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INTRODUCTION

The International Satellite Telecommunications Organization (INTELSAT), an international treaty organization, provides the space segment for a global satellite telecommunications network.[1] In relation to other organizations operating international satellite telecommunications networks, INTELSAT's structure is unique because its shareholders are promised a rate of return on investment capital,[2] and it is regulated solely by its shareholders. Accordingly, the models of economic analysis traditionally applied to private corporations, regulated monopolies, and nonprofit treaty organizations, cannot be used to analyze INTELSAT.[3]

INTELSAT was formed in 1962 at the initiative of the United States.[4] During that period, the Cold War strongly influenced

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1. *See* Richard R. Colino, *A Chronicle of Policy and Procedure: The Formulation of the Reagan Administration Policy on International Satellite Telecommunications*, 13 J. SPACE L. 103, 107 (1985).

2. Agreement Relating to the International Telecommunications Satellite Organization "INTELSAT," Aug. 20, 1971, art. V(c), 23 U.S.T. 3813, 3823, 1220 U.N.T.S. 21, 27 [hereinafter INTELSAT Agreement] (entered into force Feb. 12, 1973).

3. Although INTELSAT shareholders receive a return on investment capital, some sources describe it as a nonprofit organization. *See* Colino, *supra* note 1, at 107; Victoria E. Fimea & Thomas Mann, Note, *INTELSAT*, 1 AM. U. J. INT'L L. & POL'Y 413, 413 (1986). To apply the term nonprofit to INTELSAT would mean that every regulated utility is a nonprofit organization. The INTELSAT Agreement, *supra* note 2, nowhere classifies INTELSAT as a nonprofit organization.

4. *See* Colino, *supra* note 1, at 103. International telecommunications arrangements are typically established on the basis of bilateral agreements. MICHAEL K. KELLOGG ET AL., FEDERAL TELECOMMUNICATIONS LAW § 15.5.2 (1992). Initially, only 14 nations signed the interim agreements that established INTELSAT. Agreement Establishing

United States foreign policy and it is likely that the primary purpose behind INTELSAT was to preempt a Soviet international telecommunications satellite network.[5] Further, reflecting President Kennedy's goal of placing a man on the moon by the end of the decade, INTELSAT was intended to stimulate the development of American space technology.[6]

Since the first telecommunications satellite was put in orbit, the market for international satellite telecommunications has grown at a healthy rate.[7] In part because of this growth, several companies applied to the FCC for licenses to operate international telecommunications satellites.[8]

INTELSAT's reaction to the applications went far beyond the filing of comments with the FCC. Articles authored by attorneys affiliated with or retained by INTELSAT appeared in law journals,[9] and Director General Santiago Astrain of INTELSAT

Interim Arrangements for a Global Commercial Communications Satellite System and Special Agreement, Aug. 20, 1964, 15 U.S.T. 1705, 1743-44, 514 U.N.T.S. 25, 46-47 (entered into force Aug. 20, 1964).

5. "The US realised that if it were to share its satellite technology with other nations, it could help satisfy the demand for international communications capacity—reaping a foreign relations windfall and dealing a blow to Soviet global ambitions in the process." Raul R. Rodriguez, *III: International Telecommunications and Satellite Systems INTELSAT and Separate Systems: Cold War Revisited*, 15 INT'L BUS. LAW. 321, 321 (1987).

6. *See* JEREMY TUNSTALL, COMMUNICATIONS DEREGULATION 64 (1986).

7. INTELSAT's revenues for the period 1974-84 grew at an annual compound rate of 15.1%. *In re* Establishment of Satellite Sys. Providing Int'l Comm., *Report and Order*, 101 F.C.C.2d 1046, para. 172 (1985) [hereinafter Separate Systems]. INTELSAT reported revenues of $457 million for 1985, INTELSAT, 1985-86 ANNUAL REPORT 28 (1986), versus $557 million for 1991, INTELSAT, 1991-92 ANNUAL REPORT 30 (1992) [hereinafter 1991-92 ANNUAL REPORT], indicating growth at an annual compound rate of 3.5%. Although these statistics suggest a decrease in growth, capacity was full or near full on satellites operated by INTELSAT and Pan American Satellite Corporation (PanAmSat). INTERNATIONAL TRADE ADMIN., U.S. DEP'T OF COMMERCE, U.S. INDUSTRIAL OUTLOOK 28-9 (1992) [hereinafter 1992 INDUSTRIAL OUTLOOK]. INTELSAT's earnings for 1991 were also lower due to the launch failure of an INTELSAT VI satellite in 1990. *See* 1991-92 ANNUAL REPORT, *supra*, at 30.

