## IV. INDUSTRY CONDUCT AFFECTING MARKET STRUCTURE AND SECTOR PERFORMANCE IN SATELLITE COMMUNICATIONS SERVICES

134. This section of the *Report* identifies certain behaviors of both satellite operators and customers that influence the structure of the various satellite industry sectors and determine how well these industry segments meet customer requirements. There are factors, however, other than seller and buyer conduct that may influence industry structure and performance. Such factors, considered exogenous forces that influence both industry structure and behavior, are discussed in Section IV.A and include technological change, U.S. government policies and actions, and the policies and actions of foreign administrations.[258] Following the discussion of exogenous factors, Section IV.B considers specific seller conduct that may affect industry structure and performance, namely, vertical integration, pricing behavior, and certain alleged anticompetitive acts by satellite operators. Finally, Section IV.C considers buyer behavior in both retail and wholesale industry segments.

### A. Exogenous Factors Affecting Industry Behavior

#### 1. Technological Change

##### a. Advances in Satellite Antennas and Signal Processing

135. The antenna of a satellite consists of a "feed structure" and a reflector. The feed structure illuminates the reflector with the Radio Frequency ("RF") power to be transmitted to earth. The reflector concentrates the power from the feed structure into a tight beam, or beams, much like the reflector of a flashlight concentrates light from the flashlight's lamp. With proper illumination from the feed structure, the satellite antenna can produce several hundred small beams on the earth's surface with the RF power in each beam being, more or less, independent of the power in the other beams. Changing the feed structure will vary the illumination on the reflector and result in a different configuration of spot beams, increasing or decreasing the number, size, and location of the spot beams on the earth's surface.

136. The same holds true in receiving power from a transmitter on the Earth's surface. The transmitted signal is "collected" by the satellite reflector and focused on the feed structure. Different parts of the feed structure receive the power and combine it as if the power came from several hundred spot beams. Changes to the feed structure can, again, modify the apparent size and location of the receive spot beams. Changes to the feed structure can be accomplished by adjusting hardware onboard the satellite, through satellite on-board signal processing or by transmitting the user signals received by the feed structure to the earth and performing the signal processing at a central processing station.

[258] Within the context of the discussion of Section IV.A, an *exogenous* factor or force refers to some variable or parameter that influences the outcome of the interplay between other variables, such as buyers and sellers interacting in a specific market where equilibrium output price and quantity are determined, but is not itself influenced by the interaction of the other variables. The notion of exogeneity generally is most sharply drawn in econometrics. See, for example, Robert F. Engle, David F. Hendry, and Jean-Francois Richard, "Exogeneity," *Econometrica* 51 (1983):277-304.

137. Skyterra-1, launched by LightSquared in 2010, has the largest commercial satellite antenna reflector on an MSS satellite and next year we expect that a satellite with an even larger reflector will be launched, again on a commercial MSS satellite.[259] As the size of the reflector increases, the satellite gains an increase in the effective transmit power (by concentrating the actual RF power into smaller spot beams) and an increase in receive sensitivity (due to the larger collection area of the reflector). Increases in the transmit power and receive sensitivity permit the satellite to operate with smaller user terminals, and the latest MSS satellites should be able to communicate with cell phone-size user terminals.

#### b. Ground Based Signal Processing

138. As mentioned, effective changes to the feed structure can be accomplished in a number of ways, including by processing the user signals passing through the physical antenna feed structure on the satellite. The latest trend in the MSS systems is to perform the signal processing on the ground. Using ground signal processing provides several advantages and at least one significant challenge. The challenge is that effective use of ground based processing requires that the user signals passing through the various elements of the feed structure be transmitted from the satellite to the central signal processing facility, or from the signal processing facility to the satellite. The feed structure can consist of, potentially, tens of physical transmit and receive elements. The actual signals from each element for the entire user frequency band must be up-linked to, and down-linked from, the satellite. This results in a very large requirement for feeder link capacity. This challenge can be met by dividing the user signal into portions small enough to fit into the feeder link assignment and using multiple earth stations spaced far enough apart that the feeder links associated with each earth station do not interfere with each other. The individual portions of the data streams received by each earth station can then be re-combined at the signal processing facility.

139. The most obvious advantages of using ground signal processing is that the satellite is simplified by the removal of the on-board processors. The simpler the satellite, the less there will be to go wrong. Another advantage has to do with Moore's Law, *i.e.*, commercially available computing power doubles roughly every two years. Once a satellite is constructed the satellite's computing power is fixed for the life of the satellite. Moving the signal processing to the ground permits the operators to take advantage of increases in computing power as they occur and are cost effective for the system. Additional signal processing, for example, to add interference suppression, signal enhancement, and flexible re-configuration of spot beams can be added to the system as the computer power and research into signal processing algorithms permits. For an MSS system that is also implementing ATC, the flexibility of ground signal processing permits the operators to more easily modify the spot beam coverage of the satellite as the ATC system grows. Additionally, by reconfiguring the spot beams, satellite capacity can be moved to and from areas of the earth as required, allowing more capacity to be provided to areas that have suffered loss of terrestrial communications through natural disasters.

### 2. U.S. Government Policies and Actions

#### a. Spectrum Allocations and Orbital Locations

140. As previously noted, in order to provide satellite communications into the United States, an operator must obtain the necessary government approval to use specific radio frequency spectrum and in many cases an associated set of orbital parameters. Although technological advances have steadily increased the ability to fit more users into any given band, radio spectrum remains a finite resource. As

[259] Because no comparably significant technological change in FSS occurred in 2008, this *Third Report* will discuss only changes in MSS.

the Commission noted in the *First* and *Second Reports* to address the fact that spectrum is scarce, the Commission has progressively implemented a more flexible, market-oriented model of spectrum assignment for commercial satellite services.[260] In addition to the two licensing frameworks previously described in this *Report*,[261] the Commission, coupled with certain safeguards against speculation, has also made it easier for licensees to sell their licenses,[262] and instituted secondary market reforms where satellite bandwidth can be put to more efficient uses in response to changing conditions and consumer demands.[263]

#### b. U.S. Government Policy Regarding Entry

141. Pursuant to the satellite market-opening commitments made by the United States in the World Trade Organization's ("WTO's") Agreement on Basic Telecommunications Services, the Commission has permitted many foreign-licensed satellites to provide FSS and MSS in the United States.[264] The Commission has also allowed entry into U.S. industry segments for satellite services not covered by its commitments.[265] For example, by inclusion on the Commission's Permitted List many non-U.S. licensed satellite operators are permitted to provide service in the United States.[266]

### 3. Foreign Administrations' Policies and Actions

142. In directing the Commission to prepare this *Report*, Congress requested that the Commission compile "a list of any foreign nations in which legal or regulatory practices restrict access to the market for satellite services in such nation in a manner that undermines competition or favors a particular competitor or set of competitors."[267] As directed by Congress, we requested comment on "the legal or regulatory practices of foreign nations that have the effect of restricting access to that nation's market for satellite services." We also asked commenters to tell us "what types of legal or regulatory practices hinder U.S. firms from fully participating in a given foreign market" and if there are "legal or regulatory practices that favor a particular competitor or set of competitors."[268] We summarize the comments in the record and, consistent with our prior *Reports*, make no determination on the information provided.[269]

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[260] In 2003, the Commission substantially revised the procedures for considering license applications, which had been in place since 1983. *First Space Station Reform Order,* 18 FCC Rcd 10760.

[261] *See supra* para. 131.

[262] *Id.* at ¶ 218.

[263] *Id.* at ¶ 215.

[264] The WTO was established pursuant to the *Marrakesh Agreement Establishing the World Trade Organization*, 33 I.L.M. 1125 (1994).

[265] *See, e.g., EchoStar Satellite, LLC For Blanket Authorization to operate 1,000,000 Receive-Only Earth Stations to provide Direct-to-Home Fixed Satellite Service in the United States using the Canadian-authorized ANIK F3 Satellite at the 118.7° W.L. Orbital Location*, DA 05-3227, Order and Authorization, 20 FCC Rcd 20083, 20087-89, ¶ 14 (2005).

[266] These U.S. government actions and policies are described in more detail in the *First Report*. *See First Report,* 22 FCC Rcd at 5988-91, ¶¶ 113-17.

[267] 47 U.S.C. § 703(b)(3).

[268] *Notice,* 24 FCC Rcd at 5429.

[269] *First Report,* 22 FCC Rcd at 5992, ¶121; *Second* Report, 23 FCC Rcd at 15191, ¶66. See *also* Appendix B.

143. In its comments SIA notes that, in many parts of the world, commercial satellite providers may face foreign competitors that are owned or heavily financed by their respective governments as well as regulatory requirements that raise barriers and favor domestic providers.[270] SIA includes in the record of this proceeding its comments to the United States Trade Representative's (USTR's) 2009 and 2010 Section 1377 Review of Telecommunications Trade Agreements. SIA notes that USTR has made particular mention of problems in China, India, Russia, Korea and other countries.[271] In Costa Rica, for instance, regulatory issues related to authorization of satellite Internet services have delayed licensing of service providers for over two years, though progress is being made.[272] SIA also notes that USTR discusses some of the challenges operators face in countries where government regulations pose unwarranted barriers to providing service.[273] In its comments, SIA identified market barriers established by foreign nations that may discourage entry by U.S. satellite operators or satellite service providers, including:[274]

- Lack of transparent, non-discriminatory and timely licensing procedures;
- Requirements for local presence or a local partner;
- No national treatment (*i.e.,* most favored nation status) for U.S. satellite operators;
- Requirements for completion of the ITU frequency coordination process prior to granting market access;
- Monopolies for domestic satellite operators or service providers;
- Prohibitions on U.S. satellite operators transporting broadcast video signals and associated audio signals; and
- Requirement for deployment of specific technologies.

Appendix B to this *Third Report* reproduces a list of nations that SIA – not the Commission – identified as engaging in one or more of the foregoing barriers to entry by U.S. satellite service providers. These barriers are described more fully in the *First Report*.[275]

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[270] Comments of Satellite Industry Association, filed August 23, 2010 (SIA Comments) at 26.

[271] SIA Comments at 28, fn 123, *citing,* U.S. Trade Representative, 2010 National Trade Estimate Report on Foreign Trade Barriers (2010) ("2010 USTR Trade Estimate Report"), *available at* http://www.ustr.gov/sites/default/files/uploads/reports/2010/NTE_COMPLETE_WITH_APPENDnonameack.pdf.

