

ARTICLE

AIRLINE ALLIANCES AND SYSTEMS COMPETITION

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I. INTRODUCTION

A centerpiece of the contemporary transatlantic aviation industry is the airline alliance. Alliances involve partnership agreements between domestic and foreign airlines serving transatlantic markets that extend cooperation to levels of integration that in some cases can mimic those of a full-fledged merger (or joint venture).¹ Airline alliances present a unique policy tension between U.S. transportation regulation and antitrust enforcement. For example, the Department of Transportation (DOT) supports a process of aviation liberalization designed to increase competition in international aviation markets through the expanded use of Open Skies agreements.² At the same time, DOT grants antitrust immunity for coordinated operations among alliance members operating in

1. See TRANSP. RESEARCH BD., NAT'L RESEARCH COUNCIL, ENTRY AND COMPETITION IN THE U.S. AIRLINE INDUSTRY: ISSUES AND OPPORTUNITIES 146 (1999) [hereinafter TRB REPORT] (noting the proposed alliance between KLM and Northwest was "[a]s a practical matter . . . a merger of their transatlantic operations").

2. See OFFICE OF THE SEC'Y, U.S. DEP'T OF TRANSP., INTERNATIONAL AVIATION DEVELOPMENTS: GLOBAL DEREGULATION TAKES OFF 4 (1999), available at <http://ostpxweb.dot.gov/aviation/Data/globalderegtake.pdf> [hereinafter GLOBAL DEREGULATION] (noting the Department of Transportation's (DOT) policy "recognizes the underlying network economics of the industry and seeks to enable U.S. airlines to become early and significant players in th[e] globalization process").

liberalized markets, including the coordinated determination of fares and international route structures.³ In granting antitrust immunity, DOT therefore must weigh the proconsumer benefits of network efficiencies and other cost savings created by alliances against the potential anticompetitive effects of increased coordination among actual or potential competitors.

At the urging of the U.S. Department of Justice (DOJ), DOT denied in late 2005 a request for antitrust immunity that essentially included the combined transatlantic operations of two of the four alliances—Northwest/KLM (Wings) and Delta/Air France (SkyTeam).⁴ Among other important policy questions, the decision revisited DOT's original goal of granting immunity when it promotes end-to-end competition among rival alliances, and therefore, more passenger options for international service.⁵ As individual transatlantic alliances become larger and fewer, the balancing of proconsumer and anticompetitive effects necessarily becomes a more difficult and controversial exercise. Among other things, it highlights the multifaceted nature of competition affected by alliances, including the potential: (1) diminution of horizontal competition in overlapping gateway-to-gateway

3. See TRB REPORT, *supra* note 1, at 146–47 (analyzing the influence of airline alliances on competition in the marketplace).

4. Order to Show Cause at 34, Joint Application of Alitalia-Linee Aeree Italiane-S.p.A, No. OST-2004-19214-195 (Dep't of Transp. Dec. 22, 2005), available at <http://www.regulations.gov/fdmspublic/component/main?main=DocumentDetail&o=09000064802c22c4>. The request for immunity was prompted by the 2004 merger of Air France and the Netherlands-based KLM. *Id.* at 4. After DOT issued its Order to Show Cause, the parties filed a motion in January 2006 to withdraw their immunity request without prejudice. Joint Applicants' Response to Show Cause Order 2005-12-12 and Motion to Dismiss at 1–2, Joint Application of Alitalia-Linee Aeree Italiane-S.p.A, No. OST-2004-19214-201 (Dep't of Transp. Jan. 11, 2006), available at <http://www.regulations.gov/fdmspublic/component/main?main=DocketDetail&d=DOT-OST-2004-19214>. Subsequent to the completion of the U.S.–E.U. Open Skies Agreement in 2007, the members of the proposed expanded SkyTeam alliance filed again for antitrust immunity. Joint Application for Approval of and Antitrust Immunity for Alliance Agreements, Joint Application of Alitalia-Linee Aeree Italiane-S.p.A, No. OST-2007-28644-1 (Dep't of Transp. June 28, 2007), available at <http://www.regulations.gov/fdmspublic/component/main?main=DocketDetail&d=DOT-OST-2007-28644>. That request is pending. Press Release, European Comm'n, Competition: European Commission and U.S. Department of Transportation Launch Joint Research Project on Airline Alliances (Mar. 18, 2008), available at <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/08/459&format=HTML&aged=0&language=EN&guiLanguage=en>. However, Air France, KLM, Delta, and Northwest identify themselves as SkyTeam members on their websites. See, e.g., Delta, <http://www.delta.com> (last visited Apr. 10, 2008) (displaying the SkyTeam logo on Delta's website).

5. TRB REPORT, *supra* note 1, at 149 (discussing the desirability of “cooperative arrangements among international carriers”).

markets; (2) foreclosure of rival access to alliance-dominated hubs; and (3) insufficiency of end-to-end competition between alliances, also known as “interalliance” or “systems” competition.⁶

This Article explores the foregoing facets of rivalry between airline alliances. It provides current perspective on DOT’s objective of promoting interalliance competition in transatlantic alliance markets and the thorny issue of antitrust immunity that lies at its heart. Given the inherent tradeoffs between the proconsumer and anticompetitive forces that immunization of airline alliances creates (particularly in light of other international aviation policy considerations), a cost/benefit framework is useful. Among other things, such an assessment sheds some light on whether interalliance competition is still a relevant policy goal; if sufficient interalliance rivalry exists to ensure that blanket immunity from the antitrust laws is not, on balance, harming consumers; and how problematic requests for immunity can be addressed.

The Article proceeds in six parts. Part II provides a general discussion of systems competition and its relationship to airline alliances and antitrust immunity. Part III analyzes the horizontal and vertical competitive issues that arise in alliance operation and expansion. Part IV examines the empirical evidence accumulated thus far on the likely competitive effects of alliances and their implications for systems competition. Part V takes up the question of whether there is sufficient interalliance competition to ensure benefits to consumers. Part VI concludes with policy issues and recommendations.

II. AIRLINE ALLIANCES AND SYSTEMS COMPETITION

A. *Alliances as Systems*

Systems are becoming a pervasive feature of the New Economy, bolstered by the most recent wave of consolidation, joint ventures, and other forms of agreements in the transportation, energy, media, agriculture, and high technology sectors.⁷ Systems are characterized by two or more

6. In network-based industries, intersystem rivalry is also referred to as “end-to-end” or “facilities-based” competition. See Christopher S. Yoo, *Would Mandating Broadband Network Neutrality Help or Hurt Competition?: A Comment on the End-to-End Debate*, 3 J. TELECOMM. & HIGH TECH. L. 23, 30, 37 (2004) (explaining arguments pertaining to the end-to-end and facilities-based competition debates in the context of the broadband industry).

7. For more discussion of merger activity and the New Economy, see generally

complementary markets, linked together via interfaces.⁸ The interface promotes complementarity and compatibility, or the ability of the components to work together to provide bundled or unbundled products or services.⁹ Depending on the type of system, the interface is the technology, software, a set of facilities, or operational standards or protocols that facilitate interconnection, interoperability of the system components, or both.

Bundled products produced in a systems context include, for example, electricity delivered to end users, rail shipping, or scheduled airline passenger service that is purchased from a single supplier. Increasingly, multiproduct bundles are emerging as a feature of systems competition. For example, telecommunications companies now offer packages that include three to four services, including local telephone, wireless telephone, broadband Internet access, and cable television. Rivals in the online airline-reservation system markets, such as Expedia and Orbitz, also offer bundled services, including airfare, hotel, and rental car reservations.

Figure 1:
Interconnected Star Network



Systems-based products and services are produced in physical transportation-based networks (i.e., configured around explicit nodes and links) or in physical or virtual systems without

John Cantwell & Grazia D. Santangelo, *The Boundaries of Firms in the New Economy: M&As as a Strategic Tool Toward Corporate Technological Diversification*, 17 *STRUCTURAL CHANGE & ECON. DYNAMICS* 174 (2006) (noting the increase of mergers and acquisitions and evaluating the use of mergers and acquisitions as a tool to reshape corporate technological boundaries); Lars-Hendrik Röller & Christian Wey, *Merger Control in the New Economy*, 5 *NETNOMICS* 5 (2003) (arguing that network effects are a central feature of the New Economy).

8. See, e.g., Michael L. Katz & Carl Shapiro, *Systems Competition and Network Effects*, 8 *J. ECON. PERSP.* 93, 93 (1994) (providing an economic analysis of the influence that systems and networks have on competition in the marketplace).

9. *Id.*

network properties.¹⁰ In physical networks, complementarity is achieved by interconnecting individual system components. These components can be, for example, a generator interconnected to a high voltage transmission grid or a series of geographic segments, each of which is itself a collection of supply and demand nodes. As shown in Figure 1, the hub-and-spoke design (“star” configuration) of domestic airline networks fits this model, as do transatlantic airline alliances that connect U.S. and European hubs in gateway-to-gateway markets. The two shaded nodes represent gateways or major U.S. or European cities (e.g., New York, Washington D.C., London, Paris), while the unshaded nodes represent destinations behind the gateway (e.g., St. Louis, Charlotte) or beyond the gateway (e.g., Lyon, Geneva).¹¹

Networked systems often display supply-side economies, experienced when incremental utilization of system components lowers average costs.¹² In airline hub-and-spoke networks, for example, there are significant cost economies resulting from increased traffic density, particularly as they induce increased passenger volumes on hub-to-hub flight segments.¹³ These economies lower unit costs as the carrier pushes more traffic through routes that connect through a hub.¹⁴ High fixed costs and capacity constraints at hub nodes also imply that dominant carriers at hub facilities may potentially wield significant market power. In aviation markets, this is particularly true if the hub airports face significant constraints with respect to landing slots, gate facilities, and other infrastructure. Market power also may develop inherently as a result of higher service quality (including increased flight frequency) and greater “connectivity” that a dominant carrier at the hub provides.

Many networked and non-networked systems also display demand-side economies or network effects.¹⁵ These economies occur when the value to any given user increases as additional

10. See, e.g., Diana L. Moss, *Lessons Learned and Policy Recommendations*, in NETWORK ACCESS, REGULATION AND ANTITRUST 255, 256–57 (Diana L. Moss ed., 2005) (differentiating between physical networks and virtual networks).

11. Assuming a west-to-east travel pattern.

12. Diana L. Moss, *Preface to Part I*, in NETWORK ACCESS, REGULATION AND ANTITRUST, *supra* note 10, at 13, 14.

13. See Jan K. Brueckner, *The Economics of International Codesharing: An Analysis of Airline Alliances*, 19 INT’L J. INDUS. ORG. 1475, 1478 (2001).

14. *Id.*

15. Moss, *supra* note 10, at 15.

users join the system.¹⁶ Apart from air transportation, network effects are evident in, among other industries, telephony and software/hardware.¹⁷ For example, when an airline adds service between its hub and a new location to accommodate passengers at that location, it also creates new service offerings between that location and all other locations that can be reached through its hub.¹⁸ This benefit, which is fundamental to hub-and-spoke airline networks, enhances the value of the network for many other types of passengers. Similar benefits are experienced when additional demand allows an airline to add another flight between two locations, as passengers traveling between those locations enjoy potential benefits arising from increased flight frequency.