8. Applicants included Orion Satellite Corporation; International Satellite, Inc.; Cygnus Satellite Corporation; RCA Communications, Inc.; and PanAmSat. Separate Systems, *supra* note 7, para. 2.

9. *See* Colino, *supra* note 1; Bert W. Rein et al., *Implementation of a U.S. "Free Entry" Initiative for Transatlantic Satellite Facilities: Problems, Pitfalls, and Possibilities*, 18 GEO. WASH. J. INT'L L. & ECON. 459 (1985); *see also* Bert W. Rein

testified before Congress.[10] INTELSAT argued that the negotiators of the INTELSAT agreements never contemplated the entrance of separate systems, that such systems would cause significant economic harm to INTELSAT, and that INTELSAT should be the sole arbiter of whether the separate systems should be allowed.[11] The FCC ultimately rejected INTELSAT's position and decided to grant licenses for separate systems, subject to notable restrictions.[12]

In the 1985 proceeding regarding the entrance of separate satellite systems, the FCC never squarely addressed whether INTELSAT's telecommunications traffic between developed countries, specifically transatlantic traffic between the United States and Europe, subsidized traffic to remote, less developed countries.[13] This Comment examines technical and economic issues that the FCC did not factor into its decision to grant licenses for international satellite telecommunications systems separate from INTELSAT. This Comment will demonstrate that no

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& Carl R. Frank, *The Legal Commitment of the United States to the INTELSAT System*, 14 N.C. J. INT'L L. & COM. REG. 219 (1989).

10. *The International Telecommunications Act of 1983: Hearings Before the Subcomm. on Communications of the Comm. on Commerce, Science, and Transp.*, 98th Cong., 1st Sess. 81 (statement of Santiago Astrain, Director General, INTELSAT).

11. "It is the responsibility of each INTELSAT Party or Signatory to carry out the obligation to coordinate separate systems under Article XIV(d)." Colino, *supra* note 1, at 110.

12. The separate systems were limited to provision of services through the sale or long-term lease of transponders and could not connect with the public switched network. Separate Systems, *supra* note 7, para. 266.

At the time of this writing, INTELSAT continues to experience financial success. *See supra* note 7. Moreover, the only separate satellite system currently operating has been successful. 1992 INDUSTRIAL OUTLOOK, *supra* note 7, at 28-10.

13.

> [A] subsidy exists when a product's price does not cover the cost of making that product. . . . The price to a purchaser or user of a product or service is subsidy-free as long as it covers the capital cost, operating expenses, and profit required to bring that product or service into the marketplace.

Kenneth R. Dunsmore, Dale N. Hatfield Assocs., Issues in International Telecommunications Pricing and Demand, Nov. 27, 1984, at 8, *attached to* Comments of Orion Satellite Corp. in CC Dkt. No. 84-1299 (April 1, 1985) [hereinafter Hatfield Report]. Thus, in the context of this Comment, a subsidy would occur if INTELSAT transferred income from the Atlantic Ocean Region (AOR) to support service in the Pacific Ocean Region (POR) or the Indian Ocean Region (IOR).

technological basis or economic reason exists for a subsidy to flow from INTELSAT's high volume routes to its low volume routes.[14] Further, competing, separate systems providing satellite communications could cause INTELSAT economic harm only if such a subsidy between routes existed. Because such a system of subsidization does not exist, INTELSAT has continued to enjoy economic success.

Part I of this Comment provides an introduction to the nature of satellite communications. Part II demonstrates that INTELSAT's high volume routes do not subsidize low volume routes. Part III explains why the entrance of separate satellite systems has not caused INTELSAT economic harm.

