## NETWORK ACCESS PRICE REGULATION

Network access prices determine the compensation that connecting firms receive for providing network services. Throughout the article, I refer to the firms that access a network for the purpose of providing network services as connecting firms. Regulation of network access pricing is a necessary component of mandatory interoperability because, absent regulation, the network operator could make network access uneconomic for the connecting firms. Allowing network operators to exclude potential connecting firms would defeat the overarching goal of mandatory interoperability.

Consider a hypothetical transportation services network that matches providers of transportation services (drivers) to the consumers of transportation services (passengers), similar to the Uber network.<sup>8</sup> Note that this network is a multi-sided platform.<sup>9</sup> Suppose that a regulator mandates opening the transportation network by establishing interoperability protocols for accessing the network. Under the interoperability protocols, connecting firms may supply drivers or passengers to be matched through the network. The mandatory interoperability regime also requires establishing pricing terms for network access. These terms would determine the connecting firms' compensation for supplying drivers and passengers to the network. For example, the regulator may set network access terms where any firm supplying a driver to the network would receive a 10 percent commission, to be paid by the network operator, on any fees that the driver receives for driving a passenger matched by the network.

Implementing an effective interoperability regime implies network access terms that would allow the connecting firms to earn sufficient margins to induce their participation in the network. However, any compensation for the connecting firms in excess of the minimum necessary to induce their participation would increase the cost of network services for consumers without necessarily producing any offsetting benefits. Finding the right balance between inducing network participation and reducing

user costs can be a challenging problem for regulatory policy.

How should the regulator determine the optimal network access prices? The regulator's assessment of optimal pricing may be informed by inputs from interested parties, including potential connecting firms. However, advocacy by interested parties is unlikely to yield reliable information for determining the optimal network access pricing. Moreover, there is inherent uncertainty about the connecting firms' future costs of and revenues from providing network services. Because of this *ex ante* uncertainty, the connecting firms' *ex post* margins (for any given set of network access prices) may be either excessive or insufficient to induce participation in the network.

Suppose that the regulator sets an *ex ante* compensation level for the connecting firms.<sup>10</sup> The connecting firms' *ex post* margins may exceed the minimum necessary to induce participation in the network. But what if the *ex post* margins are insufficient to induce participation? The regulator would need to increase the connecting firms' compensation *ex post* to induce the firms to offer network services. This policy would overcompensate the connecting firms relative to the minimum necessary for participation because the regulator would only adjust the *ex post* compensation one way: upwards. There is no *ex post* downward adjustment if the connecting firms' margins are in excess of the level necessary to induce participation. Under this policy, the connecting firms may also lack incentives to invest in becoming more efficient if they expect the regulator to adjust compensation *ex post* to ensure their participation. The investments may reduce the connecting firms' *ex post* regulatory compensation.

Now suppose that the regulator sets the connecting firms' compensation *ex post* to levels that are just sufficient (but not any higher) to induce their participation in the network.<sup>11</sup> In this case, the connecting firms would lack incentives to make *ex ante* investments to reduce their costs or to improve service quality.<sup>12</sup> In the absence of regulations, these investments would result in higher margins for the connecting firms. However, under the policy of *ex post* compensation adjustment, the investments would reduce the connecting firms' regulatory compensation to levels where their margins are just sufficient to ensure participation (but not higher). This policy

8 I discuss the transportation services network example for illustrative purposes. The insights from analyzing this network apply to other types of networks.

9 See Jean-Charles Rochet & Jean Tirole, Platform Competition in Two-Sided Markets, 1 J. EUR. ECON. ASS'N 990 (2003).

10 Here, *ex ante* means prior to the connecting firms' entry as suppliers of network services.

11 Here, *ex post* means after the connecting firms' entry as suppliers of network services.

12 The regulator may also need to make some *ex ante* compensation level commitments to induce the connecting firms' initial investments in providing network services.

would lead to underinvestment in cost-reduction and quality improvement, resulting in diminished efficiency, lower service quality, less innovation, and higher prices for consumers.



***Now suppose that the regulator sets the connecting firms' compensation ex post to levels that are just sufficient (but not any higher) to induce their participation in the network***

A further complicating factor is the heterogeneity in efficiency levels among potential connecting firms. Firms that achieve greater efficiency would require less compensation to participate in a network. Whether firms are able to achieve relatively high efficiency levels may depend on whether they are able to achieve significant scale. Consider the following example. Suppose that a firm that supplies drivers to the hypothetical transportation services network achieves a relatively high level of efficiency (through scale economy). This firm incurs an average cost of \$1 per driver supplied. It requires compensation of \$1.25 per driver to induce its participation in the network. Other connecting firms cannot achieve scale and efficiency and would incur an average cost of \$3 per driver supplied. These firms require compensation of \$3.50 per driver to induce their participation in the network. The regulator may set the compensation level at \$1.25 per driver, which would induce only one firm to participate in the network as a supplier of drivers. Alternatively, the regulator may set the compensation level at \$3.50 per driver, which would induce a large number of firms to participate in the network as suppliers of drivers, including many relatively inefficient firms.