[272] USTR 2011 Section 1377 Review of Telecommunications Trade Agreements, at 16, *available at* http://www.ustr.gov/webfm_send/2788.

[273] SIA Comments at 27, n. 122, USTR 2010 Section 1377 Review of Telecommunications Trade Agreements, at 10, *available at* http://www.ustr.gov/sites/default/files/2010%2003%201377%20REPORT%20 FINAL.pdf (last visited Aug. 22, 2010).

[274] Appendix B to this *Third Report* includes a list of the nations SIA identified as engaging in one or more of the foregoing barriers to entry by U.S. satellite service providers. *See also First Report,* 22 FCC Rcd at 5991-96, ¶¶ 118-137.

[275] *First Report*, 22 FCC Rcd at 5991-96, ¶¶ 118-137.

## B. Seller Behavior

### 1. Vertical Integration in the Commercial Satellite Industry

144. Another trend observed in the satellite industry is vertical integration, *i.e.,* in addition to providing the space segment of satellite communications services the satellite operator also provides the earth segment. Vertical integration enables a satellite operator to provide a complete, customer-specific package.

145. Initially, vertical integration was observed in the emerging satellite systems, *e.g.*, PanAmSat, that competed with intergovernmental satellite bodies such as INTELSAT and INMARSAT. These entrants typically structured themselves in an integrated fashion that combined space and earth segment operations.[276] The privatization of INTELSAT and INMARSAT removed limitations on the ability of those entities to offer vertically integrated services.[277] For U.S. customers, direct access meant that they were no longer required to obtain INTELSAT access by transacting with COMSAT.

146. Some of the vertical integration of recent years has been accomplished via vertical mergers or acquisitions involving pairs of FCC licensees. For example, Inmarsat's acquisition of Stratos Global in April 2009 allowed Inmarsat to expand its distribution chain and sell satellite-based retail services directly to customers.[278] In approving Inmarsat's acquisition of Stratos, the Commission found that efficiencies were likely to result from the vertical combination.[279]

147. Intelsat expanded vertically in 2004 by creating its subsidiary Intelsat General Corp, (IGC), which is a combination of Intelsat Government Solutions Corp. and the acquired Comsat General Corp.[280] In approving the acquisition of Comsat General, the Chiefs of the FCC's International and Wireless Telecommunications Bureaus stated "we find that the combination of Intelsat's operations with the assets it proposes to acquire from COMSAT General Businesses should provide Intelsat with the ability to provide its customers greater end-to-end international communications solutions and allow Intelsat to realize economies of scale and scope."[281] Through IGC, Intelsat offers to corporate users

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[276] *See* In the Matter of Establishment of Satellite Systems Providing International Communications, CC Docket No. 84-1299, 101 FCC 2d 1046, ¶ 46 (1985).

[277] 47 U.S.C. § 765(a). "(a) ACCESS PERMITTED.--Beginning on the date of enactment of this title, users or providers of telecommunications services shall be permitted to obtain direct access to INTELSAT telecommunications services and space segment capacity through purchases of such capacity or services from INTELSAT. Such direct access shall be at the level commonly referred to by INTELSAT, on the date of enactment of this title, as 'Level III'." Level III direct access permits non-signatory users and service providers to enter into contractual agreements with INTELSAT for space segment capacity at the same rates that INTELSAT charges its Signatories without having to use a Signatory as a middleman. Direct Access to the INTELSAT System, *Report and Order*, IB Docket No. 98-192, 14 FCC Rcd 15703 (1999) (*Direct Access Order*).

[278] *Robert M. Franklin & Inmarsat, PLC,* IB Docket No. 08-143, Memorandum Opinion and Order and Declaratory Ruling, 24 FCC Rcd 449 (2009) (*Robert M. Franklin & Inmarsat MO&O*).

[279] *Id.* at 24-25.

[280] http://www.intelsatgeneral.com/docs/news/2004-11-18_COMSAT.pdf.

[281] Public Notice, "Authorizations Granted, Applications of Comsat General Corporation, Lockheed Martin Global Telecommunications LLC, Comsat New Services, Inc., Intelsat LLC, and Intelsat MTC LLC to Assign Licenses and Authorizations and Request for a Declaratory Ruling on Foreign Ownership, IB Docket No. 04-235, DA 04-3418, October 27, 2004, at 3.

integrated space segment and earth segment operations along with terrestrial-based transmission facilities and network management services. These turnkey telecommunications "solutions" were formerly only available through terrestrial-based common carriers or satellite resellers/integrators.[282]

### 2. Pricing Behavior and Market Power

#### a. Nature of Market Power

148. Most firms have some degree of technical market power,[283] *i.e.*, an ability to raise price somewhat without losing all sales, at least with respect to some of the products supplied to certain industry segments.[284] Given the assumption that all satellite operators have a similar cost structure (although somewhat different cost levels), the pricing of satellite communications services above the marginal cost of production is a necessary attribute of satellite operator conduct essential to the recovery of total industry costs. Pricing by a satellite operator above marginal cost and beyond what is required to recover the total cost of production may be anticompetitive and harmful to consumers. Practically, measurement of technical market power in various segments of the satellite communications industry is both complex and difficult given the very limited data available in the record.

#### b. Retail and Wholesale Services

149. Both the conceptualization of market power and the pricing of wholesale satellite services differ significantly from retail satellite services. Although satellite radio is presently supplied to consumers by a single satellite operator, other retail satellite applications, such as mobile and fixed broadband services and mobile and fixed network services, are supplied by multiple satellite operators and, for some applications, by terrestrial telecommunications entities. Measuring the extent of market power for satellite operators facing some degree of rivalry requires a more complex theory than what is provided by the basic monopoly model. In particular, in retail industry segments, the satellite operator sells to many, largely anonymous customers. All retail customers pay essentially the same price for the same, homogeneous service, except for introductory or promotional offers, and are generally offered the same terms and conditions of service as disclosed and advertised, for example, on a satellite operator's website.[285]

150. By contrast, in wholesale industry segments, the satellite operator sells to relatively few customers that are generally well-known to the satellite operator. It is often the case that the wholesale

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[282] http://www.intelsatgeneral.com/aboutus/company_overview.aspx.

[283] *See* Louis Kaplow and Carl Shapiro, "Antitrust," Working Paper 12867, National Bureau of Economic Research, January, 2007 (available at http://www.nber.org/papers/w12867), at 3. Any firm facing a downward sloping demand curve (as opposed to a perfectly elastic demand curve) has technical market power.

[284] To avoid financial losses, total revenues must equal the total cost of production. If a firm prices its products or services at marginal cost, the firm will incur a loss equal to its fixed cost of production. A firm will therefore exercise its technical market power to set price somewhat greater than marginal cost so that its total cost of production is recovered. This exercise of market power is not harmful to consumers since pricing above marginal cost is required to make the output available to consumers on a continuing basis without the firm operating at a loss.

[285] The retail satellite service is homogeneous in the sense that all customers of a particular *service category* receive the same service at the same price. Satellite operators do offer retail customers alternative service categories with different features, terminal equipment, and subscription terms. Consequently, there may exist price discrimination *between* different service categories but not ordinarily *within* a given service. In other words, whatever price discrimination may exist between and among service categories does not depend on the *identity* of the consumer. Ordinarily, any consumer subscribing to the *same* service package will pay the same as any other customer selecting the same service.

customer will have a long-term, established business relationship with the satellite operator. Additionally, the wholesale customer is usually highly knowledgeable concerning both the satellite communications industry and satellite technology. The unit of sale in wholesale industry segments, often the lease of a substantial fraction of a transponder or even entire transponders, is far larger than the ordinary retail unit of sale and is typically for a far longer length of time compared to a retail sale. Moreover, compared to the retail unit of sale, the wholesale unit of sale (*i.e.*, a lease of transponder capacity) is intrinsically heterogeneous (*i.e.*, differentiated in terms of attributes).[286] For these reasons, some understanding of both satellite technology and the economic organization of a satellite services enterprise is essential to understanding both the pricing and exercise of market power in wholesale industry segment.

151. By way of background, price determination for satellite operators offering wholesale services is typically the result of bilateral negotiations or bargaining between the customer and the satellite operator.[287] It is possible to identify certain attributes of the bargaining environment that are predictive of the conduct of both satellite operators and wholesale customers.[288] Negotiations between a satellite operator and a wholesale customer are multidimensional and include much more than just the pricing of leased transponder services. Negotiations may also involve the terms and conditions of the transponder lease contract, including payment schedules, cancellation penalties, legal issues and other aspects of service delivery, including the nature and extent of customer support following contract execution. For both parties, building and sustaining a workable, ongoing, and long-term commercial relationship benefits both the satellite operator and the customer given the length of term of many transponder leases and the technical nature of the service which requires adjustments and modifications as technology evolves. However, the net or incremental economic benefits produced by the deal need not necessarily be shared on a pro rata basis between, or among, the parties. If the customer has credible outside options, such as alternative vendors of transponder capacity or the ability to substitute fiber optic transmission facilities for satellite transponder capacity and is not risk averse, then the negotiated price for leased transponder capacity may include little if any economic profit for the satellite operator.

152. Data from Futron Corporation summarize the results of the bargaining process for heterogeneous and multi-dimensional FSS wholesale transponder services (see Table IV.1). Futron reports average transponder lease rates, for the equivalent of 36 MHz per year of capacity, for three major spectrum categories: C-band, Ku-band, and Premium Ku-band (premium Ku-band is typically used to provide high-power services, generally 50 dBw or above). The data are reported for three time periods, spanning the years 2004 through 2009, and for four regions: North America, Europe/Middle East/Africa (EMEA), Asia/Pacific, and Latin America.

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[286] *See* the discussion and analysis of the nature of the output produced by the satellite industry in Section III.A of this *Report*.

[287] Bargaining as a method for effectuating exchange and implementing a contract between buyer and seller tends to replace impersonal market exchange with its parametric prices for consumers in cases where the number of buyers and sellers are *few*, and the good or service to be exchanged is relatively high in value. Since bilateral bargaining is costly in terms of the opportunity cost of the parties and in terms of the cost implied by a potential delay in striking a bargain, this method of effectuating exchange is too costly or inefficient for relatively low-valued transactions for a large number of customers, such as retail satellite services.