I. THE NATURE OF SATELLITE COMMUNICATIONS

A. Earth Station Access to Telecommunications Satellites

Telecommunications satellites are typically placed in geostationary orbit at a distance of 35,900 kilometers (22,300 miles) above the earth's surface, in the plane that passes through the earth's equator.[15] A satellite in geostationary orbit appears to remain stationary when viewed from the surface of the earth.[16] The advantage of placing a satellite in geostationary orbit is that any antenna on the ground can remain stationary while tracking the satellite.[17]

A satellite in geostationary orbit can broadcast radio waves to 42.4 percent of the earth's surface under the satellite.[18] The area of coverage is referred to as a "footprint."[19] To send and receive signals, the earth station (a dish-shaped satellite antenna)

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14. A technological basis for a subsidy would occur if, because of a technological limitation, the revenues produced in serving an area did not cover the marginal cost of providing that service.

15. LEON W. COUCH, DIGITAL AND ANALOG COMMUNICATION SYSTEMS 341 (2d ed. 1987).

16. The orbital location is a function of the satellite's velocity. MARK LONG, WORLD SATELLITE ALMANAC 4 (2d ed. 1987).

17. COUCH, *supra* note 15, at 341.

18. LONG, *supra* note 16, at 41.

19. *Id.* at 39.

must be in the satellite's footprint.[20] Similar to the beam of light from a flashlight, the radio signal from a satellite transponder can be focused to illuminate less than 42.4 percent of the earth's surface.

The earth station antenna is focused on and transmits radio signals to the satellite, and the satellite receives and retransmits the radio signals. If the signal were sufficiently strong, and if the earth station antenna were focused on the satellite, then an earth station could receive a transmission from the satellite. If the signal were not strong enough, the earth station would lose it in background noise, an effect similar to trying to see a flashlight from a far distance on a bright day. By increasing the radius of the earth station antenna, it is still possible to receive a weak signal.[21]

B. Technical Compatibility of Earth Stations and Satellite Equipment

To communicate successfully the earth station must also be able to broadcast and receive signals that are compatible with the satellite.[22] Many formats are available for using radio signals to transmit data.[23]

The sounds created by vocal cords can be converted into a change in the amplitude or the frequency of a radio signal,[24] and can then be broadcast via satellite. This conversion illustrates the concept of the analog broadcast format.

The digital transmission format is based on a different principle. The frequency of a sound is measured a certain number

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20. Other limitations of using satellites for telecommunications include (1) the earth station antenna can only be focused on one satellite at a time, (2) the transmitting and receiving earth stations must have compatible radio transmission formats, and (3) the two earth stations must be illuminated by the same satellite to communicate directly with each other.

21. Dish antenna "gain," or magnification, increases linearly as a function of the surface area of the dish. *See* COUCH, *supra* note 15, at 353.

22. *See generally id.* at 340-51.

23. *See id.* at 344-47. Two familiar formats for radio transmission are frequency modulation (FM) and amplitude modulation (AM).

24. *See id.* at 211-13.

of times every second (sometimes called the sampling frequency).[25] If the frequency were measured one thousand times every second, one thousand pieces of data per second would be created.[26] If this data were later fed into a machine that could generate these frequencies, it would re-create a sound similar to the original sound. This is the concept behind the digital format.

The difference between the digital and analog formats is that analog signals are continuously measured, whereas digital signals are measured a discrete number of times every second.[27] If ten thousand pieces of data could be sent over a circuit that carries one analog signal, but only one thousand pieces of data were required to digitally re-create the signal, it would be possible to send ten digital signals over that same circuit.[28]

The smallest unit of telecommunications typically carried by satellite is the voice channel, the amount of satellite capacity required to transmit a single conversation.[29] It is possible to multiplex (mix together) up to 3600 voice channels and transmit them via satellite transponder.[30] Smaller volumes of traffic can be served by different formats. For example, if an earth station does not handle a large volume of traffic, it would be more efficient to transmit each voice channel individually, a format

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25. *See id.* at 75-80.

26. This is referred to as the "baud" rate, which is the rate of transmission of the smallest discrete piece of information. Most digital equipment operates with binary numbers, where each digit can be either "0" or "1". These digits are referred to as "bits." If the information were converted to binary digital and transmitted as such, the baud rate would become the rate at which each binary digit is transmitted. *See id.* at 82.