Codesharing arrangements between airlines and other alliance functions can facilitate network effects to the extent they promote coordination of schedules, route expansion, and the appearance of increased flight frequency.¹⁹ Collectively, these efficiencies increase traveler convenience, access to low volume markets, and loyalty to particular carriers or alliances. However, the self-reinforcing process of network effects, when coupled with strategic consolidation that expands the size of the network, can create dominance at certain hubs.²⁰

B. Systems and Competition

Competitive issues involving systems arise in two important contexts: (1) within-system or “intrasystem” competition; and (2) between-system or “intersystem” competition. In the case of intrasystem competition, rival providers of one “component” of the system may seek access to an interface controlled by a vertically integrated system owner. Such access is a necessary condition for competing in one of the complementary markets

16. *Id.*

17. Katz & Shapiro, *supra* note 8, at 94 (discussing the importance of consumer coordination in public telephone and software networks).

18. Christopher Mayer & Todd Sinai, *Network Effects, Congestion Externalities, and Air Traffic Delays: Or Why Not All Delays Are Evil*, 93 AM. ECON. REV. 1194, 1195 (2003).

19. To a lesser extent, codesharing enhances the value of frequent flyer programs and airport amenities.

20. In some cases, the presence of strong network effects can result in “tipping” to a single product, service, standard, or technology. Switching costs and consumer lock-in play a significant role in tipping. *See, e.g.*, Joseph Farrell & Paul Klemperer, *Coordination and Lock-In: Competition with Switching Costs and Network Effects* 10 (Centre for Econ. Policy Research, Discussion Paper No. 5798, 2006).

that comprise the system. “Access” problems encountered by nonintegrated, rival sellers or marketers of natural gas, electricity, and local telecommunications services created the impetus for reforms in those traditionally regulated sectors.²¹ For example, wholesale competition in electric generation was aided by requirements that mandated open access to the transmission system, where transmission facilities were provided by electric utilities that frequently owned generating plants in competition with independent power producers.²² Attempts to encourage local telecommunications competition were predicated on rulings that required incumbent local exchange carriers to make portions of their network accessible to their rivals.²³

Intrasystem competition also arises in nonregulated sectors. For example, software developers require access to application programming interfaces (APIs) that allow their programs to run on top of the operating system platform.²⁴ Rival producers of industrial inks, biotechnology, and other inputs also require access to patented technologies or software that facilitates compatibility with other equipment, technology, or software or the finished products themselves. With respect to air transportation, a nonalliance carrier may seek to interconnect with an alliance carrier through a common network location when the alliance carrier serves a particular city that is not served by the nonalliance carrier.

“Access” issues factor prominently in key antitrust cases such as *Verizon Communications Inc. v. Law Offices of Curtis V. Trinko, LLP*, *Eastman Kodak Co. v. Image Technical Services, Inc.*, *Otter Tail Power Co. v. United States*, and *United States v.*

21. See Diana L. Moss & Peter Fox-Penner, *Introduction*, in NETWORK ACCESS, REGULATION AND ANTITRUST, *supra* note 10, at 1, 3 (noting that mixed model network industries such as electricity transmission, telecommunications, and gas pipelines “have often been the subject of deregulation, whereby price regulation in complementary products markets is lifted or softened and/or regulation of the network moves from cost-based to performance-based”).

22. See Diana L. Moss, *Electricity Transmission*, in NETWORK ACCESS, REGULATION AND ANTITRUST, *supra* note 10, at 91, 91 (observing how wholesale markets are now more competitive by “the system of compulsory access that promotes rival generators’ access to the transmission systems of vertically-integrated utilities”).

23. See Jonathan L. Rubin, *Local Telecommunications*, in NETWORK ACCESS, REGULATION AND ANTITRUST, *supra* note 10, at 121, 125–26 (explaining the Telecommunications Act of 1996).

24. See *United States v. Microsoft Corp.*, 147 F.3d 935, 939 (D.C. Cir. 1998) (“Each operating system’s APIs are unique; hence applications tend to be written for particular operating systems.”).

*Microsoft Corp.*²⁵ In antitrust, the access problem is typically framed as a refusal to deal or other exclusionary practice under section 2 of the Sherman Act.²⁶ Such practices are potentially employed for the purpose of leveraging market power to another level in a vertically integrated system.²⁷ If harmful exclusionary behavior is unchecked by the antitrust laws, it has the potential effect of creating a “closed” system that is relatively impervious to access by rivals (i.e., intrasystem competition).

As a result, the antitrust agencies and courts are pressed to balance efficiencies resulting from economies of coordination in integrated systems against the potential anticompetitive effects of hindering rival access to key system components. Exclusionary conduct in a systems context is becoming a more complex issue as innovation and the protection of intellectual property rights are offered as rationales for protecting system interfaces from rival access. This creates a natural tension between antitrust law and intellectual property law, as evident in cases such as *Illinois Tool Works, Inc. v. Independent Ink, Inc.* and in the recent merger of Monsanto, Delta, and PineLand.²⁸

In contrast to the focus of intrasystem competition on rivalry at a given level of a vertically integrated system, intersystem competition involves competition *between* systems producing products or services that are close substitutes. A number of

25. See, e.g., *Verizon Commc'ns Inc. v. Law Offices of Curtis V. Trinko, LLP*, 540 U.S. 398, 401 (2004) (considering whether Verizon's refusal to share its network with its competitors violated section 2 of the Sherman Act); *Eastman Kodak Co. v. Image Technical Servs., Inc.*, 504 U.S. 451, 454–55 (1992) (deciding whether Kodak's policies of limiting the availability of parts to repair organizations was unlawful); *Otter Tail Power Co. v. United States*, 410 U.S. 366, 370–71 (1973) (adjudicating whether Otter Tail's refusal to deal with retail outlets violated antitrust law); *Microsoft*, 147 F.3d at 939 (addressing whether software developers could access APIs to allow their programs to run on top of an operating system platform).

26. See, e.g., *Trinko*, 540 U.S. at 407–08 (illustrating a claim that an access problem violated section 2 of the Sherman Act, which bars firms from monopolizing or attempting to monopolize).

27. See *Eastman Kodak*, 504 U.S. at 483 (denying Kodak's motion for summary judgment based upon the plaintiff's claim that “Kodak took exclusionary action to maintain its parts monopoly and used its control over parts to strengthen its monopoly share of the Kodak service market” in violation of section 2 of the Sherman Act).

28. See *Ill. Tool Works, Inc. v. Indep. Ink, Inc.*, 547 U.S. 28, 41 (2006) (demonstrating the manner in which antitrust law and intellectual property law may conflict); see also Diana Moss, Am. Antitrust Inst., Tunney Act Comments in *Monsanto/Delta and Pine Land* (Aug. 27, 2007), available at http://antitrustinstitute.org/documents/Monsanto_DPL/AAI%20Tunney%20comments_Monsanto_DPL.pdf (explaining competitive issues raised by the merger). See generally Complaint, *United States v. Monsanto Co.*, No. 07-992 (D. D.C. May 31, 2007).

industries exhibit some degree of systems competition, including stock exchanges, automated teller machines, and multichannel video programming distribution (e.g., cable versus digital broadcast satellite).²⁹ In network-based markets, systems are seen in railroads and wireless telephony. The proliferating numbers and types of systems resulting from vertical and horizontal consolidation and changes in technology raise competitive issues with greater frequency, posing new issues for regulators and antitrust enforcement.

For example, DOT's policies toward encouraging development of competing transatlantic alliances (i.e., approvals of codesharing and grants of antitrust immunity) were shaped strongly by the agency's early recognition that they were effectively systems.³⁰ However, DOT's approach to alliances was arguably predicated on the development of multiple, viable competing systems sufficient to ensure choice for consumers and inject competitive discipline in transatlantic markets. The absence of such conditions puts DOT's policy on grants of antitrust immunity to the test.

For example, robust interalliance competition in key markets could temper concerns about problematic access to alliance hubs by nonalliance carriers and therefore, antitrust immunity. On the other hand, if intersystem competition is viewed as insufficient by regulators and antitrust enforcers, immunity decisions would necessarily focus more on the effects of further alliance expansion, consolidation, and ensuring rival access to interlining services provided by alliance carriers. These policy considerations arise under conditions where many argue there is inefficient fragmentation of the international air transportation market, resulting from two major factors.³¹ One factor is the constraint on market entry created by the patchwork

29. See Donald I. Baker, *Automated Teller Machines*, in NETWORK ACCESS, REGULATION AND ANTITRUST, *supra* note 10, at 178, 178–82 (discussing the various competitive aspects of the automated teller industry).

30. See OFFICE OF THE SEC'Y, U.S. DEP'T OF TRANSP., INTERNATIONAL AVIATION DEVELOPMENTS: TRANSATLANTIC DEREGULATION: THE ALLIANCE NETWORK EFFECT 1–2, 5 (2000), available at <http://ostpxweb.dot.gov/aviation/Data/transatlantdereg.pdf> [hereinafter TRANSATLANTIC DEREGULATION] (discussing the positive effects for airline network services derived from Open Skies bilateral agreements).

31. See KENNETH J. BUTTON, CATO INST., OPENING U.S. SKIES TO GLOBAL AIRLINE COMPETITION 1, 2, 5 (1998), available at <http://www.freetrade.org/pubs/pas/tpa-005.pdf> (arguing that “bilateral air service agreements . . . prevent[] the economies of hub-and-spoke operations from being fully realized” and that restrictions on foreign-owned airlines reduce efficiency of airline services).

of bilateral aviation agreements between the United States and individual countries.³² Restrictions on foreign ownership of airlines are a second factor.³³

C. Antitrust Immunity and Airline Alliances

Immunitations and exemptions from the antitrust laws have attracted increasing scrutiny in recent years. Longstanding exemptions for regulated industries,³⁴ professional sports,³⁵ and the various sectors of the transportation industry³⁶ have come under fire by skeptics of their benefits.³⁷ Much of this debate coalesced in the report and recommendations of the Antitrust Modernization Commission (AMC). In its 2007 findings the AMC looked askance at immunity, noting:

[S]tatutory immunity from the antitrust laws should be disfavored. Immunities should rarely (if ever) be granted and then only on the basis of compelling evidence that either (1) competition cannot achieve important societal goals that trump consumer welfare, or (2) a market failure clearly requires government regulation in place of competition.³⁸

International airline alliances are one of the primary beneficiaries of antitrust immunity. The industry has enjoyed

32. See Gabriel S. Meyer, Note, *U.S.–China Aviation Relations: Flight Path Toward Open Skies?*, 35 CORNELL INT'L L.J. 427, 433 (2002) (noting that in 2002 there were more than 1,200 bilateral trade agreements in existence).

33. See 49 U.S.C. §§ 40102, 44101, 44102 (2000) (requiring that U.S. citizens hold at least 75% of the voting shares of a domestic airline).