[288] This discussion addresses the major long-term contractual issues that are most directly related to the wholesale customer's acquisition of satellite transponder capacity as an investment decision, say, leasing transponder capacity for 10 or 15 years. There are other satellite industry segments where the dynamics of contractual negotiations may differ somewhat, such as the spot market for transponder capacity for satellite news gathering, which relate to the wholesale customer's very short term requirements for transponder capacity.

**TABLE IV.1**

**AVERAGE TRANSPONDER LEASE RATES IN US $[289]**

| **Average C-Band Transponder Lease Rates (36MHz/Year)** | | | | |
|---|---|---|---|---|
| | **North America** | **EMEA*** | **Asia/Pacific** | **Latin America** |
| 2004/2005 | $1,300,000 | $1,400,000 | $1,250,000 | $1,350,000 |
| 2006/2007 | $1,300,000 | $1,200,000 | $1,400,000 | $1,100,000 |
| 2008/2009 | $1,600,000 | $1,800,000 | $1,350,000 | $1,600,000 |
| 2010 | $1,300,000 | $2,000,000 | $1,450,000 | $1,400,000 |
| **Average Ku-Band Transponder Lease Rates (36MHz/Year)** | | | | |
| | **North America** | **EMEA*** | **Asia/Pacific** | **Latin America** |
| 2004/2005 | $1,800,000 | $2,000,000 | $1,500,000 | $1,500,000 |
| 2006/2007 | $1,800,000 | $2,000,000 | $1,600,000 | $1,700,000 |
| 2008/2009 | $2,500,000 | $3,000,000 | $1,750,000 | $1,800,000 |
| 2010 | $2,000,000 | $2,200,000 | $2,000,000 | $1,500,000 |
| **Average Premium Ku-Band[290] Transponder Lease Rates (36MHz/Year)** | | | | |
| | **North America** | **EMEA*** | **Asia/Pacific** | **Latin America** |
| 2004/2005 | $2,600,000 | $5,000,000 | | |
| 2006/2007 | $2,300,000 | $5,000,000 | $1,800,000 | |
| 2008/2009 | $3,000,000 | $4,000,000 | $2,500,000 | |

* Europe/Middle East/Africa (EMEA)

153. Figures IV.1 through IV.4 provide a graphical representation of the transponder lease rate data reported in Table IV.1. Pricing behavior for transponder capacity over the years 2004/2005 through 2010 differs over time and between and among different global regions. In broad terms, transponder lease rates tend to mirror the intensity of demand at a given time in a particular region and the availability of transponder capacity for meeting this demand. In the North American region, lease rates have been relatively stable over the reported time period; the decline in both C-band and Ku-band transponder rates in 2010 may be attributed to general macroeconomic conditions.[291] In EMEA, declines in transponder rates in recent years are attributed to both economic weakness in Europe and significant increases in fiber optic cable capacity serving the African continent in addition to increases in terrestrial telecommunications facilities. Volatility in transponder pricing is anticipated in coming years as the increases in both fiber optic cable capacity and terrestrial telecommunications facilities are accommodated within EMEA.[292] In the Asia-Pacific region, demand for transponder capacity has steadily increased over the 2004/2005 to 2010 time period, especially for premium Ku-band capacity to meet the growing demand for various video services.[293] In the Latin America region, transponder pricing has

[289] Based on data from Futron Corp.

[290] Ku-Band with high-power services, generally 50 dBw or above.

[291] Communication with Futron consultants, September 7, 2011.

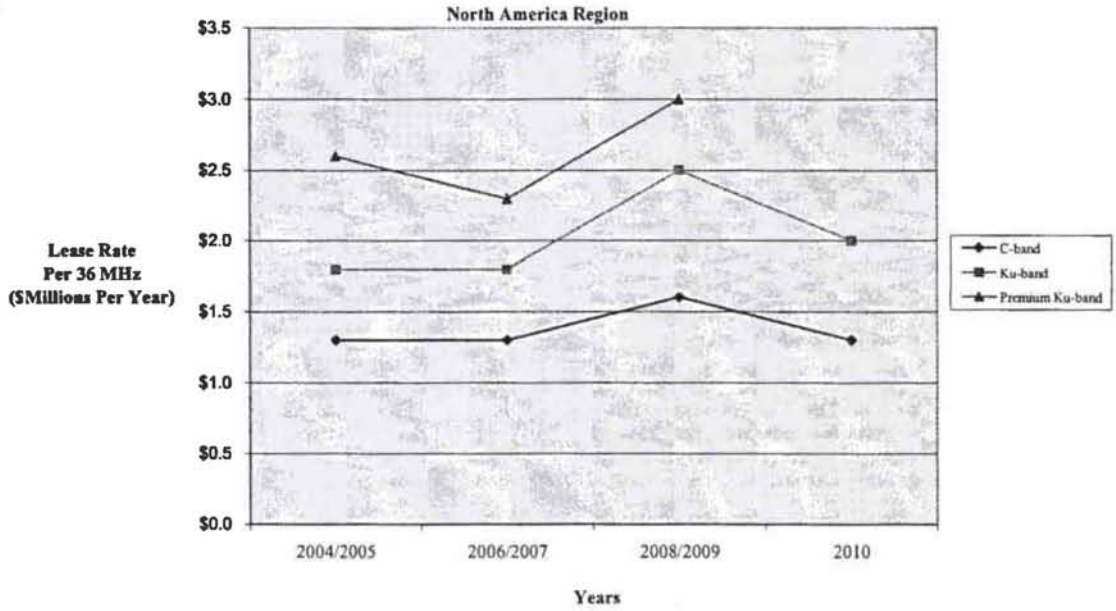
[292] *Id.*

[293] *Id.*

weakened in the last several years, reflecting once again the relatively weak macroeconomic environment in Latin America and the accommodation to planned new transponder capacity that will serve this region in the near future.[294]