27. *See id.* at 3.

28. The actual digital to analog ratio for voice signals on the INTELSAT VI satellite is 5:1. *See* 1991-92 ANNUAL REPORT, *supra* note 7, at 17.

29. *See generally* COUCH, *supra* note 15, at 344-51.

30. A transponder is any device that takes an input signal, amplifies it, and outputs the same signal. Some transponders are designed to perform data processing, and might therefore output an intentionally modified signal. A typical transponder bandwidth is 36 MHz. Other bandwidths are also used. *See id.* at 342.

referred to as single channel per carrier (SCPC).[31] In the SCPC format a transponder carries only eight hundred voice channels.[32]

II. HIGH VOLUME ROUTES DO NOT SUBSIDIZE LOW VOLUME ROUTES

A. A Basic Satellite Telecommunications System

Consider a basic satellite telecommunications system where a satellite illuminates two earth stations, the earth stations have antennae large enough to detect the signal, and they transmit and receive the data in the appropriate format. The two stations are able to communicate via the satellite. However, because one satellite illuminates a maximum of 42 percent of the earth's surface, to communicate with an earth station outside of the satellite's footprint, a second satellite must be added to illuminate the third earth station. The second satellite must illuminate either the first or second earth stations, which can then relay the message to the remaining earth station via the first satellite.

Adding a second satellite to the transmission path causes a considerable delay in the transmission time. Although radio signals travel at the speed of light, 300,000 kilometers (186,000 miles) per second, a conversation relayed through two geostationary satellites must travel more than 150,000 kilometers (93,000 miles) from the sender to the receiver, and the same distance back to the sender. This results in a noticeable and annoying delay, and requires twice as much satellite capacity. Thus, transmission through two satellite links is avoided, even though feasible.

Two satellites could connect one location, for example New York, to over 80 percent of the earth's surface. However, the same is not true for all locations connected to New York. A location to the west of New York, such as Mexico City, would not be able to communicate directly with a location to the east, such as Dublin.

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31. INTELSAT uses a system identified by the acronym SPADE to carry individual voice channels. *Id.* at 347. SPADE is an acronym for Single channel per carrier, Pulse code modulation, multiple Access, Demand assignment Equipment. *Id.*

32. *See id.*

A third satellite would be required, or else the Mexico City to Dublin connection would require twice the satellite resources of the New York to Mexico City or Dublin connection. Another alternative would be to route part of the call over land from New York to Mexico City, or over submarine cable from New York to Dublin, although the quality of the call would be somewhat diminished. The ideal connection would be direct via satellite from Mexico City to Dublin.

This scenario illustrates why there is no technological reason for a subsidy to flow from a route carrying heavy traffic, such as the United States to Europe, to a route carrying light traffic, such as from Mexico City to Dublin. A technological basis for a subsidy would occur if a separate satellite were necessary to provide service for the light traffic route only because the heavy traffic route could not service both the light and heavy routes. In such a case, the subsidy would exist only as long as the satellite covering the light traffic route has more excess capacity than the satellite covering the heavy traffic route.

Returning to the example, if a third satellite were needed only to carry communications between Mexico City and Dublin, and if these communications did not use all of the satellite's capacity, then the two satellites serving New York would subsidize the third satellite. If all three satellites were used to full capacity, no subsidy would exist. If either or both of the satellites serving New York were below capacity and the third satellite were used at a greater capacity, a subsidy would then flow from the third satellite to the satellites serving New York.

B. Flexibility in System Design

INTELSAT and other satellite operators routinely redeploy satellites to other orbits.[33] The location and size of the earth station antennae and the volume of member state telecommunica-

33. *See* William Harwood, *Titan 3 Rocket Primed for Launch*, UPI, Mar. 13, 1990, *available in* LEXIS, News Library, UPI File; Margaret M. Petronchak & Walter L. Morgan, Communications Center, *C-Band Geostationary Satellite Locations*, SATELLITE COMM., Dec. 1990, at 35.

tions traffic must be coordinated when satellites are added, replaced, or redeployed. A perfect system would establish all desired communications links and would distribute communications traffic as evenly as possible, accommodating the daily and seasonal fluctuations in traffic volume and allowing traffic to be rerouted easily. Redeployment allows INTELSAT to equate more closely marginal costs and marginal revenues, minimizing any potential subsidy. Although the loss of transatlantic traffic would require INTELSAT to redeploy satellite resources, and perhaps downsize its fleet of satellites, such changes would not necessarily cause INTELSAT to raise its rates.