34. The filed-rate doctrine and state-action doctrine limit the role of federal antitrust law in regulated markets. The filed-rate doctrine (also known as the *Keogh* doctrine) originated in *Keogh v. Chicago & Northwestern Railway*, 260 U.S. 156 (1922). It prevents a private plaintiff from pursuing an antitrust action seeking treble damages involving a rate they claim was the result of an antitrust violation if that rate was submitted to, and approved by, a regulator. *Keogh*, 260 U.S. at 162. The state-action doctrine was created by the Supreme Court to identify instances in which a state's decision to displace competition with regulation overrides the application of federal antitrust law. See *Parker v. Brown*, 317 U.S. 341, 351–52 (1943).

35. See 15 U.S.C. § 1291 (2000) (exempting the NHL, NBA, NFL, and MLB from antitrust laws that would otherwise prohibit the leagues from participating in league-wide television contracts).

36. See 49 U.S.C. § 10901(c) (2000) (dictating the appropriate means for authorizing railroad construction and operation).

37. For a general discussion of antitrust immunity and professional sports, see Stephen F. Ross, *Antitrust, Professional Sports, and the Public Interest*, 4 J. SPORTS ECON. 318 (2003).

38. ANTITRUST MODERNIZATION COMM'N, REPORT AND RECOMMENDATIONS, at viii (2007).

numerous grants of immunity for market alliances between domestic and foreign airlines approved by DOT since the early 1990s.³⁹ Currently, international air travel is dominated by three global alliances: Star Alliance (United/Lufthansa), SkyTeam (Delta/Air France/Northwest/KLM), and oneworld (American/British Airways). Two of these three alliances (all but oneworld) have immunity from U.S. antitrust laws to jointly set prices and allocate capacity on those international routes covered by the immunity grants.⁴⁰

Whether transatlantic alliances could pass the AMC's set of tests for grants of immunity is debatable. Few would argue that there is an inherent market failure in airline markets that necessitates regulation in place of competition.⁴¹ The more relevant question is whether immunization is required for alliances to achieve objectives that may take precedence over consumer welfare. For example, immunized alliances provide a way for airlines to work around bilateral air-services restrictions, foreign ownership restrictions, and national laws that may otherwise impede market efficiency. In addition, the U.S. government has used antitrust immunity as a carrot to induce foreign governments to liberalize their international aviation markets by making immunity conditional on the existence of an Open Skies arrangement with the foreign carrier's home country.⁴²

The DOT approved the first immunized alliance in 1992, between Northwest and KLM (Wings), after the Netherlands agreed to Open Skies with the United States—the first such accord.⁴³ Similarly, DOT's approval of immunity for Star Alliance

39. 49 U.S.C. §§ 41308, 41309, 42111 (2000) (illustrating the immunity granted by the DOT to domestic and foreign airline alliances).

40. Arguably, alliance relationships create new opportunities for facilitating coordinated interaction among carriers. Immunized alliances can and do share profits from international operations among their members, which can lead to a tight form of horizontal coordination within the alliance itself. Technically, an application requesting joint immunity for the four principal SkyTeam members is still pending. Press Release, *supra* note 4. However, Air France and Delta enjoy antitrust immunity to jointly set fares and coordinate activities, as do KLM and Northwest. Daniel Michaels, *Delta and Air France Partnership to Send Ripples Across Atlantic*, WALL ST. J., June 23, 1999, at A23. Moreover, Air France and KLM have merged. Eric Sivers, *Italy Fires Alitalia's Board and Seeks New Investors*, N.Y. TIMES, May 7, 2004, at W1.

41. For relevant discussion on the justifications of airline regulation, see generally Michael E. Levine, *Why Weren't the Airlines Reregulated?*, 23 YALE J. ON REG. 269 (2006).

42. TRB REPORT, *supra* note 1, at 148–49, 152.

43. Order to Show Cause at 1–3, Joint Application of Northwest Airlines, Inc. and KLM Royal Dutch Airlines, No. OST-95-579-24 (Dep't of Transp. Nov. 16, 1992).

followed Germany's entry into an Open Skies arrangement in 1996.⁴⁴ So, one might argue that the grant of antitrust immunity has been part of a "package deal," conditioned on aviation liberalization that has produced benefits for consumers (and arguably for certain U.S. air carriers). Implementation of the broad-based 2007 U.S.–E.U. Open Skies Agreement at the end of March 2008 (pending ratification) is likely to raise even more questions about the relative effects of aviation liberalization policy and antitrust immunity.⁴⁵

III. COMPETITIVE ISSUES SURROUNDING ALLIANCES

Notwithstanding its strategic value in promoting aviation liberalization, antitrust immunity is a double-edged sword with the potential to harm as well as help competition. On the benefit side, the formation of an immunized alliance can lead to lower airfares for interline traffic because alliance partners can coordinate pricing and share revenue. In theory, each partner "internalizes" the effect of its fare on demand for travel on the other leg of the interline route, resulting in the elimination of double marginalization (i.e., successive markups). Immunized alliances also facilitate the scheduling of connecting flights and related activities such as gate location and baggage handling. The improvement in connections can stimulate passenger demand and permit carriers to offer service across a wider and more efficient network (the "network effect").⁴⁶

On the cost side, the formation of an immunized alliance results in direct horizontal consolidation. This may eliminate competition among alliance members on the same gateway-to-gateway routes and with respect to connecting routes, where passengers may connect through the hub airports of alternate alliance members. A grant of antitrust immunity also enhances the incentive for, and ability of, alliance members to engage in

44. The seventy-plus Open Skies agreements the U.S. government has negotiated since 1992 represent a major and unambiguous source of economic benefits to U.S. consumers. In other work, we have quantified the consumer gains from transatlantic Open Skies agreements, specifically, and estimated the additional benefits that a fully deregulated transatlantic market would bring. *See generally* BOAZ MOSELLE ET AL., THE BRATTLE GROUP, THE ECONOMIC IMPACT OF AN EU–US OPEN AVIATION AREA (2002), available at http://www.brattle.com/_documents/UploadLibrary/ArticleReport2198.pdf.

45. *See* Press Release, *supra* note 4 (explaining the E.U.–U.S. Air Transport Agreement).

46. *See* GLOBAL DEREGULATION, *supra* note 2, at 4; TRANSATLANTIC DEREGULATION, *supra* note 30, at 2, 4.

exclusionary behavior such as discriminatory interline access designed to divert connecting passengers from a nonalliance partner carrier to an alliance partner carrier.⁴⁷ In addition to the direct harm to competition in connecting markets, access discrimination can cause indirect harm in gateway-to-gateway markets because nonpartner carriers, deprived of connecting passengers, are forced to reduce capacity. These competitive concerns are discussed in more detail in the following Section.

A. *Elimination of Horizontal Competition*

1. *Concerns Over Immunity.* The formation of immunized international alliances allows carriers to combine their individual networks to create an extended network with more seamless service. On the other hand, the formation of an immunized alliance eliminates direct competition between alliance partners on certain overlapping city pairs. Frequently, this overlap involves nonstop service between two international gateways, one that is the hub of a specified alliance member and the other that is the hub of another alliance partner. As early as 1996, the DOJ warned of a potential adverse effect on travelers in mainline, gate-to-gate markets where the alliance partners would otherwise compete (the “horizontal effect”).⁴⁸ The DOJ also emphasized that a “preferred provider” relationship among the members of an immunized alliance, while improving the efficiency of the alliance partners, could foreclose competing carriers from access to those inputs necessary to interline (the “vertical effect”).⁴⁹

47. A transatlantic carrier—let us call it E.U. Air—is usually indifferent to which airline brings a connecting passenger across the Atlantic. But if E.U. Air is part of a revenue-sharing alliance, it can benefit if the transatlantic passenger arrives on a partner airline. Thus, E.U. Air has an incentive to “inconvenience” interlining passengers arriving on nonpartner carriers by, for example, raising prorate charges (the charge to another airline for carrying one of its passengers on the connecting segment of the trip) or reducing seat availability. Exhibit 1 to Answer of American Airlines, Inc. at 10–11, Joint Application of Alitalia-Linee Aeree Italiane-S.p.A, No. OST-2004-19214-97 (Dep’t of Transp. June 24, 2005), available at <http://www.regulations.gov/fdmspublic/component/main?main=DocumentDetail&o=09000064802c23e9> [hereinafter Exhibit 1].

48. Anne K. Bingaman, Assistant Attorney Gen., Antitrust Div., Dep’t of Justice, Address Before the American Bar Association Forum on Air and Space Law: Consolidation and Code Sharing: Antitrust Enforcement in the Airline Industry (Jan. 25, 1996), transcribed at <http://www.usdoj.gov/atr/public/speeches/speech.akb.htm>.

49. *Id.* More generally, the Antitrust Division was skeptical that global airline alliances should receive antitrust immunity, as Bingaman stated succinctly: “It is not necessary for code share partners to receive antitrust immunity for any agreement that would not violate the antitrust laws; and conduct that would violate the antitrust laws

In 1999, the Transportation Research Board (TRB) of the National Academy of Sciences issued a report on competition in the U.S. airline industry.⁵⁰ Although the group was split on its original research question of DOT's appropriate role (separate from that of DOJ) in enforcing domestic competition, the panel members expressed a unified view on other issues. One such issue was the advent of immunized international airline alliances, which the report characterized as "alarming."⁵¹ The TRB panel noted the change over time in DOT's rationale for immunizing international alliances.⁵² For example, in granting immunity to the Northwest/KLM alliance in 1993, DOT aimed to "strengthen the competitive position of two relatively minor transatlantic airlines."⁵³ By 1996, however, when it approved the United–Lufthansa and Delta–Sabena–Swiss Air alliances, "DOT's emphasis was on creating competing alliances to offer fare and service alternatives for connecting passengers."⁵⁴

The TRB report's conclusions underscored DOJ's concern that immunity grants would have anticompetitive effects in dense gateway-to-gateway markets and cautioned that barriers to entry such as airport slots could magnify such effects.⁵⁵ The panel also endorsed DOJ's view that a carve-out of overlapping routes would not eliminate the risk, as "codesharing airlines might compete less aggressively in price or capacity in overlapping markets, to avoid undermining the agreement on connecting traffic."⁵⁶

2. *Alliance Expansion and Implications for Interalliance Competition.* After the formation of the principal alliances in the 1990s, alliances have more recently attempted to increase in size by adding new members. This includes the attempt to combine the SkyTeam and Wings alliances into an immunized "mega-SkyTeam" alliance.⁵⁷ While Air France has effectively acquired KLM, which naturally may argue for combining Air France and KLM in the same immunized alliance, no current immunized

should not be permitted, much less immunized." *Id.*

50. TRB REPORT, *supra* note 1.

51. *Id.* at 5.

52. *Id.* at 147.

53. *Id.* at 146–47.

54. *Id.* at 147.

55. *Id.* at 149–50.

56. *Id.* at 150.