**Average Transponder Lease Rates**
**2004-2010**
**(36 MHz Equivalent Per Year)**

**FIGURE IV.1**




[294] *Id.*

FIGURE IV.2

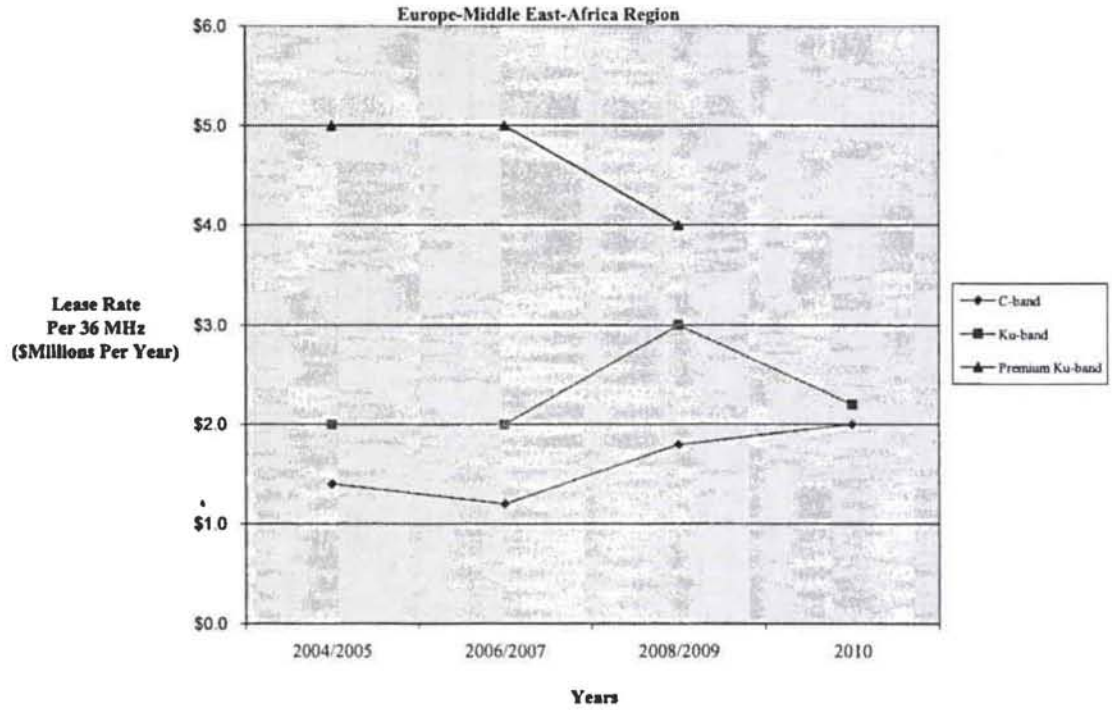



FIGURE IV.3

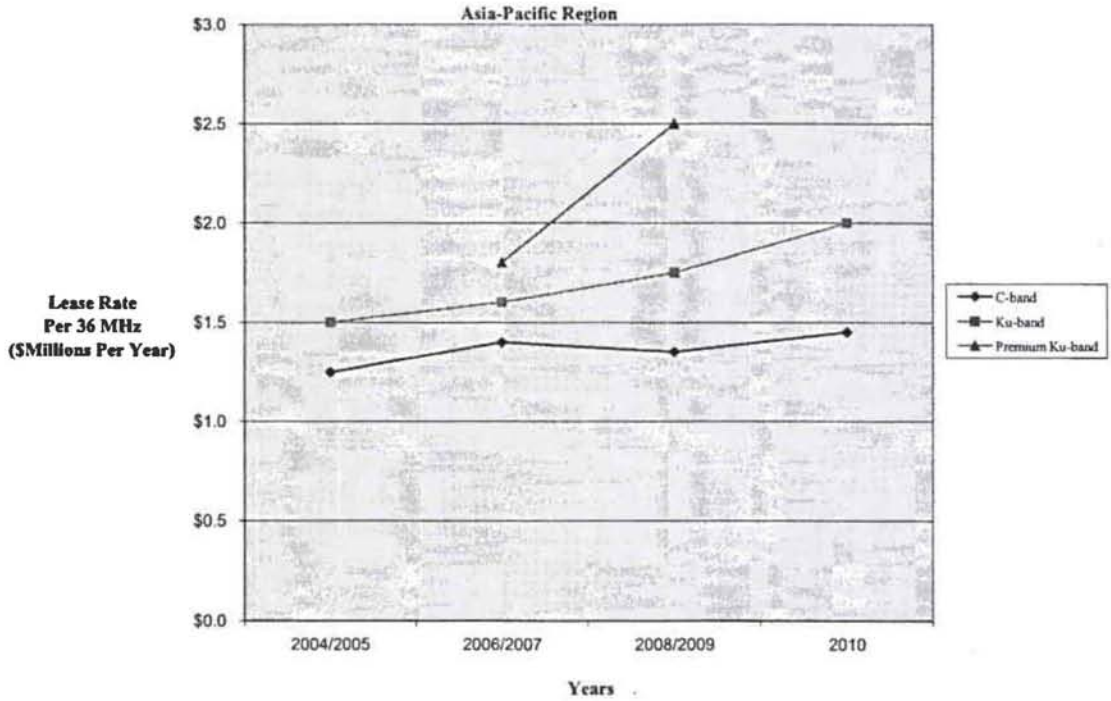
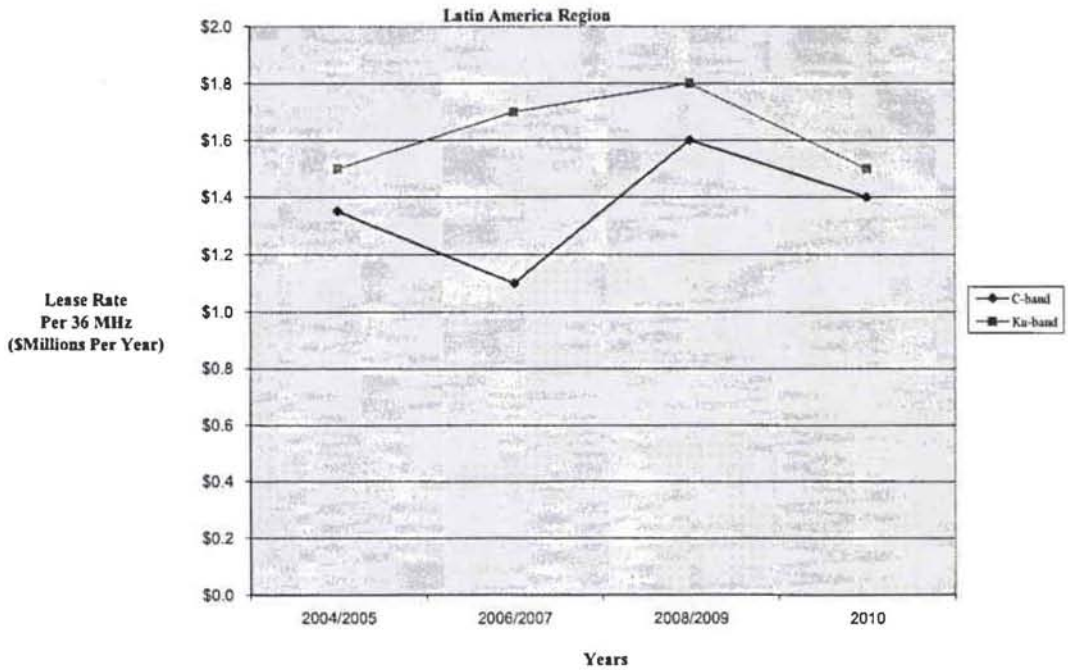


FIGURE IV.4




### 3. Allegations of Anticompetitive Behavior

154. This *Third Report,* discusses two allegations of anticompetitive behavior related to the FSS sector. First, it is alleged that Intelsat has anticompetitively foreclosed some independent reseller/integrator firms from obtaining space segment capacity. Second, it is alleged that the large incumbent FSS operators – *i.e.,* Intelsat and SES Americom – are anticompetitively hoarding or "warehousing" geostationary orbital slots and spectrum frequency assignments. Because neither of these issues falls into the category of *per se* anticompetitive behavior, we examine both allegations to determine whether there is substance behind the claims and, assuming that these are substantive allegations, whether economic inefficiency and consumer harm results. We consider them in turn below.[295]

#### a. Allegations of Vertical Foreclosure in the FSS Sector

155. During the first half of 2010, comments by some industry participants raised the possibility that one particular type of vertical anticompetitive behavior was occurring in the FSS sector. As described above in Section IV.B.1, Intelsat has integrated downstream, *i.e.*, Intelsat is now providing directly satellite network services via its marketing subsidiary IGC. This means that, in certain instances, Intelsat transacts directly with government and corporate customers, and provides them with customer-specific packages that include space and earth segment services as well as other related terrestrial

[295] Here we simply analyze the foreclosure and warehousing conduct allegations. The question of what these analyses mean for an ultimate finding regarding the state of competition in the FSS sector is addressed in Section VI.

transmission and management services.[296] Several reseller/integrator firms argue that, along with this integration, Intelsat has foreclosed them from acquiring transponder capacity, resulting in harm to government and corporate customers.

156. *Comments*.[297] The possibility that Intelsat harms the public interest by foreclosing resellers/integrators was first raised by certain commenters in the Commission's 11th ORBIT Act Report.[298] In the ORBIT Act Report, ARTEL, CapRock, and Globecomm all essentially argue that several factors – Intelsat's privatization; increased consolidation in the FSS sector; an absence of FSS entry opportunities; and an absence of terrestrial service alternatives – give Intelsat the incentive and ability to: (1) vertically integrate into the direct provision of end-to-end services to certain customers; and (2) foreclose resellers/integrators from these business segments.[299] Further, these commenters argue that the harms that result from this vertical integration and foreclosure of opportunities extend beyond them and affect government and corporate customers in the form of higher prices or inferior service packages.[300]

157. These firms argue that Intelsat's foreclosure behavior takes a number of forms.[301] First, when a reseller/integrator, in preparation for a bid, seeks a commitment of space segment capacity from Intelsat, Intelsat, in some instances, allegedly refuses to provide any pricing information for the requested space transponder service. For example, Intelsat allegedly effectively refuses to provide space segment capacity at any price, thus preventing the reseller/integrator from being able to fashion a bid for a prospective customer.[302] Second, the resellers/integrators also state that, at least in the case of one government bid, Intelsat made available only a package of space segment capacity that prevented the resellers/integrators from crafting different overall service solutions for the customer to consider. According to the commenters, this take-it-or-leave-it "forced bundle" made their bids uncompetitive.[303] Third, resellers/integrators also make a distinct claim of partial foreclosure: in some instances, where an incumbent resellers/integrator provides service pursuant to a particular contract and that contract is up for renewal, the resellers/integrators allege that Intelsat offers space segment at a lower price to the incumbent provider but at a higher price to competing resellers/integrators trying to win the business. This "incumbent pricing" policy allegedly predetermines that the incumbent integrator will win the

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[296] *See, e.g.*, http://www.intelsat.com/services/, and http://www.intelsat.com/_files/resources/knowledge/datasheets/ds-ground-system-solutions.pdf.

[297] Because our purpose is to provide an analysis of the economic dispute here, and not to undertake a formal adjudication, we describe only those parts of the comments that are relevant to the vertical foreclosure claim.

[298] *FCC Report to Congress as Required by the ORBIT Act: Eleventh Report*, FCC 10-112, Report, 25 FCC Rcd 7834 (June 15, 2010) (*11th Orbit Act Report*).

[299] *See* the Orbit Act Comments of ARTEL, Inc., CapRock, and Globecomm Systems, Inc. These comments are also fully described in the *11th Orbit Act Report* at 22-26, 28-29.

[300] ARTEL Orbit Act Comments at i; CapRock Orbit Act Comments at 17.

[301] The reseller/integrator firms emphasize that the foreclosure is given effect by an Intelsat requirement that they deal not with Intelsat itself but rather with Intelsat's subsidiary IGC, which they view as their competitor in the downstream services market. We do not focus on this corporate organization point, but rather on the substantive fact that Intelsat has integrated downstream, offering transponder and related services directly to government and enterprise customers, and acting as both a supplier to and competitor of the resellers/integrators.

[302] ARTEL Orbit Act Comments at 5; Globecomm Orbit Act Comments at 4.

[303] CapRock Orbit Act Comments at 9.

bidding for the future business.[304] Fourth, the resellers/integrators allege that Intelsat not only unilaterally forecloses independent integrators, but also colludes with other space segment providers to prevent the integrators from bypassing Intelsat and obtaining space segment from those other sources,[305] *i.e.*, horizontal collusion in the upstream space segment market is facilitating and enhancing the vertical foreclosure of downstream independent resellers/integrators.

158. These commenters also allege that their protests against such foreclosure practices, either via direct complaint to Intelsat or formal challenge of a government contract award, have been subject to retaliation by Intelsat, *e.g.*, being denied space segment capacity that would enable them to bid for other, unrelated contracts.[306]

159. For purposes of this *Third Report,* CapRock repeats many of its ORBIT Act arguments. As a result of increased concentration in the satellite sector, CapRock contends that Intelsat has market power in the provision of international FSS, *i.e.*, transponder service between the U.S. and other regions of the world. Thus, CapRock believes a portion of international FSS traffic is not subject to effective competition.[307] CapRock also alleges at least one instance of foreclosure when Intelsat offered CapRock a "forced bundle" of capacity that did not meet CapRock's needs,[308] and at least one instance when Intelsat prevented CapRock from acquiring space segment capacity from other providers by essentially colluding with other satellite providers.[309]

160. In addition to actions by Intelsat, ARTEL, in an *ex parte* meeting, stated that Intelsat's decision to serve customers directly has been adopted by SES. Specifically, ARTEL stated that there has been further recent FSS "consolidation and vertical integration," including "SES's September 2010 announcement concerning the consolidation of its government solutions group."[310]

161. In response to the allegations raised against it in the 11th ORBIT Act Report, Intelsat stated that: the satellite sector is increasingly competitive, with multiple incumbents and new entrants providing service;[311] that one of the goals of Intelsat privatization was to "end this separation of Intelsat from end users, and to permit Intelsat to compete in the same manner as all other satellite providers";[312] and that the allegation of harmful foreclosure is simply an attempt by certain commenters to inject the FCC into a commercial dispute regarding a U.S. Navy contract awarded to Intelsat over the commenters.[313]

162. In their comments to this *Third Report,* Intelsat provides more detail and SES addresses the vertical foreclosure issue. The two incumbents argue that the relevant market is not FSS space

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[304] CapRock Orbit Act Comments at 8.

[305] ARTEL Orbit Act Comments at 6; ARTEL Orbit Act Surreply at 3; Globecomm Orbit Act Surreply at 3.