C. *Heavy Route Users Will Initially Pay for a Decrease in Volume*

Even if INTELSAT experienced a loss of telecommunications traffic due to the entrance of separate systems and could not efficiently restructure its system, the price charged for the space-segment portion of the call for all users would not necessarily increase. A transponder carrying multiplexed voice channels can carry up to 3600 channels, but it must also operate with less volume in response to daily and seasonal variations in traffic. The immediate effect from a loss of transatlantic traffic would be a gradual loss in total traffic, but there would still be periods of heavy use. The transponders used by the Communications Satellite Corporation (COMSAT), which provides the uplink to the satellite, and other INTELSAT shareholders in this region might experience decreasing levels of use, which could ultimately require these users to decrease the total number of transponders used in this region. Nevertheless, the higher costs of operating the transponders resulting from decreasing traffic volume will be borne only by these INTELSAT shareholders, and not by any other INTELSAT shareholders. Eventually, these shareholders would coordinate with INTELSAT to decrease the total number of transponders that they use in the AOR.

III. WHY THE ENTRANCE OF SEPARATE SATELLITE SYSTEMS WILL NOT CAUSE INTELSAT ECONOMIC HARM

A. A Refutation of INTELSAT's Subsidy Argument

In their comments to the FCC, three parties contended that separate systems would increase the cost of INTELSAT's service to developing countries. The commenters alleged that allowing the entrance of separate systems in the AOR would divert revenue from INTELSAT and increase the cost to developing nations of using INTELSAT.[34]

INTELSAT asserted two arguments in support of its contentions. First, it argued that the original parties to the INTELSAT agreements intended that no competing service be established in the transatlantic region. Second, INTELSAT argued that because of INTELSAT's pricing structure, any loss of traffic in the transatlantic region would increase the cost of services as a whole.

1. Critique of INTELSAT's Policy Argument

INTELSAT's first argument, that the original signatories to the INTELSAT agreements did not contemplate the entrance of separate systems, was simply a policy argument. This argument was based in part upon Article XIV(d) of the INTELSAT agreement. Article XIV(d) states:

> To the extent that any Party or Signatory or person within the jurisdiction of a Party intends individually or jointly to establish, acquire or utilize space segment facilities separate from the INTELSAT space segment facilities . . . such Party or Signatory . . . shall consult with the Assembly of Parties . . . to avoid significant economic harm to the global system of INTELSAT.[35]

INTELSAT used this provision to support its position that it had the sole authority to determine whether separate systems would cause economic harm to INTELSAT. INTELSAT determined that loss of transatlantic service would create a loss of

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34. Separate Systems, *supra* note 7, para. 200.

35. INTELSAT Agreement, *supra* note 2, art. XIV(d), 23 U.S.T. at 3854, 1220 U.N.T.S. at 41.

revenue, and cause the cost of all services to rise, which would cause INTELSAT significant economic harm.[36]

The existence and further development of submarine cables clearly demonstrates the shortcoming of INTELSAT's policy argument. The original INTELSAT agreements did not mention submarine cables even though five transatlantic cables had been laid before the signing of the agreements. The cables carried approximately the same number of circuits as the entire INTELSAT network at that time.[37] If INTELSAT truly intended to have the exclusive role for transatlantic satellite telecommunications, it seems unlikely that the signatories would have completely overlooked controls on the amount of traffic carried by transatlantic cable. Therefore, it would seem that the United States did not envision an exclusive role for INTELSAT for transatlantic telecommunications.

2. Critique of INTELSAT's Economic Assertions

INTELSAT's second argument, that a loss of transatlantic telecommunications traffic would result in higher costs, was a blanket assertion.

