17-960-cv(L)

(and 17-983-cv(XAP))

IN THE
UNITED STATES COURT OF APPEALS
FOR THE SECOND CIRCUIT

US AIRWAYS, INC., FOR AMERICAN AIRLINES, INC.,
AS SUCCESSOR AND REAL PARTY IN INTEREST,
Plaintiff–Appellee–Cross-Appellant

v.

SABRE HOLDINGS CORPORATION, SABRE TRAVEL
INTERNATIONAL LIMITED AND SABRE GLBL INC.,
Defendants–Appellants–Cross-Appellees.

On Appeal from the United States District Court,
for the Southern District of New York (No. 11-cv-2725-LGS)

BRIEF OF DR. DAVID S. EVANS AND PROF. RICHARD SCHMALENSEE AS AMICI CURIAE IN SUPPORT OF APPELLANTS-CROSS APPELLEES

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PRELIMINARY STATEMENT[1]

Economists, Dr. David S. Evans and Professor Richard Schmalensee, file this Brief of Amici in support of Defendants–Appellants–Cross-Appellees (the Sabre parties). Pursuant to Federal Rule of Appellate Procedure 29(a)(2), no motion for leave to file this Brief of Amici is required because US Airways has consented to its filing for purposes of this Rule.[2]

Sabre and its main competitors are *firms* that operate two-sided platforms for which there is interdependent demand.[3] The purpose of this Amicus Brief is to discuss, as a matter of economics, the court's additional jury instruction and opinion regarding whether the *relevant market* is one-sided or two-sided for purposes of a vertical-restraint antitrust claim against a defendant that operates a two-sided platform.[4] The Amici are economists whose work on two-sided platforms was cited

[1] No party's counsel authored this brief in whole or in part. No party, no party's counsel, and no person other than the Amici and their counsel contributed money that was intended to fund preparing or submitting this brief. The Amici have not worked for the defendant, Sabre, in this or any other matter since at least 1990. Amici have, however, worked on other matters, for plaintiffs and defendants, in which the two-sided platform issues discussed in this brief are relevant.

[2] On July 20, 2017, Andrew Frackman, counsel for US Airways, emailed Douglas Alexander, counsel for Amici, and stated that "US Airways does not object" to the filing of this Brief.

[3] ECF No. 882 at 15 ("... the evidence was sufficient for a reasonable jury to conclude … that the relevant market … was one-sided, even though Sabre and the other GDSs are two-sided platforms.")

[4] This case is therefore similar to *U.S. v. American Express Co.*, 838 F.3d 179 (2d Cir. 2016), in which the defendant was also a two-sided platform that imposed vertical restraints on customers on one side (merchants) of that platform.

extensively by this Court in *United States v. American Express Co.*, 838 F.3d 179 (2d Cir. 2016), which also dealt with a two-sided platform, and by the court below.

In the Amici's view, the court below made two unfortunate errors that permitted the jury to exclude the competitive pressures[5] on the defendant coming from serving two interdependent groups of customers. First, the court gave the jury a definition that is not supported by the economic literature, inconsistent with well-accepted practices for defining markets, and not capable of identifying competitive pressures on a defendant platform accurately. Second, the district court's market analysis led it to exclude from consideration one side of a defendant's platform even though the platform firm faces competitive pressures from both sides of its platform.

IDENTITIES AND INTEREST OF AMICI CURIAE

David S. Evans and Richard Schmalensee are economists who individually, and as co-authors, have written extensively on the economics of two-sided platforms. Five of their publications on two-sided platforms, and the analysis of market definition, were cited in a total of seventeen references by this Court in *U.S. v. American Express*[6] and three were cited in the district court opinion below.[7]

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[5] "The purpose of market definition is 'to identify the market participants and competitive pressures that restrain an individual firm's ability to raise prices or restrict output.'" ECF No. 882 at 11 (quoting *Geneva Pharms. Tech. Corp. v. Barr Labs, Inc.*, 386 F.3d 485, 496 (2d Cir. 2004)).

[6] *See* 838 F.3d 179, at nn. 3, 6, 10-19, 31-35.

[7] *See* ECF No. 882 at 17, 21.