57. See Order to Show Cause, *supra* note 4, at 1–2.

alliance contains more than a single U.S. carrier.⁵⁸ Thus, the combination of Delta and Northwest within the same alliance that enjoys antitrust immunity with respect to its international operations raises an attendant concern—the implicit coordination between the two U.S. carriers with respect to purely domestic traffic (and with respect to domestic passengers on international journeys), including decisions regarding where to add (or not to add) additional domestic flight capacity.⁵⁹

For that reason, as well as the potential diminution of interalliance competition on certain transatlantic origin-destination pairs, DOT denied the initial application for expanded SkyTeam antitrust immunity. DOT's denial of this application, however, was consistent with concerns expressed by DOJ as to the prospect of anticompetitive behavior arising on U.S. domestic routes as a result of conveying antitrust immunity on international routes to Delta and Northwest.⁶⁰ Since that decision, and in light of the U.S.–E.U. Open Skies Agreement becoming effective in 2008 (with its elimination of entry restrictions for European carriers into other European transatlantic markets), SkyTeam has reapplied for approval of antitrust immunity for its proposed expanded alliance.⁶¹ As of this writing, that request is still pending before DOT.⁶²

The concern remains, however, whether there may be anticompetitive spillovers into domestic markets if two or more U.S. carriers become members of the same immunized alliance.⁶³ Monitoring agreements that convey antitrust immunity on international operations to prevent spillovers into purely domestic routes would admittedly be a tough challenge and an unwelcome burden for antitrust authorities. Star Alliance (United/Lufthansa and others), has petitioned successfully in the past few years to add Austrian, Swiss, LOT, and others to its membership.⁶⁴

58. *Id.* at 2, 4.

59. *See id.* at 12, 16 (discussing concerns of American Airlines and DOJ).

60. *Id.* at 16.

61. Joint Application for Approval of and Antitrust Immunity for Alliance Agreements, *supra* note 4, at 1–2.

62. Press Release, *supra* note 4.

63. For example, U.S. Airways is engaged in certain coordinated activities with members of the Star Alliance (e.g., codesharing) although it does not receive antitrust immunity as a member of that alliance. If, hypothetically, the Star Alliance applies to include U.S. Airways as an immunized member, the concern about domestic market spillovers would again arise.

64. *See* Final Order at 1, Joint Application of the Austrian Group, No. OST-2005-

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The Star Alliance expansion raises an interesting policy question. One might expect that greater cost savings from horizontal and vertical integration can be achieved by combining transportation networks that are in close geographic proximity to one another relative to networks that have extremely limited or no geographic overlap. At the same time, however, networks that are generally in close proximity and overlap at certain locations may impose the most competitive discipline on one another's pricing and service quality. This includes the likelihood that a nearby air transportation network may face the lowest incremental costs in expanding its service to serve a new origin-destination market when a geographically proximate competitor increases its prices or lowers its service quality in that market.

For the foregoing reason, policymakers must carefully weigh the costs and benefits of alliance expansion to include airlines that operate from locations relatively close to existing alliance hubs. In the case of Star Alliance, one might argue that Austrian, Swiss, and LOT offered potentially attractive alternatives to Lufthansa's Frankfurt hub in reaching locations in central and eastern Europe. Alliance expansion, therefore, potentially eliminates carriers that could otherwise join a competing alliance, thus contributing to interalliance rivalry. This has important implications for antitrust remedies regarding alliances.

B. Vertical Issues—Discrimination and Foreclosure by Immunized Alliances

1. *Concerns Over Exclusionary Behavior.* While the TRB's report expressed concern about the direct elimination of competition in gateway-to-gateway markets resulting from the formation of immunized alliances, the panel convened by the TRB arguably expressed the greatest concern about possible exclusionary effects:

Moreover, the longer-term effects of these alliances may be exclusionary, ultimately forcing some unaffiliated U.S. airlines out of international markets by diverting their feed traffic and weakening their overall route structures to the detriment of domestic competition. An issue that deserves

22922-55 (Dep't of Transp. Feb. 13, 2007), available at <http://www.regulations.gov/fdmspublic/component/main?main=DocumentDetail&o=09000064803842d5> (approving antitrust immunity for alliance agreements among Air Canada, Austrian, bmi, LOT, Lufthansa, SAS, Swiss, TAP, and United).

explicit attention is whether these expanding alliances are compatible with longer-range international aviation goals, such as unrestricted entry and competition by the most efficient carriers on a multilateral or global basis.⁶⁵

The TRB's warning about exclusionary effects echoed DOJ's expressed concern about the potential for immunized alliances to raise rivals' input costs or foreclose them from access to inputs necessary to offer interline service from a specific origination point to a destination that lay beyond a transatlantic (or transpacific) gateway.⁶⁶ "Alliance carriers can increase an interline carrier's costs by increasing their interconnection ('prorate') charges, reducing seat capacity, or through other activities [e.g., seat assignments, baggage handling] that inconvenience connecting passengers."⁶⁷

Because immunity allows alliance members to share revenue or profits, a given alliance member potentially benefits from actions it takes to shift business away from nonallied carriers to fellow alliance members. U.S. carriers handling passenger traffic bound for destinations that lie beyond the scope of their international networks are potentially vulnerable to such "access discrimination" when they must interface with foreign carriers that offer connections to those destinations but belong to another alliance. The potential anticompetitive impact of rival cost-raising behavior with respect to interline traffic can be felt not only by passengers who are flying beyond (or originating behind) transatlantic or transpacific gateways but also by passengers who are not making connections.

If nonallied carriers flying to alliance hubs (or alliance members flying to other alliances' hubs) encounter rising costs and declining profitability on interline flights, then their decisions regarding gateway-to-gateway flight capacity and fares

65. TRB REPORT, *supra* note 1, at 5. The body of the report elaborated on panel members' concern:

A longer term issue is whether the number of international alliances—each of which is developing into a large, multicarrier alliance—will ultimately dictate the number of U.S. carriers that can maintain international operations, possibly reducing the number of domestic airlines capable of survival. . . . The absence of unaffiliated carriers abroad, or even of carriers willing to interline, raises the possibility that independent U.S. airlines might be weakened and possibly would not survive.

Id. at 150–51.

66. Bingaman, *supra* note 48.

67. Exhibit 1, *supra* note 47, at 10.

also are affected.⁶⁸ For these reasons, gateway-to-gateway passengers may ultimately be disadvantaged by an alliance carrier offering discriminatory access to its network. For example, when a European alliance carrier increases interline charges to a U.S. transatlantic nonalliance carrier for transporting passengers from (or to) its European hub to (or from) other European or overseas locations, the profitability of transatlantic flights to that hub is necessarily reduced for the U.S. carrier because its net revenues (i.e., revenues net of interline charges) decline with respect to “through” passengers.

If this revenue reduction from increased interlining charges is sufficiently large, the U.S. carrier’s incremental profits from offering a particular transatlantic flight (or flights) could decline sufficiently to make the flight (or flights) unprofitable.⁶⁹ If this occurs, the nonalliance carrier has an incentive to withdraw some of its transatlantic gateway-to-gateway capacity. In this fashion, both connecting and gateway-to-gateway passengers can be adversely affected by a European alliance member’s decision to discriminate against nonmember carriers in providing access to its network. An immunized alliance’s strategy of “raising rivals’ interlining costs” could therefore result in increased profits for the alliance with respect to connecting and gateway-to-gateway passengers. As this outcome becomes more likely, the incentive necessarily increases for alliance carriers to act anticompetitively in granting access to their networks. The consumer harm resulting from this strategy also increases.

2. *Conditions Necessary for Raising Rivals’ Costs.* Certain conditions are necessary for an immunized alliance to be able to threaten or execute an effective strategy of raising rivals’ interlining costs at a particular gateway. First, outside carriers must have few alternatives to interlining with an alliance member carrier that has a hub at that gateway. Second, the strategy will be more successful if connecting passengers cannot readily be diverted to other gateways. Finally, the effectiveness of the strategy depends on the importance to a rival of connecting traffic. A gateway that enjoys a larger volume (and/or higher

68. This Section contains information reproduced from a document prepared for American Airlines by James Reitzes, Dorothy Robyn, and Kevin Neels of The Brattle Group. Exhibit 1, *supra* note 47. American Airlines used this document as an exhibit in an application for antitrust immunity submitted to the Department of Transportation.

69. Revenue reduction from higher interlining charges would be large if sufficient numbers of the U.S. carrier’s passengers to that hub are connecting passengers.

ratio) of local traffic will be less susceptible to a raising rivals' cost strategy.

A strategy of raising rivals' costs to divert transatlantic passengers is unlikely to be successful in the United States. There are a number of international gateways, and key gateways are served by multiple network carriers. Thus, an interlining European carrier would likely have several options among U.S. carriers in securing connecting service to a U.S. destination that it does not directly serve. However, the current market structure in Europe is arguably more conducive to anticompetitive behavior of this type. For example, individual national carriers (e.g., Air France, Lufthansa, KLM) operate extensive networks to and from their respective hubs, and they account for a predominant share of transatlantic traffic connecting through their hubs, particularly traffic that is destined for a location within the same country as the hub. Moreover, most of these carriers are members of immunized alliances. Finally, many European destination points are more conveniently served through a particular European gateway and the number of less convenient, but possible alternative, gateways is limited.

3. *Hubs as Potential Essential Facilities and Implications for Interalliance Competition.* Related to the vertical market power issues described above (i.e., the ability of an alliance carrier to discriminate against outside carriers with respect to the offering of interlining services) is the general question of whether market efficiency is enhanced when a carrier operating an extensive network from a particular hub airport enters into an alliance. If access to the network operating from that hub is an essential component of serving particular origin–destination pairs, then integration between the carrier operating from the hub and a carrier offering complementary network components could produce lower costs, lower fares, and enhanced services. At the same time, multiple carriers may be able to offer substitutable network components that can be combined with the “dominant” hub carrier’s network to offer connecting service from a particular origination point to a particular destination point. The question therefore arises as to whether the formation of an immunized alliance involving the hub carrier and one or two other carriers may lead ultimately to exclusionary behavior that results in fewer carriers offering service to and from that connecting hub than might otherwise be the case. Even if there are fewer carriers offering service, the question still remains as to whether the efficiencies engendered by the airline alliance lead

to lower fares and better service, notwithstanding the associated exit of certain competitors to the alliance.

If, in fact, multiple carriers offer somewhat substitutable (but nonetheless differentiated) networks that connect with the hub, it is unclear what is gained by the “dominant” hub carrier from inducing the exit of a carrier that might otherwise provide feed traffic. One exception to this is when that carrier provides competitive service to either the hub carrier’s own service or that of its alliance partners in serving a particular city pair. Certainly, there is no obvious reason why the dominant hub carrier would seek to avoid interlining with a carrier that is serving an origination or destination point not directly served by either the hub carrier or its alliance partners. To the extent that it is essential to interline with the dominant hub carrier to serve a particular origin or destination point, the dominant carrier can extract monopoly rents through the prorate charges it levies on all carriers seeking connections to that location without directly forcing any individual carrier to exit that city-pair market.⁷⁰ Of course, the dominant hub carrier cannot extract monopoly rents in setting prorate charges for serving a particular destination when it is also convenient to connect to that destination through other hub locations.⁷¹

However, a dominant carrier serving a hub may want to limit the interconnecting opportunities that it provides to outside carriers—those carriers that are not members of its alliance—if it believes that doing so inhibits the development of a competing network operating from that hub. As mentioned previously, the denial or limiting of interconnecting service may be a profitable strategy for the dominant hub carrier if it forces a carrier outside its alliance to stop offering long-haul international service into the hub in competition with either the hub carrier or its alliance partners.⁷² Moreover, while interalliance competition limits the potential for consumer harm in connecting markets that are conveniently served by several alliances,⁷³ connecting passenger traffic that is effectively “captive” to a specific alliance’s hub may be harmed as a result of access discrimination by the carrier dominating the hub.⁷⁴

70. Exhibit 1, *supra* note 47, at 40 (discussing prorate charges among hubs).

71. *See id.*

72. *See supra* Part III.B.1.