[306] Globecomm Orbit Act Comments at 4; ARTEL Orbit Act Comments at 6; CapRock Orbit Act Comments at 11.

[307] CapRock Comments at 7-12.

[308] *Id.* at 5.

[309] *Id.* at 10.

[310] ARTEL *Ex Parte* Notice, Dockets 10-70 and 10-99, November 9, 2010.

[311] Intelsat Orbit Act Reply at 6-8.

[312] *Id.* at 3-4.

[313] *Id.* at 8-10.

segment capacity, but rather that the market includes terrestrial and MSS-based services;[314] that the market is broad in geographic scope, and that there are virtually no "thin market" locations that cable capacity does not serve;[315] that even if terrestrial and MSS competition are excluded, space segment providers have no market power due to actual competition within the FSS sector and ongoing entry by new providers;[316] and that there have been no concentration-increasing mergers since the FCC made its finding of effective competition in 2008 in the *Second Report*.[317] Intelsat and SES contend that the reseller/integrator complaints actually suggest an *increase* in competition,[318] and Intelsat notes that "[w]hen the U.S. Department of Defense was able to open its bidding process to satellite network operators such as Intelsat, the result was lower prices and greater efficiency."[319] Intelsat further contends that the reseller/integrator firms are confusing their own interest with the interests of competition, and that "none of the government and corporate customers has raised any concern about the state of competition for satellite communications services."[320] According to Intelsat, the only impact of its vertical integration has been "integration efficiency."[321]

163. *Economic Framework.* Economists have demonstrated that vertical relationships between firms are often multidimensional and complex. In addition, there is a wide variety of market environments in which vertical control or integration may be attempted, and a variety of the types of vertical control that may be attempted. Consequently, economic analysis of vertical conduct is complicated and varied, and diverse outcomes are possible.[322] For example, under certain conditions vertical integration in a market in which a firm exercises monopoly power has no impact because the firm already earns all available monopoly profits. Also, there are a number of models in which vertical integration benefits consumers, *e.g.,* lowering prices paid.[323] Further, some exercises in vertical control or integration can reduce market competition which, in turn, can constitute economic inefficiency harmful to consumers.[324]

164. The vertical foreclosure allegations raised by commenters can be categorized as "input foreclosure," *i.e.,* resellers/integrators are excluded from obtaining the input transponder services. A standard approach to analyzing an input foreclosure situation has several steps.[325] First, one can consider

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[314] Intelsat Reply at 12-18; SES Reply at 3-4.

[315] Intelsat Reply at 11-12; SES Reply at 3-4.

[316] Intelsat Reply at 18-25; SES Reply at 2-3.

[317] SES Reply at 5.

[318] Intelsat Reply at 3-5.

[319] Intelsat Reply at 4. *See also* SES Reply at 13-16.

[320] Intelsat Reply at 1-2.

[321] *Id.* at 7.

[322] *See generally* Chapter 4, *Vertical Control*, of Jean Tirole, The Theory of Industrial Organization (1988).

[323] *See* Tirole at 174-181, for descriptions of vertical integration or control by an upstream firm possessing market power that serve to eliminate the problems of: double marginalization (that is, both upstream and downstream firms imposing a mark-up over the cost they incur); or downstream moral hazard (that is, non-optimal amount of promotional effort by the downstream firm).

[324] Phillip E. Areeda and Herbert Hovenkamp, Antitrust Law: An Analysis of Antitrust Principles and Their Application, Vol. IIIB, Third Edition (2008), at 8, ¶ 756.

[325] For descriptions of the analytical framework in situations where the vertical integration is accomplished via merger, *see* Michael H. Riordan & Steven C. Salop, *Evaluating Vertical Mergers: A Post-Chicago Approach*, 63 (continued....)

whether the foreclosure conduct actually excludes the affected firm(s) from acquiring the input. This would be true, for example, if the foreclosing firm is the only option for the downstream firms, but not true if there are other providers of an identical or closely substitutable input; *i.e.,* the question is whether the firm exercising vertical foreclosure possesses market power in the input market.

165. Second, one can consider whether the foreclosure results in increased price or degraded service quality in the downstream, output market. Exercising such power would not be possible if there are other, non-foreclosed firms in the output market that are effectively competitive constraints, or if the consumers themselves were able to switch their demand to substitute services and avoid entirely the offering of the integrated, foreclosing firm.

166. Third, one can consider whether the vertical foreclosure and integration of the upstream and downstream activities result in efficiencies, *e.g.,* cost savings from integrating production, benefits resulting from internalizing externalities and correctly aligning incentives, or savings from eliminating double marginalization.[326]

167. In the fourth and final step, one can consider the net effect on consumers, *i.e.,* weighing the impact of any harmful, anticompetitive effects against any positive effects of efficiencies. This means considering directly, for example, the net changes in price paid and quality realized.

168. As noted above in the review of comments, in addition to the primary dispute the record includes claims of collusive behavior. A key question is whether the vertical integration, by facilitating the sharing of pricing and related information, increases the likelihood of tacit or explicit coordinated behavior among the integrated firm and other input suppliers.

169. *Analysis of the Current Dispute.* As further explained below, we cannot definitively determine in this *Third Report* whether the vertical integration and foreclosure actions of Intelsat constitute anticompetitive behavior harmful to consumers and cause economic inefficiency. The factual information available regarding this dispute is quite limited, and the evidence we do have offers some support for each side's position.

170. The record regarding the vertical foreclosure allegations is significantly limited. The limitations prevent us from identifying the nature and scope of the claimed foreclosure. For example, the record does not document what time period the allegations cover, nor which international origin-destination pairs are involved, nor how many and which specific Intelsat contracts are involved. We know neither how much nor which space segment capacity is involved, nor which government or enterprise customers are affected. Neither do we know what the customers purchased, *i.e.,* exactly what combination of terrestrial transmission facilities, network management services, space and earth segment services were purchased. Additionally, we have no information regarding the size of the disputed business, either in absolute terms or relative terms (*i.e.,* relative to the size of commenters' business or Intelsat's business, or to the total demand of the affected customers).

(Continued from previous page)
ANTITRUST L.J. 513 (1995), at 527-551, and Jonathan B. Baker, "Comcast/NBCU: The FCC Provides a Roadmap for Vertical Analysis," Antitrust, vol. 25, No. 2, Spring, 2011, available at 36-42.

[326] Double marginalization occurs when an upstream firm sells an input to a downstream firm at a price that exceeds marginal cost, and the downstream firm then sells its product in the downstream market at a price that exceeds its marginal cost. The margin charged by the upstream firm increases the marginal cost of the downstream firm, which results in a higher end-user price than would occur if the input had been priced at marginal cost. Vertical integration can eliminate the problem of double marginalization because the integrated firm, in determining the uniform price at which it will sell the downstream product, will consider the real economic cost of producing the input. Because vertical integration effectively reduces the marginal cost of the input in this situation, it results in the integrated firm setting a lower price for the downstream product, benefiting consumers. *See* Tirole at 174-75; Riordan & Salop at 526-27.

171. A second significant limitation involves possible efficiencies. While there are claims that integrative efficiencies result from Intelsat's vertical integration, we do not have a quantitative estimate of their magnitude, nor do we have even a descriptive statement of what those efficiencies are and how they arise.

172. A third major gap relates to the net effect of the foreclosure on the government and corporate customers. Despite claims about the harm and lack of harm to customers, there is no evidence regarding the direction and magnitude of any price changes, quantity changes, or quality changes that have been experienced by those customers.

173. A fourth deficiency in the record centers on the collusion issue. While claims on both sides are set out briefly, we do not have either detailed explanation of the nature and extent of the collusive behavior or detailed explanation that justifies the behavior of the satellite operators.

174. Largely as a result of these information limitations, we are unable to carry out confidently any of the steps in the vertical foreclosure analytical framework. For example, without knowing to which traffic or business segment(s) the allegations apply, we cannot assess the availability of alternative FSS, MSS, and terrestrial options to which the resellers/integrators might avail themselves. Similarly, we are unable to determine what entry barriers and entry prospects exist, and what switching costs the resellers/integrators may face.

175. Regarding the second step of the framework, not knowing the traffic/business segments at issue means we cannot determine the extent to which there may be other reseller/integrator firms, or other vertically integrated firms, that are not dependent on using Intelsat capacity, and can therefore serve as effective competitive constraints in the output market. Not knowing the customers affected means we cannot evaluate whether they have other closely substitutable options that do not depend on commercial satellite service. In the case of government customers, for example, we cannot determine whether non-commercial satellite service constitutes an effective constraint preventing harm. The absence of efficiency/cost saving evidence prevents the completion of the third step, and the inability to complete the first three steps of the analysis means that the net effect determination of the fourth step cannot be reached. Finally, we are similarly unable to evaluate the likely incentives for and success of collusive efforts by the satellite operators.

176. Beyond the fact that our data are limited in crucial ways, it is also true that the evidence and argument now available offers some support for each side's position. Several points suggest that public interest harm may have indeed resulted from Intelsat's vertical integration. First, it is undisputed that the foreclosure has occurred. Intelsat essentially concedes this, but argues that no public interest harm results because it possesses no market power.[327] Second, it does appear that the foreclosure has reduced competition in the largely undefined output market, since several firms have been excluded, and in every case the vertically integrated Intelsat has taken their place. Third, and perhaps most worrisome despite our limited information, is that it does appear that space segment operators sometimes partner and submit bids to customers, *e.g.*, the integrated Intelsat may plan to use some SES capacity to win output market bids for service. We recognize that it is standard industry practice for firms to make common cause and form bidding groups in an effort to win contracts from government or corporate customers; and the mere fact that Intelsat and SES may occasionally be on the same bidding team is not by itself evidence of harmful collusion. These joint undertakings do underline, however, that the FSS operators are both competitors and partners, and are likely sharing non-trivial market information. Thus rivalry among FSS firms may be less than if none of the firms were vertically integrated.

[327] This is in contrast to the typical situation in analyzing vertical mergers, where it is necessary to reach a predictive judgment about whether foreclosure is likely. Here, it is in effect not disputed that the behavior has occurred, and we can therefore presume that it has been profitable to Intelsat.