Evans and Schmalensee have been commissioned to write surveys concerning the antitrust economics of two-sided platforms for the ABA Antitrust Section's handbook, *Issues in Competition Law and Policy* and the *Oxford Handbook of International Antitrust Economics.* They were also commissioned to write the entry on the general economics of two-sided platforms for the New Palgrave Dictionary of Economics. Their book, *Matchmakers: The New Economics of Multisided Platforms*, which provides a non-technical introduction to this area, was published by Harvard Business Review Press in 2016. It won the Gold Medal in Economics for the 2017 Axiom Business Book Awards.

Dr. David S. Evans is Chairman of Global Economics Group, based in Boston, and Visiting Professor at University College London where he is Co-Director of the Jevons Institute for Competition Law and Economics. He has also taught antitrust economics at the University of Chicago Law School (2006-2016). He has authored or co-authored a number of articles on economic methods for defining markets involving two-sided platforms, as well as other topics in antitrust economics. He has a Ph.D. in Economics from the University of Chicago.

Professor Richard Schmalensee is Dean Emeritus and Howard W. Johnson Professor of Management Emeritus at the MIT Sloan School of Management and Professor of Economics Emeritus at the MIT Department of Economics. He is a Fellow of the Econometric Society and the American Academy of Arts and Sciences

and has served as a Member of the President's Council of Economic Advisers and of the Executive Committee of the American Economic Association. He has authored or co-authored a number of articles on two-sided platforms and antitrust economics. He has a Ph.D. in Economics from MIT.

INTRODUCTION AND SUMMARY

The case below was about Sabre's GDS. A global distribution system (GDS) is a platform that connects airlines and travel agents. GDSs charge airlines booking fees and provide financial incentives to travel agents to book flight segments through their systems. There are three major GDSs in the US, of which Sabre is one. Airlines "multi-home" by using all the major GDSs, while travel agents typically "single home" and use only one GDS.

The parties, and their economists, agreed below that the Sabre GDS is a two-sided platform, with interdependent demand between its two sides, which competes with other GDSs, which are also two-sided platforms that also have interdependent demands.[8] "Interdependent demand," put simply, means the demand by airlines for a particular GDS depends on the demand by travel agents and the demand by travel agents for a particular GDS similarly depends on the demand by airlines.

[8] ECF No. 882 at 4, 19-21. *See* Tr. 5532:14-5534:10 (Stiglitz, USAir); Tr. 4885:12-4888:1 (Murphy, Sabre).

The decision below concerned allegations that Sabre imposed vertical restraints on US Airways in violation of Section 1 of the Sherman Act.[9]

The district court instructed the jury that, "The market in this case is considered two-sided if the two sides are interdependent such that a change in price on one side of the market affects demand on the other side."[10] The court upheld the jury's conclusion that the "relevant market … was one sided, even though Sabre and the other GDSs are two-sided platforms."[11] The court found there was sufficient evidence "for the jury to conclude that the relevant product market was not two-sided and interdependent, such that benefits to the travel agent side of the market had to be considered in assessing harm to competition."[12] It used that finding as the rationale for treating GDSs in effect as one-sided businesses, ignoring competitive pressures from the travel agent sides of those businesses.

The court concluded it was reasonable to find that the market was one-sided based on expert economic testimony that the "relevant market is one-sided because the GDS services market lacks interdependence where benefits to one side depend

[9] US Airways also alleged and tried a claim that Sabre conspired with its GDS competitors to limit competition in violation of Section 2 of the Sherman Act. *Id.* at 4. The jury found in Sabre's favor on that claim, and it was not a subject of the court's decision discussed here. *Id.*

[10] *Id.* at 19 n.3.

[11] *Id.* at 15.

[12] *Id.*

on the number of people or usage on the other side."[13] The principal basis for this expert conclusion was that GDS services are a "mature market" in which all possible participants on both sides of the market have joined one or more platforms.[14]

In our view, the district court erred in two fundamental ways.