73. *See* Exhibit 1, *supra* note 47, at 40.

74. One example is New York–Toulouse, which is more conveniently served by

IV. EVIDENCE ON ALLIANCE PERFORMANCE AND
IMPLICATIONS FOR INTERALLIANCE COMPETITION

A. *Early Findings on the Net Benefits of Alliances*

Despite the potential for competitive harm stemming from alliance formation that might result from horizontal and vertical effects, early studies concluded that the impact of immunized alliances was highly beneficial on balance. For example, using pre-2000 data on transatlantic interline fares, Brueckner and Whalen found that alliance partners charged fares that were 18% to 29% below those charged by nonallied airlines, presumably due to elimination of double marginalization.⁷⁵ Park and Zhang found evidence that alliances have increasing market power at their hubs but lower fares from departures at such hubs offset this effect.⁷⁶

While these results might lead one to believe that alliances engender significant efficiencies that produce lower air fares, there is another possible explanation for the Brueckner–Whalen results that would produce the opposite conclusion. Allied carriers may offer lower fares than nonallied carriers because of strategies used by allied carriers to raise the costs of nonallied carriers. Hypothetically, if one were looking at the air fares for a New York–Paris–Lyon trip, one might find that the SkyTeam (Delta/Air France) alliance offers lower fares than a nonallied combination consisting of some other airline and Air France. However, the higher fares offered by nonallied carriers may be the result of a higher “prorate” charge set by Air France when it interlines with carriers other than Delta. Whether the formation of an immunized alliance is, on balance, beneficial to competition

connections through Paris.

75. Jan K. Brueckner & W. Tom Whalen, *The Price Effects of International Airline Alliances*, 43 J.L. & ECON. 503, 528 (2000); see also Brueckner, *supra* note 13, at 1494 (concluding that benefits of airline alliances, such as reduced fares in interline markets, outweigh any negative impacts that may arise); Jan K. Brueckner, *International Airfares in the Age of Alliances: The Effects of Codesharing and Antitrust Immunity*, 85 REV. ECON. & STAT. 105, 117–18 (2003) (determining that codesharing and antitrust immunity both serve to reduce interline fares paid by international passengers).

76. Jong-Hun Park & Anming Zhang, *An Empirical Analysis of Global Airline Alliances: Cases in North Atlantic Markets*, 16 REV. INDUS. ORG. 367, 380–81 (2000) (finding a pattern of increased passenger volume as well as decreased fares on routes served by allied airlines); see also Volodymyr Bilotkach, *Price Competition Between International Airline Alliances*, 39 J. TRANSP. ECON. & POL'Y 167 (2005) (arguing that alliances with antitrust immunity benefit passengers and finding that alliances lead to lower fares for interline passengers).

would require determining whether fares on a given route were generally lower (or service quality higher) with an immunized alliance than without such an alliance. To help answer this question, one could examine whether granting antitrust immunity to an alliance was associated with lower fares after controlling for other relevant factors.

In addition to the above evidence, DOT disseminated two widely discussed papers in 1999 and 2000 that analyzed changes in transatlantic traffic and fares associated with alliance formation and the bilateral Open Skies agreements that were the precursors to such alliances.⁷⁷ DOT's studies indicated that the formation of immunized alliances was associated with substantial output expansion by the participating carriers.⁷⁸ Moreover, significant fare reductions had been achieved in markets where immunized alliances operated relative to markets where those alliances did not operate (i.e., transatlantic markets where there was no Open Skies agreement).⁷⁹ These output and price effects were particularly pronounced with respect to connecting traffic—precisely where one would expect alliances to generate the largest efficiency benefits.⁸⁰ From this evidence, DOT concluded that alliances were highly beneficial to competition and consumer welfare.⁸¹

B. Later Findings on the Net Costs of Alliances

Part of the difficulty in determining whether granting broad-based antitrust immunity to international airline alliances has produced net societal benefits is that the grant of immunity followed almost immediately after an Open Skies agreement became effective between the United States and the European alliance member's home country.⁸² Thus, the question naturally arises as to whether any resulting fare benefits or output expansion was attributable to the formation of the immunized

77. GLOBAL DEREGULATION, *supra* note 2; TRANSATLANTIC DEREGULATION, *supra* note 30.

78. GLOBAL DEREGULATION, *supra* note 2, at 6–8; TRANSATLANTIC DEREGULATION, *supra* note 30, at 3–5.

79. GLOBAL DEREGULATION, *supra* note 2, at 13–15; TRANSATLANTIC DEREGULATION, *supra* note 30, at 5–6.

80. GLOBAL DEREGULATION, *supra* note 2, at 9; TRANSATLANTIC DEREGULATION, *supra* note 30, at 6.

81. GLOBAL DEREGULATION, *supra* note 2, at 5–6; TRANSATLANTIC DEREGULATION, *supra* note 30, at 2–3.

82. TRB REPORT, *supra* note 1, at 148–50.

alliance or the increased competition that resulted from the Open Skies agreement. Those agreements typically replaced entry-restricting bilateral agreements between the United States and the specified country.⁸³

A notable exception involved the receipt of antitrust immunity for the SkyTeam alliance (Delta/Air France). Although SkyTeam received antitrust immunity shortly after the U.S.–France Open Skies Agreement was signed in 2002, it was well after the completion of a substantially liberalized 1998 U.S.–France bilateral agreement, which represented a major step toward Open Skies.⁸⁴ Thus, an examination of fare effects after SkyTeam received its antitrust immunity represents a situation where the impact of alliances can be assessed with less interference from the impact of aviation liberalization.

Pursuant to a DOT filing by American Airlines that opposed the proposed addition of KLM, Northwest, and other carriers to the immunized SkyTeam alliance, Reitzes, Robyn, and Neels (RRN) performed a regression analysis that examined the fare impacts associated with granting antitrust immunity to SkyTeam members in 2002.⁸⁵ The study controlled for a variety of economic factors, including changes in jet fuel costs, exchange rates, income in the origin and destination markets, and seasonal and annual effects that were general to all transatlantic routes.⁸⁶ RRN found that the granting of antitrust immunity to SkyTeam members was associated with a fare increase of 5.1% on trips originating from a U.S. transatlantic gateway city (e.g., New York) and terminating at a French transatlantic gateway (e.g., Paris).⁸⁷ Similarly, they found that the granting of antitrust immunity was associated with a 3.9% fare increase on trips originating from a U.S. city that was not a U.S. transatlantic gateway and terminating at a French transatlantic gateway city.⁸⁸ SkyTeam's receipt of antitrust immunity was not associated with a statistically significant fare impact for

83. *Id.* at 148.

84. BOAZ MOSELLE ET AL., *supra* note 44, at 1-5 n.10.

85. Motion for Leave to File and Surreply of American Airlines, Inc., Joint Application of Alitalia-Linee Aeree Italiane-S.p.A No. OST-2004-19214-186, available at <http://www.regulations.gov/fdmspublic/component/main?main=DocumentDetail&o=09000064802c22ac> [hereinafter Surreply].

86. *Id.* at 13–14.

87. *Id.* at 15–16.

88. *Id.*

transatlantic trips that extended beyond French gateways to other destinations in France.⁸⁹

RRN focused on the fare impacts on routes involving French destinations, in comparison to other destinations, because the SkyTeam alliance arguably faces less robust competition from other alliances when serving French destinations as opposed to other European destinations. Thus, analyzing the fare effects to French destinations in comparison to other European destinations allows one to specifically focus on the benefits or costs of granting antitrust immunity to a specified alliance, such as SkyTeam, on routes where other alliances offer less competitive discipline.

In this context, the RRN results make intuitive sense. Statistically significant fare increases are associated with granting antitrust immunity on gateway-to-gateway routes (and behind-to-gateway routes), which are the routes on which carriers in an immunized alliance “would have the greatest degree of overlap in their networks.”⁹⁰ Thus, that is where one would expect a grant of antitrust immunity to have the strongest horizontal effects.⁹¹ “Note that gateway-to-gateway routes also tend to serve many more passengers than the other route categories,” and therefore “the impact of changes in gateway-to-gateway fares is more significant than changes on other routes.”⁹²

The RRN findings suggest the lessening of direct horizontal competition when transatlantic competitors form an immunized alliance can produce fare increases and significant losses in consumer welfare, specifically for trips terminating at the gateway hub of the European member of that alliance. In such instances, interalliance competition may have the least ability to discipline prices because the European participants in other alliances have their hubs in other countries and can only reach the European hub of a competing alliance by connecting through their own hub. However, liberalization of air traffic rights occurring in 2008 under the U.S.–E.U. Open Skies Agreement will soon allow E.U. carriers to fly from any E.U. gateway to the United States.⁹³ This Agreement will allow carriers such as Air France—which currently can only offer nonstop service to the United States from France—to begin offering nonstop

89. *Id.*

90. *Id.* at 15.

91. *Id.*

92. *Id.*

93. Air Transport Agreement art. 3, Apr. 30, 2007, 46 I.L.M. 470, 472–73.

transatlantic service from other European gateways.⁹⁴ Other E.U. carriers such as Lufthansa, Virgin, British Airways, and KLM, will be allowed to do the same.⁹⁵

C. Changing Alliance Performance

The DOT's procompetitive impression of immunized alliances relied particularly on the findings of its 1999 and 2000 studies. The studies were aimed at comparing fare performance in U.S. transatlantic markets where there was an Open Skies agreement with those U.S. transatlantic markets where no such agreement existed.⁹⁶ As mentioned previously, the focus on Open Skies versus non-Open Skies markets was due to the fact that an Open Skies agreement was a necessary precondition for DOT to grant antitrust immunity to an alliance between a U.S. carrier and a carrier from a specified foreign country.⁹⁷ Hence, immunized alliances operate in Open Skies markets.

The DOT used data from its *Passenger Origin and Destination Survey* to analyze changes over time in fares and traffic in four broad categories of origin–destination markets:⁹⁸

1. *Gateway-to-Gateway* (G-G): travel from a U.S. gateway to a European gateway (e.g., New York City to Paris).
2. *Behind-Gateway-to-Gateway* (B-G): travel from behind a U.S. gateway to a European gateway (e.g., Ithaca, New York to Paris).
3. *Gateway-to-Beyond-Gateway* (G-B): travel from a U.S. gateway to beyond a European gateway (e.g., New York City to Lyon, France).
4. *Behind-Gateway-to-Beyond-Gateway* (B-B): travel from behind a U.S. gateway to beyond a European gateway (e.g., Ithaca, New York to Lyon, France).