INTELSAT could not prove the existence of a subsidy.[38]

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36. Colino, *supra* note 1, at 114.

37. *See* Hatfield Report, *supra* note 13, at 23, tbl. 3. Additional cables have been laid since that time. The first fiber-optic cable was TAT-8, which went into service in 1988 with the capacity to carry 40,000 voice channels. *First Transoceanic Fiber-Optic Cable*, PR Newswire, Dec. 14, 1988, *available in* LEXIS, News Library, Arcnws File. The latest planned fiber-optic cable pair, TAT-12/TAT-13, will be capable of carrying 320,000 voice channels. *Self-Restoring Fiber: AT&T Leading Owner of First Self-Restoring Fiber Optic Network in the Atlantic*, Business Wire, Dec. 16, 1992, *available in* LEXIS, News Library, Bwire File. Fiber-optic cable has siphoned off an increasingly large amount of INTELSAT's transatlantic business without affecting the ability of INTELSAT to operate successfully a global satellite telecommunications network.

38. INTELSAT submitted with its comments a report explaining the difficulty of determining the existence of a subsidy.

> More importantly, our overall examination of INTELSAT operating and cost characteristics clearly demonstrates the inherent misdirection and futility of any attempt to identify and/or measure INTELSAT cross-subsidies through such cost-allocation methods. The simple fact is that most of INTELSAT's costs are inherently unallocable among regions, routes or users.

Walter Hinchman Assocs., Inc., 1 The Economics of International Satellite Communications (Summary Report), in FCC Dkt. No. 84-1299, at 17 (May 18, 1984) (on file with

However, INTELSAT implied that such a subsidy existed, based upon the conventional perception that a route carrying heavy traffic should realize economies of scale and produce more profit than a route carrying light traffic.

INTELSAT based this argument on an interpretation of Article V(d) of the INTELSAT agreement.[39] Article V(d) states:

> All users of the INTELSAT space segment shall pay utilization charges determined in accordance with the provisions of this Agreement and the Operating Agreement. The rates of space segment utilization charge for each type of utilization shall be the same for all applicants for space segment capacity for that type of utilization.[40]

Interpreted incorrectly, the phrase "for each type of utilization" could be taken to mean that the charge for each channel of voice communications would be the same, regardless of the format used to transmit the channel. However, as explained previously, certain formats carry a greater number of voice channels or other data. INTELSAT categorizes different formats as different "types of utilization" and charges for service based upon the owner's use of transponders, rather than based upon the amount of data transferred.[41] Stated simply, INTELSAT's yearly operating costs are divided by the number of transponders utilized, yielding the cost charged for using one transponder for the entire year. These costs are adjusted to account for differences in transponder capacity (bandwidth) and total system use. If one owner used fewer transponders and all other owners' usage remained unchanged, the cost of service per transponder for all users would increase over the short term.

Ambassador Abbott Washburn testified that the entrance of separate transatlantic systems would siphon off revenue from and

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the *Federal Communications Law Journal*).

39. INTELSAT Agreement, *supra* note 2, art. V(d), 23 U.S.T. at 3823, 1220 U.N.T.S. at 27.

40. *Id.*

41. *See* Walter Hinchman Assocs., Inc., 2 The Economics of International Satellite Communications (Supporting Analysis and Workpapers), in FCC Dkt. No. 84-1299, at III-1 to III-4 (May 18, 1984) (explaining how INTELSAT uses a global average of its costs to determine cost per transponder) (on file with the *Federal Communications Law Journal*).

do harm to INTELSAT.[42] Washburn asserted that entrance of separate systems would be a challenge to a unique system that linked together nations and "provide[d] universal access on a non-discriminatory basis."[43]

The FCC made several findings regarding the economic arguments raised by INTELSAT and the separate system applicants. The FCC noted that it was difficult to quantify the existence of a subsidy.[44] Further, the FCC concluded that INTELSAT was a financially stable organization, and that limited competition would not cause INTELSAT significant economic harm.[45] The FCC determined that restricting the separate systems from markets that provided significant revenue to INTELSAT would adequately protect INTELSAT.[46] The FCC did not conclude that separate systems could not cause economic harm to INTELSAT; rather, the determinations reflected the FCC's belief that the United States would continue to support INTELSAT.