First, the court's definition of a two-sided market, which was submitted to the jury, is wrong as a matter of economics. The economic literature supports the use of the technical concept of interdependent demand faced by a *firm* to determine whether that *firm* operates a *two-sided platform* or operates a one-sided business. Once it is determined that a defendant firm operates a two-sided platform, however, the economic analysis of market definition should identify the competitive pressures on that two-sided platform, which come from serving two groups with interdependent demand and competing with other two-sided platforms for both types of customers.[15] The relevant factual inquiry regarding market definition is to

[13] *Id.* at 19.

[14] *See id.* at 20-21. In his testimony, the plaintiff's economic expert occasionally suggests that the market demand for *using* a platform, as opposed to belonging to a platform, is also fixed, but offers no theoretical or empirical support for that proposition. *See* Tr. 1377:10-21; Tr. 5541:7-5542:1. We therefore focus on the claim that there is a fixed level of market demand to join the platforms. However, we show below that the mature market theory is also wrong when it pertains to a fixed level of usage at the market level.

[15] While market definition analyses are usually framed in terms of products and geographies, modern approaches to market definition always result in a set of suppliers (or sometimes potential suppliers) deemed to impose significant competitive constraints.

identify other firms that provide those competitive pressures.[16] The economic literature on two-sided platforms, and on market definition in general, does not support applying the technical concept of interdependent demand to the *overall market* as the court did in its jury charge.

Second, the court's erroneous market analysis led it to infer that it was reasonable to exclude one side of the platform from consideration if all potential customers are members, and will remain members, of one or more platforms.[17] However, the competitive pressures on the defendant platform involve both sides of the market. This is true even in the extreme case in which all potential participants have joined one or more platforms. It is therefore not defensible as a matter of economics to exclude one side of the platform, and the customers it serves, from the relevant market. Doing so erroneously ignores the competitive pressures arising from competition for both interdependent groups of customers and the competitive impact on the excluded group. *See Geneva Pharms.*, 386 F.3d at 606 (noting the purpose of market definition is "to identify the market participants and competitive

[16] Here for example, there was an issue as to whether the relevant market included only the two GDSs that compete with Sabre, or whether it also included airline and other websites through which travelers may book flight segments.

[17] The assumption by the court, and the plaintiff's economist, is that customers have decided to join at least one platform and will not reverse that decision. From an economic standpoint, the court and the plaintiff's economist assume there is perfectly inelastic demand to belong to a platform.

pressures that restrain an individual firm's ability to raise prices or restrict output."). The trial court's error is precisely the mistake that the United States Court of Appeals for the Second Circuit condemned in *U.S. v. American Express.*[18]

[18] *See* 838 F.3d at 197-200 (holding that both sides of the market must be considered in a vertical-restraint case that deals with "the two consumer sides of a platform.").

ARGUMENT

I. Economic Background

Two-sided platforms enable two distinct types of participants to interact more readily and realize gains from trade.[19] The demand for the platform by each type of participant depends on the demand for the platform by the other type of participant. The following section outlines the basic economic features of two-sided platforms.[20]

Platform Participation

Potential platform participants typically make two distinct decisions.

1. They decide whether or not to join a platform so that they have the option to use it. In the case of a ride-sharing app, drivers have to sign on to the ride-sharing service, and passengers need to install an app and set up an account.

2. Having joined a platform, participants make decisions on how much to use it. Drivers have to decide how much to drive for a particular service. Passengers have to decide how many rides to take on that service.

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[19] Two-sided platforms are a special case of multisided platforms, which can serve two or more distinct groups of customers. For a non-technical discussion of this point and the background provided below, *see* David S. Evans & Richard Schmalensee, MATCHMAKERS: THE NEW ECONOMICS OF MULTISIDED PLATFORMS 1-4, 8-9, 14-19 (Harv. Bus. Rev. Press 2016).