94. *Id.*

95. *Id.*

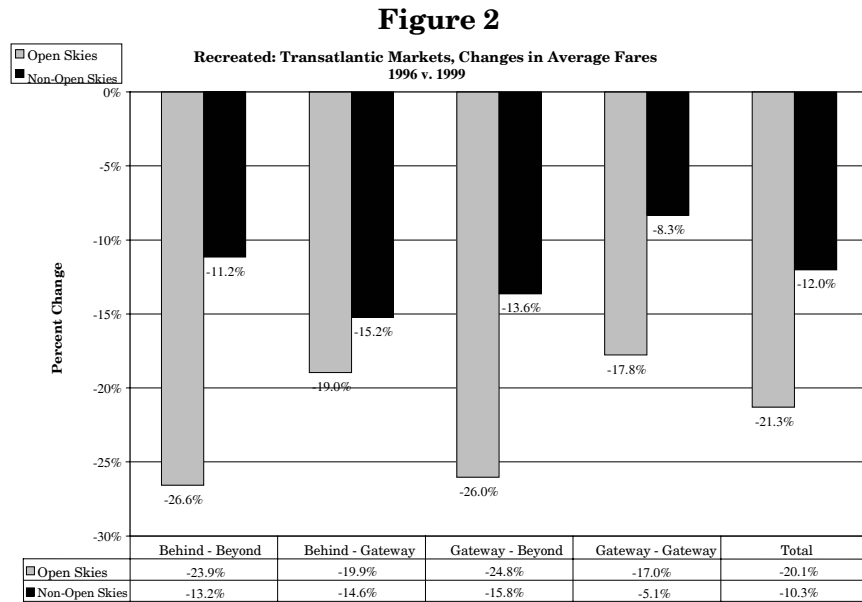
96. GLOBAL DEREGULATION, *supra* note 2, at 2–3; TRANSATLANTIC DEREGULATION, *supra* note 30, at 5–6.

97. *See supra* notes 42–44 and accompanying text.

98. Data included in the survey is obtained from U.S. carriers. *See* GLOBAL DEREGULATION, *supra* note 2, at 16 (explaining analytical methodology employed throughout the study); TRANSATLANTIC DEREGULATION, *supra* note 30, at 2 (noting use of same methodology as 1999 study).

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The DOT's 2000 report analyzed fare trends from 1996 through 1999.⁹⁹ Results indicate that fares in transatlantic Open Skies markets—the markets dominated by immunized alliances—went down by 20% overall, with the declines approaching 25% in connecting markets to destinations beyond European gateways.¹⁰⁰ Although fares in non-Open Skies markets also fell during that period, the decrease was only half as large.¹⁰¹ In 2005, RRN replicated the relevant chart from DOT's 2000 report,¹⁰² seen in Figure 2 below, and analyzed subsequent fare changes for these same routes.¹⁰³ DOT's own numerical results are arrayed in tabular form at the bottom of Figure 2.



Source: DOT Origin and Destination Gateway data provided by Data Base Products, Inc.
Table data from DOT's October 2000 report: "Transatlantic Deregulation: The Alliance Network Effect."

The DOT also found evidence of much faster growth in passenger traffic carried by alliance members as opposed to nonallied carriers, and pointed to that as evidence of procompetitive behavior on behalf of alliances.¹⁰⁴ While the initial performance of

99. TRANSATLANTIC DEREGULATION, *supra* note 30, at 2–3.

100. *Id.* at 3.

101. *Id.*

102. *Id.*

103. Surreply, *supra* note 85, at 1–2.

104. TRANSATLANTIC DEREGULATION, *supra* note 30, at 5–6.

immunized alliances as described in the DOT studies was potentially encouraging, a more recent look at their performance suggests a different picture. Figure 3 describes fare trends from 1999 to 2004 for the four broad categories of origin–destination markets.¹⁰⁵ From 1999 to 2004, all four categories of transatlantic Open Skies markets experienced double-digit fare increases. On average, fares from the United States to and through European Open Skies gateways went up by about 13%.¹⁰⁶ Moreover, the largest fare increases occurred in just the type of connecting markets that experienced the largest fare declines from 1996 to 1999—specifically, behind-beyond markets (up 15.3%) and gateway-beyond markets (up 14.5%).¹⁰⁷ By contrast, all four categories of transatlantic non-Open Skies markets experienced either decreases or modest increases in fares.¹⁰⁸ In sum, Figure 3 shows that there was a striking turnaround in the positive fare trends that characterized Open Skies markets from 1996 to 1999.¹⁰⁹ Moreover, there was a role reversal in the price performance of Open Skies markets (in which immunized alliances operate) compared to non-Open Skies markets.

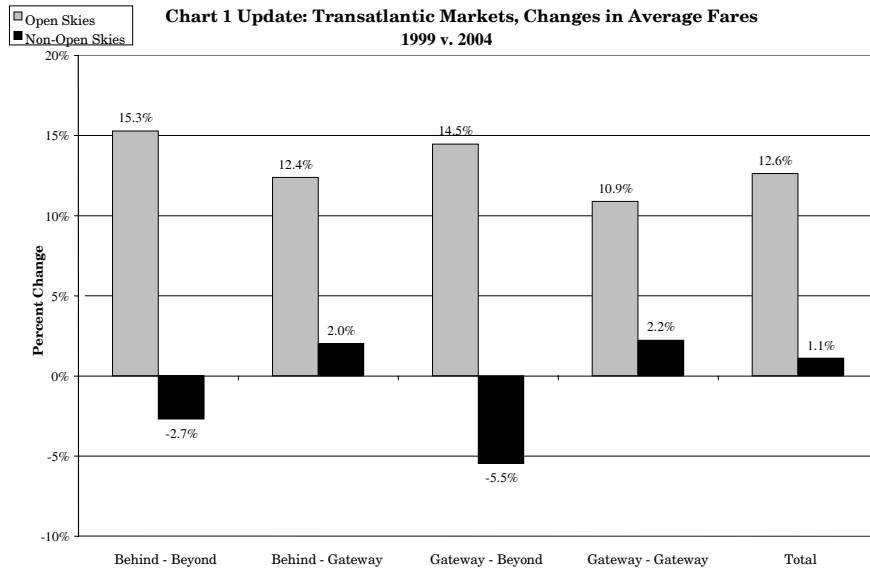
105. In Figure 3, “Open Skies” refers to those European countries with which the United States had an Open Skies Agreement as of 1999. The most significant addition to the list of Open Skies countries post-1999 was France, which entered an Open Skies agreement with the United States in 2002. The other post-1999 signatories are Malta, Turkey and the Slovak Republic (2000), and Poland (2001).

106. Surreply, *supra* note 85, at 2; *Infra* fig.3.

107. Surreply, *supra* note 85, at 2; *Infra* fig.3.

108. Surreply, *supra* note 85, at 2; *Infra* fig.3.

109. Improvements in the quality of alliance carriers’ service (as opposed to nonalliance carriers) could account for increases in Open Skies fares. However, this is unlikely to be the case. For example, alliances offer less of a quality advantage for passengers who do not have to connect. If quality were an explanatory factor in fare increases, we would expect increases to be much more modest in nonstop (G-G) markets than in connecting markets. Figure 3, however, shows that G-G fares increased significantly in Open Skies markets. Moreover, fare increases for all markets (connecting and nonstop) increased dramatically more in Open Skies markets where immunized alliances operate relative to non-Open Skies markets where nonimmunized alliances operate. For more discussion, see, for example, James D. Reitzes & Dorothy Robyn, *An Economic Analysis of How Antitrustimmunized Alliances Have Affected Transatlantic Competition*, 16 TRANSP. ANTITRUST UPDATE (Spring 2007).

Figure 3

Note: 4Q 2004 data unavailable, thus 4Q 2003 - 3Q 2004 substituted for 2004.

Source: DOT Origin & Destination data provided by Data Base Products, Inc.

D. Alliance Carriers Have Taken Actions to Raise Rivals' Interlining Costs

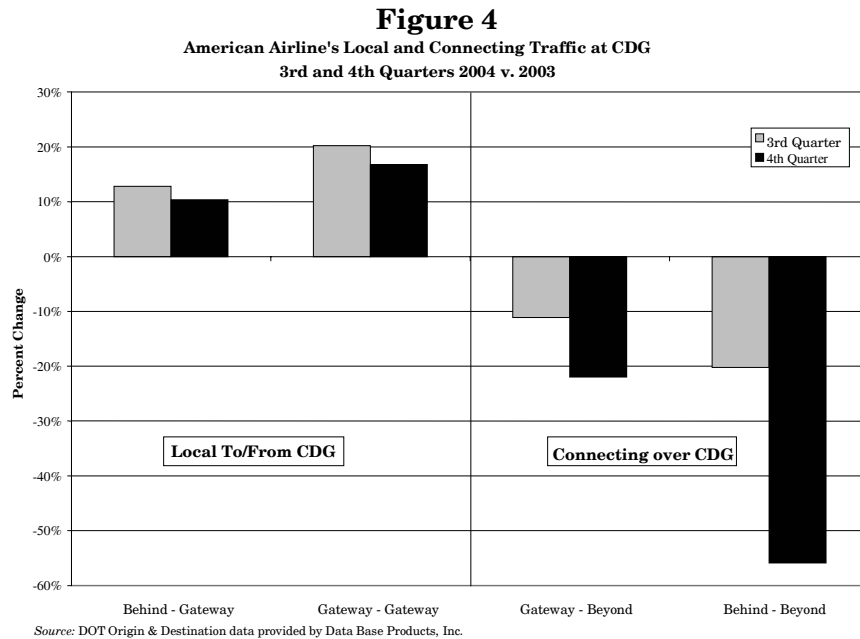
While the above fare evidence points to worsening performance in both gateway-to-gateway and connecting markets where immunized alliances operate, other evidence indicates that immunized alliances are harming competition by discriminating with respect to access to their networks.

Members of immunized alliances have acted to increase the input costs facing rival carriers, specifically with respect to interline passengers.¹¹⁰ In June 2004, Air France began restricting inventory for non-SkyTeam interline carriers. And in September 2004, Air France filed a memorandum with the International Air Transport Association which specified that it would accept only certain fares in the settlement process for purposes of establishing prorates for interline traffic. By refusing to accept lower fares, Air France substantially raised interlining costs for American and other carriers that do not have a Special

110. This Section contains information reproduced from a document prepared for American Airlines by James Reitzes, Dorothy Robyn, and Kevin Neels of The Brattle Group. Exhibit 1, *supra* note 47. American Airlines used this document as an exhibit in an application for antitrust immunity submitted to the Department of Transportation.

Prorate Agreement (SPA) with Air France. Under Air France's new prorate terms, these carriers are unable to offer discounted through-fares at a profit.

The impact of Air France's discriminatory interline policies was immediate and dramatic. In the second half of 2004, the number of American Airlines passengers connecting at Charles de Gaulle airport (CDG) for other destinations fell by approximately 22% in total when compared to the second half of 2003. American's connecting traffic at CDG fell even more sharply in the last *quarter* of 2004, which corresponds to the period when Air France's new pro-rate policy took effect (September 2004). As Figure 4 indicates, the number of American Airlines passengers traveling from a U.S. gateway to a European destination beyond CDG fell by approximately 22% in the fourth quarter of 2004, compared to the same quarter in 2003. Even worse, the number of American Airlines passengers traveling from behind a U.S. gateway to a European destination beyond CDG fell by more than 55% during the fourth quarter of 2004, compared to the same quarter in 2003.