B. Analysis of the Impact of Separate Systems on INTELSAT

1. The Cream-Skimming Argument

INTELSAT's argument against the proposed separate systems was the classic "cream-skimming" argument.[47] Cream-skimming

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42. *International Communication and Information Policy: Hearings Before the Subcomm. on Arms Control, Oceans, International Operations and Environment of the Comm. on Foreign Relations*, 98th Cong., 1st. Sess. 160 (1983) [hereinafter *Communication Hearings*] (statement of Ambassador Abbott Washburn, former Commissioner, FCC, former Ambassador and Chairman, U.S. Delegation to 1983 Regional Administrative Radio Conference Direct Broadcasting Satellite Service).

43. *Id.* at 159.

44. Separate Systems, *supra* note 7, para. 200 n.139.

45. *Id.* para. 265.

46. *Id.*

47. Regulated monopolies are vulnerable to cream-skimming because "if entry is free, competitors will naturally choose to come into only the lucrative markets, 'skimming the cream' of the business, negligently leaving to the established common carriers the burden of providing continuing service to the poorer and thinner markets . . . ." 2 ALFRED E. KAHN, THE ECONOMICS OF REGULATION: PRINCIPLES AND INSTITUTIONS 7 (1971).

requires the presence of a regulated monopoly,[48] and cannot occur in a competitive market or if a service is not provided by a monopolist.[49] The cost of service for some users (the burdened market) is priced above marginal cost in order to create a surplus of revenue, which is used to subsidize services that would be prohibitively expensive for other customers if priced at marginal cost. In this situation, competitors in the burdened market could price their services above marginal cost, but below the cost the monopoly provider must charge in order to subsidize the unprofitable market.

Telecommunications was initially considered a natural monopoly because of the large capital costs required to install residential phone service.[50] However, in the United States, the subsidies created by the monopolized telecommunications services did not follow a cognizable pattern and may have subsidized parties not intended to receive a subsidy.[51] The condition persisted in large part because of the sparsity of data provided by AT&T that might have demonstrated that some telecommunications services, such as long-distance, are not natural monopolies.[52] The rise of a competitive long-distance telecommunications market indicates that long-distance telecommunications service is not a natural monopoly.

2. Traditional Models of Economic Analysis Cannot Be Applied to INTELSAT

The problem with applying a cream-skimming analysis to the proposed entrance of separate systems is that INTELSAT is not a regulated natural monopoly. INTELSAT is an international

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48. A natural monopoly is said to exist when the cost for a product would be lower if there were a single supplier. Regulation is required only to simulate the effects of competition. 2 *id.* at 2.

49. *See* 2 *id.* at 2, 7. In a free market, cream-skimming is simply competition. If a monopoly were artificially created, competition could only result from a change in the circumstances that created the monopoly. If a monopoly were not regulated, any limited competition could be underpriced by the monopoly provider.

50. *See* TUNSTALL, *supra* note 6, at 90-91.

51. *See id.* at 92.

52. *See id.*

cooperative owned by the nations or designated telecommunication companies that are signatories to the INTELSAT Agreement.[53] The owners of INTELSAT are typically the monopoly providers of postal, telephone, and telegraph (PTT) services for the signatory countries.[54]

In order to understand the economics of INTELSAT, it is necessary to understand how INTELSAT interacts with the owners of the system. When a customer places a phone call requiring the services of INTELSAT, the customer must deal with the organization that owns INTELSAT for the customer's country. This company is typically a PTT.[55] The country receiving the call has a similar arrangement for routing the call from the downlink (the earth station receiving the call) to the party receiving the call.

Under this system, at least three companies are involved in the completion of an international call. The charge for the call is split between the two terrestrial companies,[56] who must later pay for INTELSAT's services. The charge for the space segment of the call can be nearly 10 percent of the cost of the call between two countries with well-developed terrestrial networks.[57] INTELSAT's services are an indirect cost to the user and a relatively fixed cost to the service provider.