[20] *See* Jean-Charles Rochet & Jean Tirole, *Platform Competition in Two-Sided Markets*, J. EUR. ECON. ASS'N, 1(4): 990-1029 (2003); Jean-Charles Rochet & Jean Tirole, *Two-Sided Markets: A Progress Report*, RAND J. ECON. 37(3): 645-667 (2006); Mark Armstrong, *Competition in Two-Sided Markets*, RAND J. ECON. 37(3): 668-691 (2006); E. Glen Weyl, *A Price Theory of Multi-Sided Platforms*, AM. ECON. REV. 100(4): 1642-1672 (2010). For nontechnical surveys, *see* David S. Evans & Richard Schmalensee, *The Antitrust Analysis of Multisided Platform Businesses*, in 1 OXFORD HANDBOOK INT'L ANTITRUST ECON. 404-448 (Roger D. Blair & D. Daniel Sokol, eds. 2014); Marc Rysman, *The Economics of Two-Sided Markets*, J. ECON. PERSPECTIVES 23(3): 125-143 (2009).

Externalities

Two-sided platforms involve externalities between two types (*A*, *B*) of participants. Customer *a*, on side *A*, benefits when she can enter into a transaction with Customer *b*, on side *B*, and vice versa. Each participant, *a* and *b*, benefits from using the same platform. Participants benefit more when they have more potential trading partners for valuable exchanges. Members of Side *A* benefit when they can enter into transactions with more possible members on Side *B*.

Economists refer to that relationship as an "indirect network effect." In this case, the demand for joining and using the platform by one group of participants depends on the demand for joining and using the platform by the other group of participants. In the case of ride-sharing apps, for example, drivers value a platform that has more riders in an area, who have the app and use it, and passengers value a platform that has more drivers, who are on the platform and available to pick them up.

Platform Prices

To maximize profits, a platform may set both access prices for joining the platform and transaction prices for using it for each set of participants.

The economic theory of two-sided platforms shows that profit-maximizing access and transaction prices can be less than the marginal cost of provision, and can even be zero or negative, subject to at least some of these prices being sufficiently

above marginal cost so that the platform earns a profit. These access and transaction prices affect the overall use of the platform. How they do so depends on the structure of demand for the participants to join the platform and to use the platform after having joined.[21]

It is common for two-sided platforms to lose money on one side of the platform.[22] Two-sided platforms sometimes provide users with incentives to use the platform, thereby resulting in negative transaction prices. OpenTable, for example, doesn't charge diners for using its app and instead gives them reward points for using its service, resulting in discounts at participating restaurants. It makes money by charging restaurants for each diner who makes a reservation through OpenTable and for software services. Thus, the literature refers to platforms having a "money side," where it makes incremental profits, and a "subsidy side," where it loses money on the margin.

Platform Longevity

The foundational theoretical papers on two-sided platforms consider the pricing decisions of platforms in equilibrium.[23] The finding that profit-maximizing

[21] The economic literature shows that transaction prices can be less than the marginal cost of provision, and even be zero or negative, even when platform membership is fixed. Rochet & Tirole, *Two-Sided Markets: A Progress Report*, at 647-50.

[22] Evans & Schmalensee, *The Antitrust Analysis of Multisided Platform Businesses* at 436-437.

[23] A related literature focuses on solving the chicken-and-egg problem for new platforms. *See* Bernard Caillaud & Bruno Jullien, *Chicken and Egg: Competition Among Intermediation*

prices can be less than marginal cost, and even zero or negative, therefore applies to platforms that have gotten both sides on board and are well past being startups.

The empirical work in support of this finding is based on industries and firms that are decades old. Shopping malls, magazines, and credit cards are a few examples of industries in which two-sided platforms have subsidized one side of the platform, through low or zero membership or usage fees, for more than 50 years.

Platforms and Markets

The economic theory of two-sided platforms pertains mainly to the behavior of individual firms that have chosen to serve two distinct groups of customers for which there is interdependent demand as a result of the externalities described above. The technical economic definition of a two-sided platform is based on the demand schedules for the individual platform by these two groups.[24]

Some early papers on two-sided platforms used the phrase "two-sided markets." The term "market" referred to the individual platform, acting as a "marketplace" between two groups of customers, and not a "market" as economists

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Providers, RAND J. ECON. 34(2): 309-328 (2003); David S. Evans, *How Catalysts Ignite: The Economics of Platform-Based Start-Ups*, in PLATFORMS, MARKETS, AND INNOVATION 99-103 (Annabelle Gawer & Edward Elgar, eds. 2009); David S. Evans & Richard Schmalensee, *Failure to Launch: Critical Mass in Platform Businesses*, REV. NETWORK ECON. 9(4) (2010).