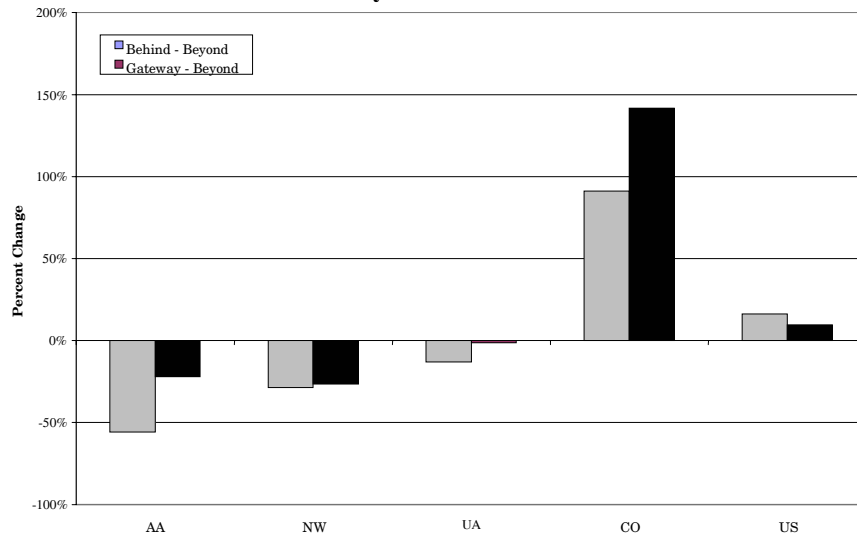


By contrast, the number of American Airlines passengers terminating at CDG increased substantially over the same period (see Figure 4). This increase was understandable as a short term effect. Air France's apparent strategy of access discrimination

(through higher prorated charges and reduced seat availability) would be expected to reduce its rival's profitability and lower its volume of beyond passengers. In an effort to fill seats left empty as a result, American Airlines in turn would be expected to reduce fares in gateway-to-gateway and behind-gateway markets, which do not require interlining cooperation with Air France. Although these fare reductions would benefit travelers in the short run, the affected passengers would not necessarily benefit over the longer term. The decline in connecting traffic experienced by American could cause it to eventually reduce its seat capacity (and also the number of flights) on routes to CDG.

American did not appear to be the only interline carrier that faced discriminatory access at CDG when Air France changed its prorated and inventory policies. Figure 5 shows that Northwest and United both experienced substantial declines in the number of passengers that originated behind a U.S. gateway and terminated beyond CDG in the fourth quarter of 2004. In sharp contrast, Continental, which joined the SkyTeam alliance in September 2004 and has an extensive codeshare agreement with Air France, showed a substantial increase in connecting passengers over CDG during the same time period.

Figure 5
 Percent Change in Through Traffic at CDG by U.S. Carrier
 4th Quarter of 2003 v. 2004

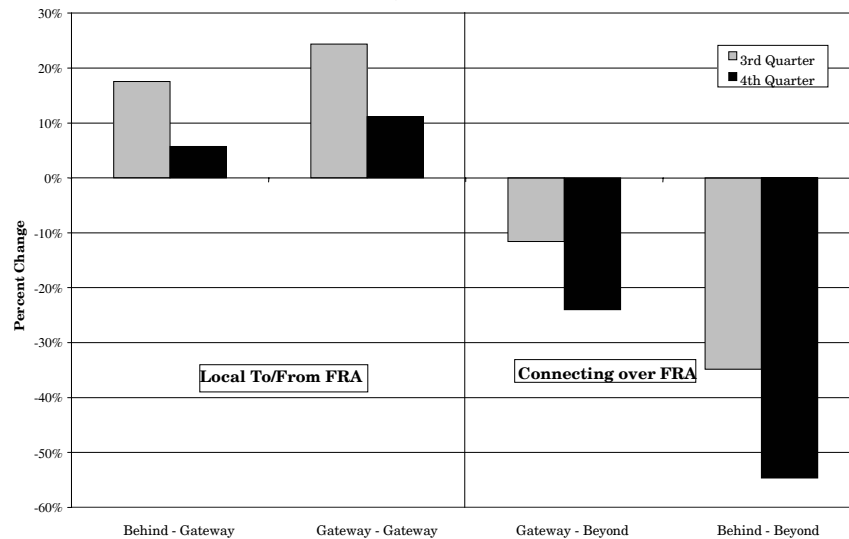


Source: DOT Origin & Destination data provided by Data Base Products, Inc.

European Open Skies gateways other than CDG may have experienced a similar problem. Delta's overall passenger traffic to and through Frankfurt is less than half of what it was in 1996,

when United and Lufthansa's alliance was immunized. In fact, between 2003 and 2004, there was a notable drop-off in Delta's connecting traffic through Frankfurt as Delta reduced its operations involving that transatlantic gateway (see Figure 6). While there may have been several other business reasons for this reduction in Delta's operations, Delta had previously expressed frustration over its ability to connect with Lufthansa through Frankfurt.

Figure 6
Delta's Local and Connecting Traffic at FRA
3rd and 4th Quarters 2003 v. 2004



Source: DOT Origin & Destination data provided by Data Base Products, Inc.

The evidence presented above, while far from offering conclusive proof as to the benefits or costs imposed by immunized alliances, suggests a need for further study of alliance impacts and elicits the question of whether particular aviation policy changes with respect to alliances would enhance market performance.

To that end, recent concerns regarding alliance dominance of key European hubs have led to an investigation of SkyTeam by the European Commission, along with the proposed imposition of mandatory remedies.¹¹¹ These remedies include forcing SkyTeam

111. For documentation related to this investigation see Press Release, European Comm'n, Competition: Commission Confirms Sending Statement of Objections to Members of SkyTeam Global Airline Alliance (June 19, 2006), available at <http://ec.europa.eu/comm/competition/antitrust/cases/decisions/37984/memo.pdf>.

to make available landing slots at Paris, Amsterdam, Milan, and Rome to facilitate entry on specific transatlantic and intra-Europe routes. Other proposed remedies include mandatory interlining provisions and a “most favored customer” clause, whereby SkyTeam carriers must offer the same prorate terms to a new entrant as they do to their own partners on particular city pairs.¹¹²

V. IS THERE SUFFICIENT INTERALLIANCE COMPETITION TO ENSURE BENEFITS TO CONSUMERS?

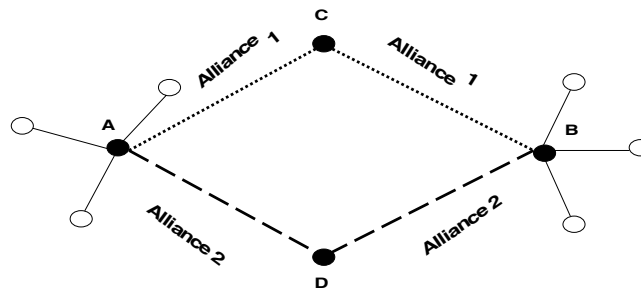
The foregoing analysis highlights the complexity of competition policy involving immunized alliances. It illustrates the tradeoff between the positive effects of antitrust immunity in encouraging intersystem competition and the negative effects of immunity grants in diminishing horizontal and vertical competition at the intrasystem level. The analysis also emphasizes that noneconomic factors such as restrictions on foreign entry and ownership bear directly on a competitive analysis of alliances. A number of observations are worth noting. First, intersystem and intrasystem competitive issues involving alliances are difficult to disentangle. For example, alliances may have incentives to foreclose rival access to their networks *in order to* frustrate the development of a competing alliance. Expansion of an alliance also removes from the market carriers that could potentially join competing alliances and thus contribute to the development of interalliance competition. These interrelationships are important to consider in evaluating requests for immunity and, more broadly, in crafting alliance policy.

Second, the question of whether there is sufficient intersystem competition is complicated by a number of factors. Alliances are intended to operate as competing transportation systems, as shown in Figure 7. With respect to connecting trips from origin point A to destination point B, it is possible that one alliance member provides service from point A to another alliance member’s hub at point C, where the latter provides service to the ultimate destination at point B. Within a competing alliance, one member carrier may provide service from point A to another alliance member’s hub at point D, where the

112. See European Comm’n, Commitments Package 11, <http://ec.europa.eu/comm/competition/antitrust/cases/decisions/37984/commitments.pdf>.

latter provides service to point B. In this example, interalliance rivalry mitigates against supracompetitive pricing of the air fares between points A and B if two conditions are in place. One, connections through C and D must be viewed by travelers as relatively good substitutes for one another. Two, aggressive competition must exist between the two alliances offering service between points A and B.

Figure 7:
Competing Transatlantic Airline Alliances



The foregoing requirements raise two concerns. One is that due to its underlying network structure, one transportation network may have a natural competitive advantage in serving specified origin–destination pairs relative to another competing network(s). As applied to airline markets, this notion implies that interalliance competition may not discipline air fares sufficiently when one alliance’s network offers substantially more convenient service between a particular origin–destination pair. Evidence exists that this might be the case, for example, when traveling to a destination in the same country as the transatlantic hub of a particular European carrier.¹¹³ Another concern is whether—in light of the distinct probability that there will be only two major immunized alliances and one major nonimmunized alliance—there is sufficient interalliance competition to prevent supracompetitive pricing on origin–

113. See Exhibit 1, *supra* note 47, at 28 (explaining the “higher fares accompanied by increased market share” phenomenon in terms of U.S. carriers that are not members of the dominant alliances in Paris and Frankfurt).

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destination pairs that may be conveniently served by more than one alliance.

The dismal recent profit performance of the airline industry, for example, might lead one to conclude that there has been sufficient price competition to constrain air fares.¹¹⁴ But this also could be due to the fact that network air carriers are operating at inefficiently high costs, possibly because of insufficient horizontal and vertical integration needed to fully exploit scale and scope economies. In Europe, the foregoing is a distinct possibility. As some have argued previously, the patchwork of bilateral agreements between the United States and individual European companies has resulted in the presence of too many national carriers in Europe whose networks are protected from entry by other European carriers.¹¹⁵ Alliances may therefore have had beneficial effects in excessively fragmented transatlantic aviation markets by alleviating inefficiencies through cost-saving horizontal and vertical integration. However, until the market distortions created by regulatory requirements in aviation markets are isolated, it will be difficult to determine how many alliances there can or should be.

Third, the evidence suggests that some of the initial procompetitive benefits of alliances in terms of increased passenger traffic and lower fares may have been reversed as alliances consolidate their market positions. Moreover, while there is evidence that alliances such as Northwest/KLM expanded output significantly after they formed, some of the output expansion and lower fares experienced in other Open Skies markets may have been less the result of efficiencies produced by alliances but instead the impact of increased competition that stemmed from the establishment of Open Skies agreements. Consequently, the question remains whether the presence of large immunized alliances competing in Open Skies environments (the apparent market structure for aviation

114. See, e.g., BUREAU OF TRANSP. STATISTICS, U.S. DEP'T OF TRANSP., PERFORMANCE MEASURES IN THE AIRLINE INDUSTRY, http://www.bts.gov/programs/airline_information/performance_measures_in_the_airline_industry/.