C. *INTELSAT's Pricing Structure Prevents the Creation of a Subsidy*

Assuming that INTELSAT were correct, and cream-skimming by the separate systems could occur, it cannot be shown that service to developing countries actually burdens INTELSAT. A service would burden INTELSAT if the revenue derived from

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53. INTELSAT Agreement, *supra* note 2, preamble, 23 U.S.T. at 3814-15, 1220 U.N.T.S. at 22-24; *id.* art. II, 23 U.S.T. at 3818, 1220 U.N.T.S. at 25.

54. *See* KELLOGG ET AL., *supra* note 4, §§ 15.3.2, 15.6.1-.4.

55. In the United States, a second company provides this connection to COMSAT, the company designated by the United States under the INTELSAT Agreement. INTELSAT Agreement, *supra* note 2, art. II(b), 23 U.S.T. at 3818, 1220 U.N.T.S. at 25.

56. KELLOGG ET AL., *supra* note 4, § 15.5.2.

57. *See Communication Hearings*, *supra* note 42, at 35 (statement of Richard R. Colino, Director General-Designate, INTELSAT).

providing the service did not cover the service's marginal cost.[58] However, INTELSAT's pricing structure does not differentiate between service to remote countries and service to developed countries. All countries are charged the same unit cost for the type of service regardless of volume[59] because the system does not make pricing distinctions based on the origin of the signal. Therefore, it cannot be shown that low volume routes burden high volume routes.

INTELSAT argued not that service on the "light routes" did not cover marginal cost, but rather that any loss of utilization must result in greater marginal costs per user.[60] The argument did not account for the organization's flexibility to respond to changes in demand. Further, INTELSAT did not establish that the markets served by separate systems would consist of telecommunications traffic that was previously carried by INTELSAT.

The proposed separate systems were initially licensed to provide telecommunications services between discrete locations.[61] The services would bypass the companies providing the public-switched terrestrial network, transmitting such data as financial market data, news, and intercorporate communications. Because the owners of INTELSAT are typically the companies that would also stand to lose revenues to the separate systems, it is likely that the objections raised by INTELSAT were not based upon the loss of revenues to INTELSAT, but rather upon the loss of revenues to the PTTs and other INTELSAT owners.

CONCLUSION

As a result of the growth in the telecommunications market and the continued prosperity of INTELSAT, INTELSAT's claims of imminent economic harm have rung hollow. This Comment

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58. 2 KAHN, *supra* note 47, at 221.

59. INTELSAT Agreement, *supra* note 2, art. V(d), 23 U.S.T. at 3823, 1220 U.N.T.S. at 27.

60. *See* Colino, *supra* note 1, at 113-14.

61. The separate systems were restricted to services that do not connect with the public switched network. Separate Systems, *supra* note 7, para. 265.

clarifies why INTELSAT and its members have not suffered the predicted economic harm.

First, the separate systems have not caused INTELSAT economic harm because no technical reason exists for high volume routes to subsidize low volume routes. By redeploying satellites, INTELSAT can accommodate changes in traffic without causing a decrease in satellite utilization. Second, INTELSAT has not suffered economic harm from the separate systems because INTELSAT is not a regulated monopoly that must subsidize services to certain users. A decrease in traffic on high volume routes would cause only a short term increase in the price of service for those customers.

The FCC announced that the restrictions placed on the separate systems will be removed by 1997.[62] In response to the FCC's decision, COMSAT's Chairman and CEO stated in a press release, "Everybody wins with this decision."[63] The press release further noted that "COMSAT has led the fight to bring the advantages of increased competition to INTELSAT."[64] While the latter assertion may seem disingenuous in light of the INTELSAT members' unanimous resolution against the entrance of separate systems,[65] this change in position reflects INTELSAT members' acceptance of the conclusions presented in this Comment.

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62. *In re* Permissible Servs. of U.S. Licensed Int'l Comm. Satellite Sys. Separate from the Int'l Telecomm. Satellite Org. (INTELSAT), *Order*, 7 FCC Rcd. 2313, para. 6 (1992).

63. *COMSAT Says "Everybody Wins" with Government Decision to Liberalize Satellite Telephone Restriction*, Business Wire, Nov. 27, 1991, *available in* LEXIS, News Library, Bwire File.

64. *Id.*

65. Colino, *supra* note 1, at 115, 122-23.