[24] Rochet & Tirole, *Two-Sided Markets: A Progress Report*, at 648, 657.

use that term generally or as the term "relevant market" is used in antitrust.[25] This has been a source of confusion and likely contributed to the district court's confusion in this case.

The leading papers on two-sided platforms, and the surveys of this literature, have not put forward a definition of a two-sided *market* based on the interdependence of market-level demand between two groups across all competing platforms. The economic literature on market definition for two-sided platforms has focused instead on the competitive constraints coming from other two-sided platforms or in some cases one-sided firms.[26] That literature is consistent with the general economic literature on the definition of relevant markets in antitrust cases, which focuses on

[25] Rochet and Tirole, for example, use the phrase "two-sided markets" to refer informally to the situation in which "one or several platforms enable interactions between end-users." Confusingly, they also use the term two-sided market when they are referring to a platform and two-sided market when they are referring to the marketplace between the two sets of customers served by the platform. However, their classic definition of two-sidedness refers to a two-sided platform—that is a *firm* and not a *market*—as is apparent from their equations which refer to profit-maximization by a *firm*. Neither Rochet and Tirole, nor other leading authors, advance a formal economic definition of a "two-sided *market*," as the term *market* is used in antitrust. Rochet & Tirole, *Two-Sided Markets: A Progress Report*, at 645-667. Informally, one can say that a "two-sided market" is one in which two-sided platforms play an important role.

[26] David S. Evans, *"Two-Sided Markets" in Market Definition*, in ANTITRUST: THEORY AND CASE STUDIES 437-470 (ABA Book Pub., Section of Antitrust Law, 2012). For a specific example in the newspaper industry, *see* Elena Argentesi & Marc Ivaldi, *Market Definition in Printed Media Industries: Theory, Practice, and Lessons for Broadcasting*, in THE ECON. REG. OF BROADCASTING MARKETS 225-254 (Paul Seabright & Jurgen von Hagen, eds., Cambridge Univ. Press 2007).

identifying the significant competitive constraints on the firm, or firms, whose practices are at issue.[27]

II. Economic Analysis of the Lower Court's Decision on One-Sided versus Two-Sided Markets

When a firm operates a two-sided platform, sound economic analysis must consider both sides of the platform in analyzing its business practices and their implications for consumers and competition. The platform is serving two different groups of customers; those customers are linked as a result of their interdependent demands; and the profit-maximizing prices and customers' welfares are linked as well.

A simple example drawn from antitrust shows why both sides of the platform must be considered. Suppose a two-sided platform engages in vigorous competition with other two-sided platforms, and that competition prevents any platform from earning supra-competitive profits. It is nonetheless possible, even likely, that each platform charges the customers on one side of its platform a price significantly higher than marginal cost and the customers on the other side of the platform a price significantly below marginal cost.

[27] David S. Evans, *Lightening up on Market Definition*, in RESEARCH HANDBOOK ON THE ECON. OF ANTITRUST LAW 53-89 (Einer Elhauge & Edward Elgar, eds. 2012).

In these circumstances, looking at an individual platform from just one side would imply it is charging either a supra-competitive price (since price is significantly higher than marginal cost on one side) or a predatory price (since price is significantly below marginal cost on the other side). Yet, because of the assumption of vigorous competition, the individual platform has no market power to raise overall prices in the market served by all the competing platforms. If it reduced the subsidy, for example, customers on that side would switch to other competitors and thereby reduce the value of the platform to the money side. This reduction would lead to a further drop off on the money side. Competition from other platforms would therefore deter the platform from setting prices to the money and subsidy sides that could result in supra-competitive profits in the absence of interdependent demand.

Policy interventions that change the price on one side of a two-sided platform can, as a result of interdependent demand, change the welfare of customers on the other side. There may be both winners and losers. The policy intervention could reduce welfare overall if winners gain less than losers sacrifice.

In some circumstances, for some questions regarding platforms, it is possible that the two-sided nature of competitive constraints won't affect the answer, but there is no way to know that without carefully considering both sides and their interdependencies. In the case below, the court adopted an analytical framework

that allowed the jury to ignore one side of a platform without any of the above considerations, and thereby make findings that defy sound economics.