The higher compensation for the connecting firms would allow more firms to participate in the network, but it would also raise prices for consumers. Even though the lower compensation level would induce only one firm to participate in the network, it would result in lower costs for passengers. Nonetheless, regulators may see participation by only one firm as a failure of policy. Many regulators may prioritize broader participation by connecting firms, which would imply higher compensation levels but also higher costs for consumers.<sup>13</sup>

Network access price regulation also affects the network operator's margins. Regulations that limit the network operator's margins (through price controls) after the network achieves success effectively undermines the network operator's property rights. Such regulations are tantamount to a tax on innovation. The regulations would weaken innovators' incentives to develop new networks, resulting in diminished dynamic competition.<sup>14</sup> The regulations would also weaken incentives to develop new network features and improve network quality.<sup>15</sup> Reducing network operators' margins via price controls may decrease consumers' short-term costs, but it would also reduce investments in innovation and quality improvement. This would ultimately harm consumers.

The foregoing demonstrates the policy challenges in regulating network access prices. Supplanting market prices with regulated prices can harm consumers. Regulators do not have a strong record of generating benefits for consumers through price regulation.<sup>16</sup> As Justice Breyer explained, "[r]egulation is viewed as a substitute for competition, to be used only as a weapon of last resort—as a heroic cure reserved for a serious disease."<sup>17</sup>

13 Note that the DMA's stated purpose is "to contribute to the proper functioning of the internal market by laying down harmonised rules ensuring for all businesses, contestable and fair markets in the digital sector across the Union where gatekeepers are present, to the benefit of business users and end users." (DMA at 27)

14 See *United States v. Aluminum Co. of America*, 148 F.2d 416, 430 (2d Cir. 1945) ("The successful competitor, having been urged to compete, must not be turned upon when he wins.").

15 Sharing the benefits of investment with connecting firms would lead to free-rider effects and would diminish investment incentives. See Paul A. Samuelson, *The Pure Theory of Public Expenditure*, 36 REV. ECON. STAT. 387 (1954).

16 See Steven & Morrison Clifford Winston, *The Economic Effects of Airline Deregulation* (1986); Thomas Gale Moore, *U. S. Airline Deregulation: Its Effects on Passengers, Capital, and Labor*, 29 J. L. & ECON. 1 (1986); Dennis W. Carlton & Randal C. Picker, *Antitrust and Regulation*, in *Economic Regulation and Its Reform: What Have We Learned?* (Nancy L. Rose ed., 2014); and Shelanski *supra* note 2.

17 Stephen G. Breyer, *Antitrust, Deregulation, and the Newly Liberated Marketplace*, 75 CALIF. L. REV. 1005, 1007 (1987)

# 03

## NO SELF-PREFERENCE RULE

The no self-preference rule prohibits the network operator from favoring its affiliates in the choice of network service providers. This rule is necessary for effective mandatory interoperability because, absent this rule, the network operator could keep the connecting firms from accessing the network by only using affiliated network services.<sup>18</sup>

Determining whether a network operator is favoring an affiliate is not a simple matter. Consider the hypothetical transportation services network from the previous section. Suppose that the network operator identifies a passenger who requests to be driven from point A to point B. The network operator has identified two drivers willing to drive the passengers for \$20. One of the drivers is from the network operator's affiliate, and the other one is from a connecting firm. If the network operator chooses the connecting firm's driver, the network operator will pay the connecting firm a \$2 a finder's fee (under the network access price regulations). The network operator does not incur this fee when choosing the affiliate's driver.

Which driver should the network select under the no self-preference rule? The regulator may apply two different versions of the no self-preference rule. Under the first version, the network operator may take account of the additional \$2 cost when choosing between the affiliate and the connecting firm. This version of the no self-preference rule would allow the network operator to choose the affiliate's driver (assuming all other aspects of the two bids are the same). Under the second version of the no self-preference rule, the network operator cannot take the connecting firm's finder's fee into account when choosing the driver.

The first version of the no self-preference rule may pressure the connecting firms to forgo at least some portion of their finder's fee compensation. Forgoing the finder's fee compensation (or some portion thereof) would frustrate the regulator's goal of compensating the connecting firms suf-

ficiently to induce their participation in the network. Without the finder's fee compensation, the connecting firms may face a "margin squeeze" and may be forced to exit the network.<sup>19</sup> For these reasons, regulators are likely to avoid this version of the no self-preference rule. However, the second version of the no self-preference rule has significant drawbacks. This version would force the network operator to incur higher costs. The network operator would pass these costs to passengers, which would lead to higher prices for passengers, lower demand, and lower compensation for drivers.