177. Other points, however, suggest that public interest harm is not a likely result from the vertical integration by Intelsat. First, a basic goal of the privatization was to enable "direct access:" that is, facilitate direct interaction between Intelsat and its customers.[328] The prior historic separation of space segment and earth segment services, a feature of the pre-privatization legal/regulatory framework, was essentially deemed inefficient. The more recent post-privatization downstream vertical integration by firms such as Inmarsat and Intelsat would appear to be a logical extension of the "direct access" policy choice,[329] and thus there is some reason to presume the integration is an efficient structural change.[330]

178. Second, we have received no complaints — indeed, no comments at all — from customers who would have been disadvantaged if Intelsat's vertical integration was indeed resulting in public interest harm. This may suggest that while the resellers/integrators have been adversely affected, customers have not, either because Intelsat lacks market power with regard to the output sector(s) involved, or because benefits from integrative efficiencies have been passed through to the customers.

179. Third, one large customer, the Department of Defense, has now abandoned its previous view that it benefited from procuring services via small reseller/integrator firms, and is transitioning (along with the General Services Administration (GSA)) to an open procurement process in which any entities, including resellers/integrators and satellite operators, may bid.[331] This suggests that, at least for large, sophisticated customers such as the federal government, the downstream integration by Intelsat and the resulting direct interaction between the customers and Intelsat may be an efficient development.[332]

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[328] 47 U.S.C. 765.

[329] We reject the argument that Intelsat's requirement that resellers/integrators deal with IGC is itself a conflict with the direct access policy. This argument puts too much weight on a fact of Intelsat's corporate structure. IGC is a wholly-owned subsidiary of Intelsat. It is not analogous to a separate corporation with distinct ownership that may have goals and incentives differing from those of Intelsat.

[330] The fact that we found, in approving Inmarsat's acquisition of Stratos, that efficiencies were likely to result from that vertical combination further suggests that the combination of space and earth segment services generally may create efficiencies. *See Robert M. Franklin & Inmarsat MO&O*, 24 FCC Rcd 449 at ¶¶ 24-25.

[331] This shift is being accomplished via the adoption of a new joint GSA/Defense Information Systems Agency (DISA) contracting vehicle, the Future COMSATCOM Services Acquisition (FCSA) program, and the ending of the current vehicle, the Defense Information Systems Network Satellite Transmission Services-Global (DSTS-G) process. *See* Future Commercial Satellite Communications Service Acquisition (FCSA), at http://www.gsa.gov/portal/content/105299. DSTS-G incorporates a guaranteed award of contracts to three small integrators. The three firms selected in 2001 to be recipients of the business set-aside were ARTEL, Arrowhead Space and Telecommunications, Inc.—subsequently acquired by CapRock—and Spacelink International—subsequently acquired by DRS Technologies, a subsidiary of Finmeccania. *See* SES Reply at 14; *see also* "COMSATCOM Alliance," at http://www.military-information-technology.com/mit-archives/206-mit-2009-volume-13-issue-9/2073-comsatcom-alliance.html; "Sea Change: Satcom operators scurry to meet surging government bandwidth demands," Aviation Week & Space Technology, April 12, 2010, at 52-53.

[332] Note that the dispute regarding a DISA/Navy contract, which is discussed in the comments we have received, involves a third, distinct contracting vehicle: the Commercial Broadband Satellite Program (CBSP). The particular CBSP request for proposals at issue, like the FCSA, was not limited to the three integrators but rather open to all entities. Intelsat's bid was the selected as the winner, based on the evaluation of numerous factors, one of which was price. This result was protested by ARTEL, CapRock, and one other losing bidder, but upheld in a May 2010 GAO ruling. *See* Decision, Matter of: CapRock Government Solutions, Inc.; ARTEL, Inc.; Segovia, Inc; File B-402490 *et al.*, May 11, 2010. The GAO decision focuses on whether procurement rules were followed correctly, and not on whether Intelsat's "forced bundle" behavior was harmful to the public interest. One point in the decision, however, is relevant here. One protester had argued that by virtue of the fact that Intelsat controlled certain satellites that other bidders would utilize if they were the successful bidder, then Intelsat possessed knowledge of certain costs (continued....)

180. Because essential information regarding this FSS vertical foreclosure dispute is not available, and because there is some evidence supporting each side's view of this issue, we cannot determine with confidence whether Intelsat's conduct constitutes anticompetitive behavior. That is, we cannot definitively determine whether the vertical foreclosure has resulted in economic inefficiency harming consumers.

**b. Allegations of Warehousing**

181. Some parties filing comments in the record supporting preparation of this *Third Report* claim that Intelsat is not making appropriate use of its orbital location and frequency resources and not complying with the Commission's Rules by failing to deploy fully functional spacecraft, *i.e.*, failing to replace aging spacecraft on a timely basis, or otherwise failing to provide transponder capacity at such orbital locations that reflects current technology.[333] Implicit in the raising of such concerns is the supposition that such behavior by Intelsat is harmful to competition in the FSS sector and that the Commission should act to deter such anticompetitive behavior. More specifically, Intelsat's failure to build and launch new spacecraft in all orbital locations as older spacecraft degrade in performance due to exhaustion of station keeping fuel and other age-related detriments may be viewed as "warehousing" of orbital locations, radio frequency spectrum, and transponder capacity that would otherwise be available if Intelsat had invested in new spacecraft.[334] Presumably, such warehousing adversely affects customers by restricting the availability of transponder capacity at the orbital locations with degraded capacity and adversely affects competing satellite operators by denying them access to the orbital locations and the up- and down-link frequencies held by Intelsat that such competitors are willing to use more efficiently by building and launching new spacecraft offering the benefits of advanced technology.[335] If true, competing satellite operators may be disadvantaged by Intelsat's sub-optimal use of orbital and spectrum resources, since such competitors often lease transponder capacity from each other to obtain geographic coverage beyond the reach of their own satellite networks.

182. However, Intelsat's alleged warehousing conduct may simply reflect, for example, its decision to delay the investment required to replace the end-of-life spacecraft until management believes it is better informed about ongoing technical change affecting the design and construction of communication satellites, or the nature of demand in the various regions around the globe, or the rate of absorption of global excess capacity, or other factors and perspectives that can affect the long term profitability of investments in replacement spacecraft. Thus, it is not clear whether, in the long term, Intelsat's alleged warehousing is anticompetitive or beneficial to consumers.

(Continued from previous page)
the other bidders would incur. It also argued that Intelsat did not negotiate fairly regarding this satellite capacity, or consistent with standard industry practice. As a result of these facts, the protester argues, the award to Intelsat was in conflict with a procurement rule prohibiting "Organizational Conflict of Interest" (OCI). GAO ruled that even if the allegations against Intelsat were true, its behavior would not violate the OCI rule. And GAO went on to note that to extent the protester is arguing Intelsat gained an unlawful anticompetitive advantage by its actions, that issue would appropriately be considered by the Antitrust Division of the Department of Justice. *See* pages 24-25.

[333] CapRock Comments at 5.

[334] The Commission has addressed various warehousing theories of harm to competition in other proceedings. *See*, for example, *Tentative Decision and Request for Further Comments in Docket 82-345*, 94 FCC 2d 1019 (1983). In that Tentative Decision, the Commission rejected the warehousing theory that the major over-the-air broadcasting networks had the incentive to withhold certain off-network programming from independent television stations during their most lucrative time slots in order to increase the price of such programs. *Id.* at ¶¶ 199-201.

[335] The term "warehousing" is used in this discussion as only a short-hand for the allegations of anticompetitive behavior by Intelsat and does not constitute a confirmation of warehousing as a viable theory of potential harm to competition or as an established fact of anticompetitive behavior in the FSS sector.

183. The record supporting the preparation of this *Third Report* is too limited to make definitive findings concerning the harm to competition that may result from Intelsat's alleged warehousing of orbital resources and radio frequencies and the restriction of output that is the consequence of keeping degraded satellites in service.[336]

### C. Buyer Behavior

184. The discussion in this section complements the discussion in Section IV.B by examining both retail and buyer behavior from the buyer's point of view. This discussion provides some insight concerning the relative bargaining power of both retail and wholesale customers of satellite communications services in purchasing output from satellite operators.

#### 1. Retail Industry Segments in the Satellite Communications Industry

185. Unlike wholesale customers leasing transponder capacity, retail customers of satellite communications services, such as satellite-delivered broadband or mobile satellite services, do not individually negotiate the price or terms and conditions of their communications service with the satellite operator. Rather, for a given type of service, retail customers face uniform pricing and terms and conditions of sale, known as "posted-offer pricing." While satellite operators periodically offer promotional pricing to attract new subscribers, all retail customers ordinarily pay the same price for the same type of service. Retail customers, unlike wholesale customers, cannot individually negotiate with the satellite operator to gain price concessions or tailor the service to the customer's individual preferences such that the satellite operator's profitability is constrained and its market power attenuated.

#### 2. Wholesale Industry Segments in the Satellite Communications Industry

186. As noted previously, a wholesale customer with outside options may be expected to obtain a more favorable outcome in its negotiations with the satellite operator than a wholesale customer with fewer outside options. Frequently, these options include the technical feasibility of using either terrestrial or undersea fiber optic capacity rather than satellites as the telecommunications transmission technology. An additional outside option is satellite transponder capacity elsewhere in the geostationary arc that could be substituted for transponder capacity that is subject to negotiation. Both factors may, but not always necessarily, augment the wholesale customer's bargaining power, restrain the market power of the satellite operator, and compress the price-cost margin that the satellite operator might earn from the negotiated lease.

187. A recent development in the domestic satellite communications industry is the formation of the Future Commercial Satellite Communications (FCSA) entity, a recent partnership of the Defense Information Systems Agency and the U.S. General Services Administration. This government partnership, established in July 2009, will aggregate both U.S. military and civilian requirements for commercial satellite communications and submit such requirements for competitive bids from both fixed and mobile satellite operators for leased transponder capacity, certain satellite communications subscription services, and customized end-to-end communications solutions tailored for individual government clients. In principle, FCSA will reduce the cost of government procurement by consolidating the procurement process for multiple federal agencies and improve the pricing and terms and conditions of service available to government buyers that would otherwise be available if each government entity negotiated separately for its own satellite communications requirements.