A. Market Definition When the Competing Firms Are Two-Sided Platforms

In this case, all agreed that the Sabre GDS and its two main rivals operated two-sided platforms for which there was interdependent demand between airlines and other travel providers on one side and travel agents on the other side. For the reasons stated above, sound economic analysis would thus have to take into account both sides of the platforms and their interdependencies before a jury could determine whether Sabre's conduct was anticompetitive. There is no defensible economic basis for excluding one group of customers served by the platform by, for example, permitting a jury to define a market that disregards a critical group (e.g., travel agencies) from consideration. Doing so prevents the consideration of relevant competitive constraints *on the defendant platform*, its overall market power, its ability to harm competition, and the effect of its actions on customer welfare for the two interdependent groups. That's the error this court sought to guard against in *U.S. v. American Express*. *See* 838 F.3d at 197-200.

The district court, contrary to accepted economic principles, instructed the jury that, "The market in this case is considered two-sided if the two sides are interdependent such that a change in price on one side of the market affects demand on the other side." But the interdependent demand test used by economists applies

to an individual *firm*, not the overall *market*, for the purpose of assessing whether that *firm* is a two-sided platform. There is no basis in the economics of two-sided platforms for applying the interdependent demand test at the *overall market level* to conclude that the *market* in which two-sided-platform *firms* compete is one sided.

Amici agree with the court that, "[t]he ultimate goal of defining the relevant market remains 'to identify the market participants and competitive pressures that restrain an individual firm's ability to raise prices or restrict output.'"[28] The court's instruction, unfortunately, does not help the jury achieve that goal—either as a matter of logic or of economics. When a firm operates a two-sided platform it faces competitive pressures that restrain its ability to raise prices or restrict output that generally depend on both sides of the platform, as discussed above. Those competitive pressures on an individual platform arise regardless of the nature of overall market demand. They necessarily arise so long as the firm operates a two-sided platform.

Suppose, for example, that there are competing shopping malls. If one mall decided to reduce its subsidy to shoppers—by charging for parking or reducing amenities, for example—some of those shoppers would shift their demand to other malls. Because of that fall in traffic, lowering the subsidy would in turn reduce the

[28] ECF No. 882 at 18 (quoting *Geneva Pharms.*, 386 F.3d at 496).

demand by retailers for locating at that mall and therefore the rents the mall could charge. Competitive pressures therefore constrain the mall's ability to profitably lower the subsidy to shoppers. Those competitive pressures arise because the shopping mall is a two-sided platform and faces competition from other shopping malls for retailers and shoppers. Those competitive pressures do *not* depend on the overall demand by retailers and shoppers. For example, an individual shopping mall would face those exact same competitive pressures if the total amount of transactions between shoppers and retailers across all malls were fixed. A lower subsidy by a mall to shoppers would shift transactions to other malls.

There is no support in the economic literature, or plausible rationale, for using the interdependent demand definition that determines whether a *firm* is a two-sided platform to eliminate participants and competitive pressures that restrain an individual firm's ability to raise prices or restrict output from the relevant *market*. As is normal in the case of market definition, the analysis must start with the defendant and consider *all* the significant competitive constraints it faces. In the case of a two-sided platform, those competitive constraints generally arise from competition for the interdependent customers on both sides of the platform.[29]

[29] *See* David S. Evans & Michael D. Noel, *Defining Antitrust Markets When Firms Operate Two-Sided Platforms*, 2005 COLUM. BUS. L. REV. 667-702 (2005); Evans, *"Two-Sided Markets" in Market Definition*, at 437-470; OECD, *Policy Roundtables: Two-Sided Markets* (2009). Two-sided platforms may face competitive pressures from one-sided firms. A relevant antitrust market can therefore consist of mixtures of two-sided platforms and one-sided firms. Retail distributors,