Another important question for the enforcement of the no self-preference rule is whether the rule can properly account for differences in quality. Could the no self-preference rule allow the transportation services network operator to consider service quality in deciding between the two drivers? Would the no self-preference rule allow the network operator to select the more costly driver from the affiliate over the less costly driver from the connecting firm when the affiliate's driver is one minute closer to the passenger or is driving a slightly nicer car or has a slightly higher user rating? How would the no self-preference rule determine the tradeoff between the cost and quality of driver services? How would the rule assign weights to each quality attribute?

It would be infeasible to design the no self-preference rule that would fully account for all the potential quality differences between services of each provider.<sup>20</sup> There are too many potential quality attributes to enumerate in the rule. Enumerating all potential quality attributes would be impractical. Quality attributes are often unquantifiable. Their assessment is subjective. It would be impossible to account for such quality attributes without arbitrarily assigning value to each attribute. Some service quality attributes may be unobservable to the regulator, making it infeasible to consider these attributes in applying the no self-preference rule.

Moreover, quality attributes of services often evolve rapidly because of innovation, changes in service features and capabilities, changes in market conditions, or actions taken to address customer complaints. To account for quality differences of services in a practical way, the no self-preference rule would have to evolve rapidly to keep up with

18 It is worth noting that the interoperability mandate under the DMA is paired with a no self-preference rule. See DMA at 15. ("The gatekeepers should, therefore, be required to ensure, free of charge, effective interoperability with, and access for the purposes of interoperability to, the same operating system, hardware or software features that are available or used in the provision of its own complementary and supporting services and hardware. Such access can equally be required by software applications related to the relevant services provided together with, or in support of, the core platform service in order to effectively develop and provide functionalities interoperable with those provided by gatekeepers.")

19 See Dennis Carlton, Should "Price Squeeze" be a Recognized Form of Anticompetitive Conduct?, 4 J. COMPET. LAW ECON. 271 (2008).

20 See Sanford J. Grossman & Oliver D. Hart, The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration, 94 J. POLIT. ECON. 691 (1986); and Oliver Hart & John Moore, Property Rights and the Nature of the Firm, 98 J. POLIT. ECON. 1119 (1990).

the evolving marketplace. Given the slow pace of adoption and implementation of regulations, it is highly unlikely that the no self-preference rule could keep up with the pace of technological changes in network operations or changes in network services.<sup>21</sup>

Considering the general infeasibility of fully accounting for service quality differences in applying the no self-preference rule, it is inevitable that, in some instances, the rule will force the network operator to choose a lower quality connecting firm over the higher quality affiliate (even when the affiliate does not cost more). Ultimately, the no self-preference rule would degrade network quality.

The quality of network services may also suffer if the no self-preference rule prevents the network operator from rejecting service bids that may harm the network. In the case of the transportation services network, the connecting firms may offer drivers that have poor driving records or even criminal records. The network operator may be unaware of the red flags in the drivers' backgrounds if the connecting firms do not share this information with the network operator. Using drivers with criminal or poor driving records may degrade the whole network if passengers do not feel safe in using the network for driver services.<sup>22</sup> Degrading the quality of the transportation services network would harm passengers and reduce demand for drivers, which would likely result in lower compensation for drivers.

# 04

## CONCLUSION

Market-based (voluntary) interoperability is very different from mandatory interoperability. Market-based interoperability is the result of arm's length negotiations where parties mutually agree on pricing terms and communication protocols. In contrast, mandatory interoperability comes loaded with regulations that supplant market prices. Although mandatory interoperability creates new competition in the supply of network services, this competition is of limited benefit to consumers because the terms of this competition are fixed through regulation.

Network access price regulation and prohibition against self-preference are critical elements of a mandatory interoperability regime. Without these regulations, a mandatory interoperability regime would not be operational. However, network access price regulation and prohibition against self-preference would harm consumers. These regulations would increase costs for consumers of network services, weaken innovation incentives, degrade the quality of network services, reduce efficiency, and reduce output levels. ■

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21 See Joseph Farrell & Garth Saloner, Coordination Through Committees and Markets, 19 RAND. J. ECON. 235 (1988).

22 A connecting firm may be willing to supply low quality drivers that harm the network because the connecting firm does not have a financial interest in the network. The supply of network services can lead to a negative externality when the no self-preference rule prevents the network operator from rejecting poor quality service offerings. In this case, the connecting firm receives the benefit from supplying low quality services, but the consequence of low quality services are borne by the entire network. See Jeremy Greenwood & R. Preston McAfee, Externalities and Asymmetric Information, 106 Q. J. ECON. 103 (1991).

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