115. See Moritz Ferdinand Scharpenseel, *Consequences of E.U. Airline Deregulation in the Context of the Global Aviation Market*, 22 NW. J. INT'L L. & BUS. 91, 109 (2001) ("Another serious problem for the liberalized aviation market is the continued application of bilateral air transport agreements that protect the national carriers of the contracting parties by capacity restrictions in air traffic between the E.U. member states and third countries.").

envisioned by the DOT throughout the 1990s and this century) is providing sufficient competitive benefits.

VI. POLICY IMPLICATIONS AND CONCLUSIONS

The foregoing analysis can usefully inform competition policy with regard to alliances in a number of ways. First, empirical analysis raises questions as to whether immunized alliances are continuing to deliver unequivocal benefits to consumers. A period of beneficial market performance, followed by a spate of lower or even negative benefits resulting from policy initiatives, is not unusual for restructuring industries.¹¹⁶ For example, much of the consolidation that occurred at the outset of electricity restructuring in the United States likely reflected a market-driven decrease in the number of firms which had previously been determined by regulatory fiat. Subsequent consolidation, however, tended to raise more concrete market power problems. A similar effect is likely in play for airline alliances as they continue to expand. Policymakers should be sensitive to this pattern in evaluating requests for codesharing and immunity, giving fair weight to empirical work that assesses both the costs and benefits of immunization.

A second implication of the foregoing analysis is that policymakers must wrestle with a number of complex factors that affect the “net” calculation of alliance-related benefits. Based on the foregoing assessment, there are five major factors that are important to consider in evaluating the expansion of immunized alliances. The first factor is the cost saving associated with coordinated operations of alliance members and the attendant fare reductions that might naturally arise as alliance members more fully internalize the complementary nature of their service offerings in handling connecting passengers. The second is the improved service quality that results from more integrated scheduling, a perceived increase in flight frequency, and potentially improved configuration of on-the-ground operations to provide smoother service to interlining passengers. A third factor is the cost (in terms of higher fares and reduced quality or choice) of anticompetitive effects related to alliance expansion, such as the diminution of competition on overlapping routes and the

116. See, e.g., *European Telecoms; Swamp Things*, ECONOMIST, Sept. 21, 2006, at 71 (noting the rise and fall of European telecom stock shares following liberalization of the industry).

potential foreclosing of rival access to alliance members' networks. A fourth is any cost associated with alliance members' incentives (if acted upon) to retard the development of competing alliances. These costs are separate and apart from higher prorated charges or access impediments that alliance members may place on rival carriers.

Finally, there is the potential cost of mutual forbearance in the form of implicit coordination between immunized alliances to refrain from entering further into each other's city-pair markets or aggressively expanding output in existing overlap markets.¹¹⁷ This is of particular concern in light of a trend toward expansion of alliances and alliance consolidation. If the proposed expansion of antitrust immunity within the SkyTeam alliance is approved, for example, there will exist only two large immunized alliances—Star Alliance and the expanded SkyTeam, along with the nonimmunized oneworld. Moreover, as alliance membership expands, a carrier operating independently of any alliance must rely increasingly on alliances for inputs (i.e., interlining services) that are important to its continued viability. The ability of an alliance to collectively punish rivals by withholding these inputs provides a potentially important tool for disciplining competition. Also, because there is multimarket contact among alliances,¹¹⁸ there are many different markets where punishment may be levied in the form of increased flights (or seat capacity), new entry, or reduced fares if a deviation arises from an implied agreement.

A natural test of whether this type of mutual forbearance is a concern will arise when the U.S.–E.U. Open Skies Agreement becomes effective because this agreement will allow a European carrier that is part of one alliance to offer nonstop transatlantic service from the principal gateway (and other gateways) used by the European member of a competing alliance.¹¹⁹ The extent to which members of one alliance will avail themselves of the

117. Alliances interact frequently with one another (e.g., when a nonallied carrier obtains interlining service from an alliance member), which increases the probability of coordination.

118. See Gustavo E. Bamberger, Dennis W. Carlton & Lynette R. Neumann, *An Empirical Investigation of the Competitive Effects of Domestic Airline Alliances*, 47 J.L. & ECON. 195, 201 (2004) (worrying that certain airline alliances could drive up prices by increasing multimarket contact between the proposed airline alliance members and other carriers).

119. See *Chocks Away; The Prospect of More Open Skies Across the Atlantic is Shaking Up Europe's Airlines*, ECONOMIST, Apr. 7, 2007, at 73 (explaining that the Open Skies agreement is "shaking up Europe's airline industry").

opportunity to enter the markets of other alliances remains to be seen. At present, several alliance carriers have announced their intention to enter or expand service on particular transatlantic routes after the agreement goes into effect.¹²⁰

A final conclusion that we draw from the analysis of airline alliances and systems competition is how competition policy will deal with problematic requests for immunity. Outright denial—as in the case of the initial mega-SkyTeam request in 2005—is one possibility. The use of carve-outs from immunity is another possibility. But this approach has obvious drawbacks, as identified by the DOJ.¹²¹ Carve-outs can also potentially distort what may be a natural network configuration for an alliance. The analogy to immunity carve-outs is divestiture in merger cases. The success of divestiture depends on whether the sale of the assets will restore competition to premerger levels. This implies the buyer of the assets must be a viable competitor in the market. Inadequate or incorrect assets slated for divestiture can undermine this objective, as well as excising efficiencies (including network effects) that originally motivated the transaction. In alliance markets, similar effects may result from inappropriate carve-outs, creating distortions that either undermine the objective of restoring competition or that neutralize key network efficiencies that could benefit consumers.

120. For example, British Airways has announced that it will offer service from New York to either Paris or Brussels. *BA to Launch 'Open Skies' Airline*, BBC NEWS, Jan. 9, 2008, <http://news.bbc.co.uk/2/hi/business/7178673.stm>. Northwest will offer roundtrip service to London Heathrow from Detroit, Minneapolis, and Seattle. Betty Stark, *Shrinking Airlines, Shifting Markets Will Frustrate U.S. Air Travelers*, WIS. ST. J., Feb. 1, 2008, at 24. Additionally Air France and Delta have announced a joint venture to add service between London Heathrow and New York, Los Angeles, and Atlanta. Russell Grantham, *Delta Lines Up Fortunes: New Venture with Air France Opens Door to Heathrow*, ATLANTA J. CONST., Oct. 17, 2007, at D1.

121. See, e.g., Bingaman, *supra* note 49; *supra* Part III.A.2.

Appendix:

DETAIL ON ALLIANCES AND RAISING RIVALS' COSTS STRATEGIES

To further illustrate how the formation or expansion of an alliance may create incentives to raise rivals' costs, consider a European carrier (E.U. Air) that operates the only network that is conveniently available from European gateway E.U. Two U.S. carriers, A and B, operate transatlantic flights into gateway E.U., and E.U. Air offers interline service to both carriers. As an unallied carrier, E.U. Air is only concerned with maximizing its own profits when setting interline (i.e., prorate) charges to Carriers A and B for transporting their carriers' passengers from gateway E.U. to other destinations in Europe (and possibly Africa or Asia).

However, if E.U. Air forms a profit-sharing (or revenue-sharing) alliance with Carrier A, it then receives some of the profits (or revenues) earned from Carrier A's operations. This creates an incentive for E.U. Air to lower its interline charge to Carrier A (representing an economic efficiency known as a reduction in so-called "double marginalization"). But E.U. Air also has an *incentive to raise its interline charge to Carrier B*, where the magnitude of this increase depends on the extent to which it shifts transatlantic passengers to Carrier A.

Based on standard economic theory as applied to optimal pricing behavior, increases in E.U. Air's interline charge to Carrier B from an arbitrarily low level (e.g., at E.U. Air's incremental costs) initially will lead to an increase in E.U. Air's profits. Further increases in the interline charge will be associated with progressively smaller profit increases for E.U. Air, because increases in the interline charge to Carrier B should induce corresponding increases in "through" fares that reduce the number of passengers connecting from Carrier B to E.U. Air. Because an incremental increase in the interline charge affects progressively fewer passengers as the magnitude of the charge increases, the revenue impact from an incremental increase in the interline charge should progressively decline. Eventually, a level is reached where a marginal increase in E.U. Air's interline charge to Carrier B has no impact on E.U. Air's profits. In this situation, a marginal increase in interline charges induces lost profits as a result of reduced connecting traffic from Carrier B that exactly offsets the increased revenues earned from the remaining interlining passengers. This represents E.U. Air's optimal interline charge to Carrier B (because further increases

in the interline charge will have a negative impact on E.U. Air's revenues and profits). This is a familiar maximization condition that arises under constrained optimization.¹²²

Although a marginal increase in E.U. Air's interline charge to Carrier B from its pre-alliance level has no initial impact on E.U. Air's profits from its own operations, that increased charge would divert transatlantic traffic to its alliance partner (Carrier A) whenever Carrier B passes some of its interline charge along in its "through" fare. Thus, if E.U. Air is entitled to a share of Carrier A's operating profits after an alliance is formed, E.U. Air has incentive to raise its interline charge to Carrier B, and the increase in the charge should be directly related to the associated diversion of passengers (and increase in profits) to Carrier A.

To elaborate, an increase in E.U. Air's interline charge to Carrier B will induce Carrier B to increase its "through" fares to connecting passengers. Because this will cause some of those connecting passengers to use Carrier A instead, it will increase the revenues and profits generated from Carrier A's operations. If E.U. Air obtains a share of Carrier A's revenues or profits through its alliance agreement, then the additional increase in the interline charge to Carrier B increases the total profits earned by E.U. Air under the newly formed alliance. As an alternative to raising their prorated charges, alliance carriers can reduce seat inventories available to nonalliance carriers seeking to interline, or take other actions to "inconvenience" interlining passengers that wish to use nonalliance carriers.¹²³ Analogous reasoning shows that the formation of a profit-sharing (or revenue-sharing) alliance between E.U. Air and Carrier A will cause E.U. Air to *lower* its interline charge to its alliance partner, Carrier A.

122. See, e.g., ALPHA C. CHIANG, FUNDAMENTAL METHODS OF MATHEMATICAL ECONOMICS (3d ed. 1984); A.K. DIXIT, OPTIMIZATION IN ECONOMIC THEORY (1976); AKIRA TAKAYAMA, MATHEMATICAL ECONOMICS (2d ed. 1985).

123. While this simplified example illustrates that alliances can create incentives for member carriers to raise interline charges to nonmember carriers, the extent to which these incentives actually exist depends on specifics in the alliance agreement relating to the nature of revenue-sharing or profit-sharing among the alliance carriers. It also depends on each alliance member's pre-existing share of gateway-to-gateway and through passenger traffic, and the amount of passenger diversion to each alliance carrier that would result from an increase in prorated charges.