188. It is not clear presently whether the consolidation within the fixed-satellite services sector and mobile satellite services sector will induce consolidation among buyers of satellite communications

[336] Whether such alleged behavior violates the Commission's Rules notwithstanding either the presence or absence of harmful anticompetitive behavior is a separate matter and is not addressed here.

services in coming years. Such buyer consolidation would clearly limit the outside options of satellite operators and limit their ability to play one customer off against another in their negotiations with individual wholesale customers.[337]

## V. INDUSTRY PERFORMANCE

189. This section reports on selected public financial data regarding FSS, MSS, and SDARS operators. Although the data may reflect, in part, the effects of competitive forces on profitability and the exercise of market power, the data provides a limited perspective on sector performance.

### 1. Sector Performance

#### a. Fixed Satellite Services

190. The assessment of performance in the FSS sector is, in general, difficult, given the limitations and availability of publicly-available data. For example, some FSS operators, such as Intelsat, are not presently publicly-traded companies; some FSS operators do not disaggregate their financial data from that of their corporate parent company; and a number of operators entered bankruptcy during the study period (with some exiting). As a result, assessment of directly comparable performance across different operators is not possible in many cases. Additionally, several large FSS operators operate fixed-satellite global networks and do not separately identify either revenues or costs that may be attributable to U.S. operations. However, as the U.S. domestic industry sector accounts for approximately 25 percent of global wholesale satellite revenue,[338] one can only estimate various financial measures, understanding that any estimates, based on globally consolidated data, can only serve as proxies for domestic data. Consequently, FSS performance comparisons that are necessarily based on globally-consolidate data only serve as proxies for performance in U.S. domestic industry segments.

##### (i) Allocation of Transponder Capacity by Application

191. An aspect of FSS industry performance is the allocation of transponder capacity to differing applications in response to the demands of wholesale customers. In 2008, 2009, and 2010, as shown in Table V.1, Intelsat has allocated roughly one-half of its domestic transponder capacity to network service applications, while utilizing approximately thirty percent of its domestic transponder capacity for video applications. SES Americom has allocated more than forty percent of its domestic transponder capacity to network services, while utilizing nearly another forty percent of its domestic transponder capacity to video applications.[339]

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[337] Both satellite operators and their customers may have outside options that strengthen their bargaining power in negotiations for transponder services. Customers may have other satellite operators or terrestrial telecommunications entities that are willing and able to supply telecommunications facilities and services that are reasonably substitutable for the transponder capacity that the customer may be negotiating with a given satellite operator. Similarly, a given satellite operator may have other customers that are willing to negotiate for the same capacity desired by some other customer. The extent of outside options available to either the satellite operator or the customer is not necessarily, or even likely, to be symmetrical. Among other factors, the extent of asymmetry of outside options between the satellite operator and the customer will determine which party to the bilateral negotiations will have the greater bargaining power.

[338] This estimate, provided by Futron, includes revenues reported by U.S.-based satellite operators and takes into account that satellite operators do not consistently report transponder lease revenues by country of service origination or destination.

[339] The data reported in Table V.1 showing the percentage allocation of FSS transponder capacity among specific applications provide an indicator of industry segment shares of output supplied by the major FSS operators. These (continued....)

**TABLE V.1**

**PERCENTAGE ALLOCATION OF FSS TRANSPONDERS FOR U.S. DOMESTIC WHOLESALE APPLICATIONS[340]**

| Operators | Video Contribution and Distribution | | | | Network Services | | | |
|---|---|---|---|---|---|---|---|---|
| | 2007 | 2008 | 2009 | 2010 | 2007 | 2008 | 2009 | 2010 |
| Intelsat | 38 | 33 | 27 | 25 | 50 | 49 | 50 | 55 |
| PanAmSat | n/a | n/a | n/a | n/a | n/a | n/a | n/a | n/a |
| Loral Skynet | 2 | n/a | n/a | n/a | 3 | n/a | n/a | n/a |
| SES Americom | 27 | 41 | 39 | 45 | 25 | 35 | 41 | 32 |
| SES New Skies | 4 | n/a | n/a | n/a | 8 | n/a | n/a | n/a |
| Other | 28 | n/a | 27 | 25 | 14 | n/a | n/a | n/a |

NOTE: SES consolidated 2008 and 2009 results for Americom and New Skies; Loral Skynet is now Telesat

### b. Mobile Satellite Services

192. Similar to the FSS sector, publicly-available financial and operating data on mobile satellite service operators are limited. Data on privately-held MSS operators are not available. For some MSS operators, data on mobile satellite services are part of the consolidated financial reports of a corporate parent and are not sufficiently disaggregated to report revenues and operating data for mobile satellite services. Given these limitations, Table V.2a and Table V.2b only report publicly-available financial data for Inmarsat and other smaller MSS operators where data were available.

#### (i) Financial Overview for Major MSS Operators

193. Inmarsat was founded as a non-profit international enterprise in 1979, and became publically-traded in 1982. Major shareholders include Lansdowne Partners and the Blackstone Group. Some other MSS firms are new entrants, as some of the financial data reflect (*e.g.*, negative cash flows).

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statistics show that Intelsat has a stronger position in the supply of various network service applications, while SES Americom is somewhat stronger in the supply of video contribution and distribution service applications. Moreover, the relative positions in the supply of network and video service applications have tended to be stable between the major satellite operators in recent years. However, the data reported in Table V.1 should not be interpreted as estimates of industry market shares, since no specific market definition is implied or determined in this *Report* for such applications of transponder capacity.

[340] Source: Futron Corporation.

**TABLE V.2a**

**SUMMARY ANNUAL OPERATING STATISTICS FOR MOBILE SATELLITE OPERATORS FOR 2009 (Millions US$)[341]**

| | INMARSAT | GlobalStar | ORBCOMM[342] | Iridium | TerreStar | DBSD |
|---|---|---|---|---|---|---|
| Revenue | 1,038 | 64 | 28 | 76 | 2.4 | 0 |
| Interest Expense | 160 | 7 | 0.19 | 89 | 64 | 40 |
| Net Operating Cash Flow[343] | 622 | (18)[344] | 3 | 23 | (113) | (27) |
| EBITDA | 594 | (31)[345] | 1.5 | 53 | n/a | n/a |
| Free Cash Flow | 349 | n/a | (29) | n/a | n/a | n/a |

**TABLE V.2b**

**SUMMARY ANNUAL OPERATING STATISTICS FOR MOBILE SATELLITE OPERATORS FOR 2010 (Millions US$)[346]**

| | INMARSAT | GLOBALSTAR | ORBCOMM[347] | IRIDIUM |
|---|---|---|---|---|
| Revenue | 1,172 | 68 | 37 | 348 |
| Interest Expense | 127 | 5 | 0.19 | 17 |
| Net Operating Cash Flow | 744 | (23)[348] | 3.4 | 151 |
| EBITDA | 696 | (18)[349] | 9 | 128[350] |
| Free Cash Flow | 470 | (23)[351] | (3.7) | (86)[352] |

[341] Source: Company 2009 Annual Reports and 10-Ks, except where indicated.

[342] All data from http://quotes.wsj.com/ORBC/financials/annual/income-statement and http://quotes.wsj.com/ORBC/financials/annual/cash-flow.

[343] Cash flow from operating activities.

[344] http://quotes.wsj.com/GSAT/financials/annual/cash-flow.

[345] http://quotes.wsj.com/GSAT/financials/annual/income-statement.

[346] Source: Company 2010 Annual Reports and 10-Ks, except where noted.

[347] All data from http://quotes.wsj.com/ORBC/financials/annual/income-statement and http://quotes.wsj.com/GSAT/financials/annual/cash-flow.

[348] http://quotes.wsj.com/GSAT/financials/annual/cash-flow.

[349] http://quotes.wsj.com/GSAT/financials.

[350] http://quotes.wsj.com/IRDM/financials.

[351] http://quotes.wsj.com/GSAT/financials.

194. DBSD-ICO Global has not yet reported revenues for its new service and financial information for SkyTerra/LightSquared are not publicly available.

195. Earnings during the reporting period of this *Third Report* in mobile satellite industry segments are relatively low, and sometimes negative. Such data reflect the new nature of the services offered coupled with the high start-up costs associated with building and launching satellites. However, little detailed company-specific data are available for assessing performance in these satellite segments.

196. The degree of terrestrial competition faced by MSS providers varies significantly among different mobile satellite services. MSS operators seem to have focused on different niches within mobile digital services. While they all can be characterized as mobile satellite operators, their services are not perfect substitutes for one another.

### c. Satellite Digital Audio Radio Services

197. SiriusXM is currently the only satellite operator offering mobile subscription satellite audio service although, as noted in paras. 3 and 72, *supra*, various emerging consumer alternatives to SiriusXM recently have been identified.[353]

#### (i) Financial Overview of SiriusXM

198. Table V.3 reports summary financial data for SiriusXM as reported in company annual reports and annual SEC 10-K filings for 2009 and 2010.

**TABLE V.3**

**SUMMARY ANNUAL OPERATING STATISTICS FOR SIRIUS-XM FOR 2009 and 2010 (Millions US$)**[354]

| | 2009 | 2010 |
|---|---|---|
| Revenue | 2,526 | 2,817 |
| Operating Expense | 2,244 | 2,352 |
| Interest Expense | 316 | 296 |
| Operating Cash Flow | 434 | 513 |
| EBITDA (adjusted) | 462 | 626 |
| Free Cash Flow | 185 | 211 |
| **Ratios** | | |
| Debt/EBIDTA | 6.1 | 4.3 |
| EBITDA/Interest Expense | 1.4 | 2.1 |

(Continued from previous page)

[352] http://quotes.wsj.com/IRDM/financials.

[353] *See XM Sirius Transfer Order, supra,* fn. 3.

[354] Source: Company Annual Reports.

# VI. COMPETITION ASSESSMENT AND CONCLUSIONS

## A. Findings

### 1. FSS

199. As a conceptual matter, an assessment of the market power of FSS operators is difficult to make since the prices paid by FSS wholesale customers for transponder capacity result from negotiations between the satellite operator and each individual customer. The record supporting the preparation of this *Third Report* provides no information concerning the pricing or other terms and conditions of individually-negotiated transponder leases that might otherwise provide insight with respect to the possible exercise of market power and the effects of relative bargaining power on the negotiated outcomes between the FSS operator and the wholesale customer.