B. Market Definition When There Is Perfectly Inelastic *Market* Demand for Joining

Given its definition of one- and two-sided markets, the court found it reasonable to conclude that the market in this case was one-sided. The court relied, for that assumption, on expert economy testimony that the "relevant market is one-sided because the GDS services market lacks interdependence where benefits to one side depend on the number of people or usage on the other side."[30] The principal basis for this expert conclusion was that GDS services are a "mature market" in which all potential participants on both sides of the platform have joined and will not leave.[31] The following are relevant excerpts from the economic testimony the court cited in support of this finding:

- "Accordingly, all, or almost all traditional travel agents are already linked to the airlines through a GDS, and vice versa."[32]
- "Because all or almost all travel agents are already users of a GDS platform, these incentives serve only to keep travel agents loyal to a particular GDS…. GDS payments to travel agents do not increase demand for GDS services and do not expand the market."[33]

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for example, could operate as traditional resellers (one-sided) or operate marketplaces (two-sided). We see online retail distributors in the same line of commerce employing both models.

[30] ECF No. 882 at 19.

[31] *Id.* at 20-21.

[32] *Id.* at 19.

[33] *Id.* at 20.

- "Once the potential consumers on both sides of the platform have joined, it no longer promotes competition, or benefits both sides of the platform, for one side of the platform (the airlines) to pay another set of customers (the travel agents) to join the platform. Doing so no longer grows the market."[34]

Even if these assertions were true,[35] they do not provide a sound economic basis for excluding one side of a platform from the relevant market, which, as the district court notes, identifies competitive pressures that restrain an individual firm's ability to raise prices or restrict output.

Consider the extreme situation contemplated by the plaintiff's economic expert, in which there is perfectly inelastic demand to join platforms on both sides side of the market. That is, a fixed number of participants on both sides will join one or more platforms regardless of price. In this case, membership demand at the *market* level by each group is independent of the demand by the other group, regardless of price.

In this extreme case, individual platforms would still impose competitive pressure on each other through both sides across the overall market. Suppose, to track the GDS case, that one group of customers multi-homes on all platforms (the airlines) and the other group of customers single-homes on one platform (the travel

[34] *Id.*

[35] The notion that the number of travel agents using GDS and their demand for GDS services are completely independent of the incentives provided to agents is implausible in light of both theory and experience in other markets.

agents). The price charged by an individual platform to the single-homing group (the travel agents) determines the extent to which travel agents join that platform versus competing platforms. That in turn determines how much the multi-homing group (the airlines) would pay for access to that platform.

Thus assuming, following plaintiff's economic expert, that the GDS platform services *market* embodies the extreme case of perfectly inelastic membership demand on both sides, if an *individual platform* charged the travel agents too much (or subsidized them too little) it could lose all of those customers, and the airlines would have no reason to join that platform. That result is consistent with perfectly inelastic demand at the market level because all members of both sides would still join one of the remaining (competing) platforms. But, in this extreme hypothetical case, there would be one less platform competing at the overall market level.

There is a further critical reason two-sided platforms impose competitive market pressure on each other through both sides of their platforms even were there perfectly inelastic membership demand at the market level. Once they have joined platforms, participants make decisions on how much to *use* platforms. Each platform faces competitive pressures from the other platforms for transaction volume. To continue the example above, if a GDS platform reduced its per-transaction subsidies to the travel agencies, those travel agencies would tend to conduct fewer transactions with it (since the effective price of doing so has gone up)

and those travel agencies would then have incentives to switch to a platform with better terms.

Consider the case of shopping malls discussed above. Suppose that every retailer has a store at all competing malls and that all shoppers go to at least one mall. If a mall reduced its subsidy to shoppers, those shoppers would tend to go to other malls instead. Shopping malls generally charge stores a percentage of transaction volumes. The mall that reduced the subsidy to consumers would make less money from retailers since its usage fees would go down. The competitive pressures arise even if there is perfectly inelastic demand by retailers to join every mall—that is to have a store at every mall.