200. The financial and operating statistics may be consistent, however, with the exercise of some technical market power but not necessarily market power that produces excess profits.[355] Possible competitive forces, such as the availability of alternative telecommunications transmission facilities and alternative transponder capacity provided by multiple FSS operators in the various global regions, may constrain the overall profitability and market power of major FSS operators in the FSS industry segment.[356]

201. Data aggregated to the level of the firm may obscure, however, competitive problems at the level of output categories or individual transactions with customers.[357] For example, some resellers/integrators allege that Intelsat, in its role as wholesaler, retailer, and competitor to resellers/integrators, prices transponder capacity at uncompetitive levels and will only supply transponder capacity in predetermined bundles.[358] Resellers/integrators allege that such uncompetitive pricing and bundling behavior reflects the exercise of market power intended to disadvantage them in responding to competitive bids for satellite communications by the Department of Defense.[359] While it is not possible to evaluate fully such claims of anticompetitive behavior given that the record is limited, and that the evidence we do have has mixed implications, it is possible, given the individual bilateral bargaining between the satellite operator and the wholesale customer of most transponder leases, that some customers may pay transponder lease rates that reflect substantial price-cost margins while others may pay lease rates that reflect much smaller price-cost margins.[360] By contrast, wholesale customers that can

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[355] The notion of technical market power and its relevance in sunk cost, capital intensive industries is discussed in Section IV.B.2.b of this *Third Report*.

[356] The performance metrics for Intelsat and SES are taken as presumptively representative of the performance of the FSS industry sector *generally*, at least for fixed satellite services covering the North American region. Financial data sufficient to compute performance metrics for additional satellite operators are not available for preparation of this *Third Report*.

[357] This problem is not unique to the satellite communications industry but is a structural characteristic of high fixed and sunk costs industries generally. For example, railroads have often failed to earn profits sufficient to recover their high fixed costs of production or earn a rate of return on assets sufficient to recover their financial cost of capital in the *aggregate* across all transportation services supplied by the firm. Nevertheless, "captive shippers" often complain that railroads have "market dominance" and exercise market power in setting rates for a particular class of customer, notwithstanding the poor financial performance of the railroad as a business entity.

[358] *See, e.g.*, CapRock Orbit Act Comments at 9-11, and CapRock Comments at 5.

[359] *Id.*

[360] These differences between and among various transponder lease negotiated outcomes will reflect multiple factors, including the level of excess capacity in a given global region; the outside options retained by the wholesale (continued....)

readily substitute available fiber optic cable capacity, either terrestrial or undersea, may likely not face the exercise of market power by the FSS operator and may be able to negotiate transponder lease rates that reflect price-cost margins that produce no excess profits for the satellite operator.

202. Taken in its entirety, the record supporting the preparation of this *Third Report* is mixed and, in some respects, contradictory with respect to the extent of competition prevailing in the FSS sector during the reporting period. On the one hand, some evidence in the record appears to support a finding of rivalry among FSS operators sufficient to constrain both the profitability and market power of major FSS operators at an aggregate, firm level. Alternatively, the record also includes multiple allegations of anticompetitive behavior by Intelsat that, if confirmed by sufficient evidence, would be consistent with both the presence and exercise of market power at the level of individual customers. Such allegations, if sustained, would contradict a finding of competitive forces that are sufficient to constrain the exercise of market power that harms otherwise efficient competitors. Thus, we will initiate a proceeding to develop a more complete record to address the allegations of anticompetitive conduct in the FSS sector.

### 2. MSS Sector

203. The performance metrics for the MSS sector reported in Section V of this *Third Report* show that Inmarsat, Iridium, and ORBCOMM had positive net operating cash flow in 2009 and 2010, while other MSS operators for which data are available operated at a loss. This appears to be consistent with the exercise of some technical market power for Inmarsat, but not necessarily market power that produces excess profits. In broad terms, our review of competitive constraints with respect to MSS operators does not allow us to make definitive conclusions with respect to the general state of effective competition in the MSS sector of the satellite communications industry. Unlike the FSS sector, the MSS sector is an evolving, growing industry segment with a single, established dominant operator (Inmarsat), several viable small operators (*e.g.*, Iridium), and several startup and bankrupt operators. Competitive rivalry within the MSS sector appears to be developing but is currently uneven given the presence of failing, evolving, and successful operators.

204. Given the current developmental stage in the evolution of the MSS sector, the very limited record supporting the analysis of rivalry in mobile satellite services during 2008, 2009, and 2010, and the disparate observations on MSS conduct, it is not possible to make either complete or definitive findings concerning the extent of effective competition in MSS industry segments.

### 3. SDARS

205. Various emerging consumer alternatives to SiriusX have been identified,[361] including Pandora Media, Inc., Rhapsody, Slacker, Last.fm, and iheartradio, as well as Internet-based streaming audio by automobile manufacturers such as Ford, Toyota, MINI, GM, Mercedes-Benz, and Hyundai. However, because there are no direct subscription radio competitors and little information in the record as to the competitive impact of the emerging alternatives on SDARS operations, no findings or conclusions regarding the current state of competition in the SDARS sector are reported for 2008, 2009, and 2010.

(Continued from previous page)
customer; the customer's intensity and elasticity of demand, which reflects the customer's outside options; and the willingness of the customer to make long term commitments for specific leased transponder capacity.

[361] *See XM Sirius Transfer Order, supra,* n. 3.

## VII. ADMINISTRATIVE MATTERS

206. This *Third Report* is issued pursuant to the authority contained in Section 703 of the Communications Satellite Act, 47 U.S.C. § 703.

## VIII. ORDERING CLAUSES

207. **IT IS ORDERED** that the Secretary shall send copies of this *Third Report* to the appropriate committees and subcommittees of the United States House of Representatives and the United States Senate.

208. **IT IS FURTHER ORDERED** that the proceeding in IB Docket Nos. 9-16 and 10-99 **IS TERMINATED.**

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch

Marlene H. Dortch
Secretary

# APPENDIX A

## List of Commenters

**May 14, 2009 Public Notice Comments**

EchoStar Corporation
MSS/ATC Coalition
Satellite Industry Association
SkyBitz, Inc.

**May 14, 2009 Public Notice Reply Comments**

Inmarsat, Inc.
MSS/ATC Coalition
SkyTerra Subsidiary, LLC

**July 22, 2010 Public Notice Comments**

CapRock Communications, Inc.
Echostar Corporation, Intelsat Global S.A., SES World Skies, and Telesat Canada (Joint Comments)
Globalstar Licensee, LLC
Iridium Satellite LLC
Microcom
Satellite Industry Association
Spacenet Inc.

**July 22, 2010 Public Notice Reply Comments**

Arianespace, Inc.
Globalstar Licensee, LLC
Intelsat Global
International Launch Services
SES World Skies
Space Exploration Technologies Corp.

## APPENDIX B

### List Of Foreign Nations Identified By SIA In The Record As Raising Barriers To Maket Entry By U.S. Satellite Providers[362]

Countries identified as lacking transparent, non-discriminatory and timely licensing procedures for U.S. satellite operators:

- Brazil
- China
- Egypt
- India
- Israel
- Kazakhstan
- Malaysia
- Philippines
- Russia
- South Africa
- Thailand
- Venezuela
- Vietnam

Countries Identified as Not Providing National Treatment (*i.e.*, Most Favored Nation status) for U.S. Satellite Operators:

- Bangladesh
- Brazil
- China
- Egypt
- India
- Israel
- Kazakhstan
- Korea
- Malaysia
- Philippines
- Russia
- South Africa
- Vietnam
- Venezuela

Countries Identified as Not Permitting U.S. Satellite Operators to Transport Broadcast Video Signals and Associated Audio Signals:

- India
- Kazakhstan
- Russia

[362] This is a list of nations that SIA – not the Commission – identified as engaging in one or more of the foregoing barriers to entry by U.S. satellite service providers.

Countries Identified as Requiring a Local Presence or Local Partner for U.S. Satellite Operators:

- Bangladesh
- Brazil
- India
- Israel
- Kazakhstan
- Korea
- Mexico
- Philippines
- Russia
- Venezuela

Countries Identified as Requiring Completion of the ITU Frequency Coordination Process Prior to Market Access for U.S. Satellite Operators:

- Russia

Countries Identified as Having a Monopoly for the Domestic Satellite Operator:

- China
- Egypt (operator monopoly, four VSAT licensees)
- Kazakhstan
- Russia
- South Africa (duopoly)
- Thailand

Countries Identified as Requiring Deployment of Specific Technologies:

- Russia
- Kazakhstan
- India
- Mexico

## STATEMENT OF COMMISSIONER MICHAEL J. COPPS

Re: *Third Report and Analysis of Competitive Market Conditions with Respect to Domestic and International Satellite Communications Services and Report and Analysis of Competitive Market Conditions with Respect to Domestic and International Satellite Communications Services*, IB Docket No. 09-16 and 10-99

I am pleased that this satellite competition report offers some important improvements over the previous two reports. My thanks to the Chairman and the International Bureau for the more detailed analysis of the satellite market, dividing it into fixed and mobile sub-markets, along with satellite radio. This approach better reflects the competitive landscape and will no doubt improve future reports. I am also pleased that the report provides an analytical framework for analyzing potentially anti-competitive behavior in the market. While I am hopeful that we will continue to refine what "effective competition" means, this step represents real progress. I am also hopeful that we will continue to improve our collection and analysis of financial and other data to dig into the state of competition for satellite services. As the National Broadband Plan and our recent reform of the High Cost program make clear, satellite can play a key role in our broadband future. We must continue to foster competition in this unique and important sector of the communications market.

## STATEMENT OF COMMISSIONER ROBERT M. McDOWELL

Re: *Third Report and Analysis of Competitive Market Conditions with Respect to Domestic and International Satellite Communications Services and Report and Analysis of Competitive Market Conditions with Respect to Domestic and International Satellite Communications Services*, IB Docket Nos. 09-16 and 10-99, FCC 11-183.

I sometimes view FCC competition reports with a skeptical eye, as I do with today's report on the competitive market conditions of the domestic and international satellite communications services. What is different here, however, is that I am voting to approve this report. The new analytical approach – a more detailed analysis that includes separate discussions of the fixed satellite services, mobile satellite systems and the satellite digital audio radio industries – is sound. And, I thank Rod Porter and the team in the International Bureau for their thoughtful work in this regard.

Even so, given the current state of these markets, the record is insufficient at this time to support a finding of "effective competition" as required by Congress. On the other hand, as discussed in our recent order reforming part of the Universal Service Fund, the satellite industry is poised to play a key role in the broadband future. I look forward to continuing to develop opportunities to foster competition in this important market sector.