Each two-sided platform would face competitive pressures from the others, arising from both sides of the platform, even in the implausible case that at the market level there was perfectly inelastic demand to join platforms *and* perfectly inelastic demand for transactions on platforms. To continue the previous example, suppose every store operates in every mall, *and* shoppers have a fixed amount of money they spend at malls, so their market-level demand for using malls is perfectly inelastic. It is still the case that a mall that reduced the subsidy to shoppers would

get fewer shoppers and earn lower transaction fees because it faces competitive pressures from the other shopping malls.[36]

C. The "Mature Market" Theory

The court credited the proposition that, "When the market becomes mature, it ceases to be interdependent and two-sided in the economic sense."[37] In addition to testimony by the plaintiff's economic expert, the court cites a claim from an economist's article. Using payment cards as an example, that article asserts "… no additional network effects can be generated once most buyers already use payment cards and most merchants accept payments cards. Therefore, *policy conclusions of two-sided market models should be confined to immature markets.*"[38] The article cites no support from the economic literature on two-sided platforms, a theoretical proof of this proposition based on an economic model, or anything beyond mere assertion.

The first part of this assertion, which applies to the *overall market*, may or may not be true. Even if it is, however, the second part about policy conclusions is

[36] The district court states the "Plaintiff presented evidence that the GDS platform does not provide value (or cause indirect network effects) in the ways that two-sided markets typically do." ECF No. 882 at 21. That statement appears to confuse the role of a two-sided platform and the relevant market that identifies the competitive pressures on that platform. The publications, cited by the court that we authored, pertain to individual platforms and not to an overall market.

[37] ECF No. 882 at 21.

[38] ECF No. 882 at 20 n.4 (emphasis added by court).

quite wrong. As demonstrated above, even if it were true that all potential participants had joined one or more platforms at the overall market level, individual two-sided platforms would still compete, on both sides, for participants to join and use their platforms. The economic theory of two-sided platforms applies to firms in equilibrium and is not restricted to immature markets as claimed by this economist.[39] Ignoring this economic fact can (and here, did) lead to an erroneous antitrust policy conclusion.

III. Two-Sided Platforms and the Economy

Two-sided platforms are an ancient business model, going back at least to the village matchmaker, and courts have encountered these businesses for many years without calling them two-sided platforms. Amici believe, however, that two developments merit the Court's attention in making sure that market definitions, and other parts of antitrust analysis, reflect valid economic principles and "encompass the realities of competition" for two-sided platforms. *See Balaklaw v. Lovell*, 14 F.3d 793, 799 (2d Cir. 1994).

[39] The court also cites an article that says that, "By its nature, a network externality is likely to become less important … as a network matures." ECF No. 882 at 20 n. 4. This broad assertion seems plausible in some cases, but we know of no theoretical or empirical work that supports it generally. Moreover, nothing in the theory of two-sided platforms depends on indirect network effects being unlimited. The predictions of the theory apply, based on common experience, to many markets where network effects must not be unlimited since those markets support multiple two-sided firms.

First, two-sided platforms have become highly significant participants in the economy. Five of the largest businesses in the world based on market capitalization earn much of their revenue from operating two-sided platforms (Amazon, Apple, Facebook, Google, and Microsoft). Many other Internet-based businesses operate two-sided platforms, and these are growing in importance. Other companies, associated with the gig-economy and the sharing economy, which are causing significant disruptions (such as Airbnb, Lyft, and Uber), are two-sided platforms. Because of advances in computation and communications technologies and the widespread deployment and use of high-speed Internet connections, the courts are likely to encounter more cases involving these businesses over time, and it is therefore important to have a sound analytical framework for analyzing cases involving two-sided platforms.

Second, economists have made considerable progress, beginning with the seminal paper by Jean-Charles Rochet and Jean Tirole, which began circulating in 2000, in understanding the economic and business realities of two-sided platforms. There is a significant body of rigorous theoretical and empirical work that provides robust results that can help the courts apply antitrust principles to these businesses. This work has shown that the two sides of these platforms are often inextricably intertwined and that it is not possible, as a matter of sound economics, to consider one side yet ignore the other.

CONCLUSION

In *U.S. v. American Express*, this Court recognized that it was a mistake to exclude one side of a two-sided platform from the relevant market. In the case below the district court made that mistake in concluding that a market consisting of two-sided platforms is nevertheless one sided, so that one side of a two-sided platform can be excluded from the relevant market. Amici believe this Court should reverse the lower court to re-affirm the tight link between valid economic theory and antitrust law.

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Respectfully submitted,

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I certify that:

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