to "bias investment and circuit utilization decisions in favor of one medium over the other" and "engage in anti-competitive practices with respect to space segment utilization and control."[63]

The level of compensation that would compensate COMSAT adequately for services it would continue to provide on behalf of direct access customers would most likely be a contested policy question. Direct access customers may be tempted to compete with COMSAT and against each other through costly attempts to influence policy rather than through the discipline of the market place. This is often called "rent-seeking behavior" in the economic literature. Rent-seeking behavior is inefficient because rents are often transferred to the benefit of third parties or are simply wasted as firms (such as COMSAT) may have to spend scarce resources to compete in the market in which they face rent-seeking behavior.[64] Direct access customers may have few incentives to promote U.S. policy interests (such as the privatization of INTELSAT or extending the reach of satellite technology) and may adversely affect or even undermine COMSAT's efforts on behalf of the U.S. government and other U.S. customers. With a group of COMSAT and direct access customers representing the U.S. before INTELSAT, the current instructional process would become rather unmanageable and it would require considerable administrative efforts by the FCC and the U.S. Government to prevent a dilution or dispersion of the unified voice with which U.S. policy interests currently can be put forth.

In fact, direct carrier participation in U.S. Signatory functions could easily result in a deadlock of opposing positions on even basic policy questions. The FCC's previous experience with multi-carrier ownership arrangements in the establishment of Inmarsat provides support for the view that direct access would make the efficient representation of U.S. interests before INTELSAT considerably more difficult. Based on the unsatisfactory experience with Marisat

---

[63] *Direct Access* at 324.

[64] For a discussion of these principles, see Anne Krueger, "The Political Economy of the Rent-seeking Society," *American Economic Review*, 1974, Vol. 64, pp. 291-303; Gordon Tullock, "The Welfare Costs on Tariffs, Monopoly and Theft," *Western Economic Journal*, 1967, Vol. 5, pp. 224-232 (reprinted in *Toward a Theory of the Rent-seeking Society*, ed. J. Buchanan, et al., Texas A&M University Press, 1980); and Hal Varian, "Deadweight Costs of DUP and Rent-seeking Activities," *Journal of Economics and Politics*, Vol. 1, No. 1, Spring 1989, pp. 81-95.

(the predecessor of Inmarsat which was organized as a consortium of U.S. carriers), Charles D. Ferris, Chairman of the FCC, strongly supported the representation of U.S. policy interests through a single private company rather than a group of competing carriers. The participating carriers were unable to resolve a number of disagreements even on business decisions. These matters were brought before the Commission and required a prolonged process and significant administrative efforts to resolve.[65]

Similar concerns were expressed previously by the FCC when it concluded that direct access "could also adversely affect COMSAT's ability effectively to express, promote and protect the

---

[65] International Maritime Satellite Telecommunications, Hearing before the Subcommittee on Communications, Second Session on S. 2211, "To Provide for the Establishment, Ownership, Operation, and Governmental Oversight and Regulation of International Maritime Satellite Telecommunications Services," Statement of Charles D. Ferris, Chairman, Federal Communications Commission, May 8, 1978:

> Mr. FERRIS. . . . Any U.S. participant in Inmarsat . . . must also have the management experience and expertise necessary to insure that the space segment is designed effectively and efficiently. . . . [A] consortium might be unable to develop the management structure and staffing needed to represent U.S. interests in Inmarsat effectively. . . . If a group of competing carriers were allowed to own and control the satellite entity, these carriers might collude to divide the market and might discriminate against non-owners. Even if ownership were offered to all interconnecting carriers, a potential for arbitrary market segmentation or joint marketing would remain (pp. 28-29).
>
> Senator HOLLINGS. Now, I understand that the FCC initially determined that maritime satellite services should be open to participation by a consortium rather than a single entity. What led the FCC to change its mind? . . .
>
> Mr. FERRIS. . . . [T]he experience and history of the first couple of years in working out those arrangements would probably be the best argument as to why the consortium arrangement should not be opted for in this case (p. 33).
>
> [T]he Commission's experience with [Marisat] is indicative of the degree of regulatory involvement required and the difficulties that occur with a consortium or any multi-carrier ownership arrangement of a satellite system. In establishing the Marisat consortium, the Commission found it necessary to resolve a number of issues through the regulatory process which were essentially business type decisions that could not be resolved by the joint venture and were brought to the Commission for resolution. . . . [T]he participants were unable to reach agreement on a number of matters. They therefore individually submitted their respective views on the outstanding issues for Commission consideration and resolution. . . . Commission consideration of these questions required a prolonged process involving the filing of numerous pleadings and responses by each of the participants (pp. 43-44).

national and foreign policy interest of the United States before INTELSAT."[66] Given that restructuring and commercialization of INTELSAT will need strong U.S. support and leadership, any diminution of COMSAT's role at this critical juncture is likely to delay and complicate the restructuring process.

2. Delayed Restructuring of INTELSAT

Commercializing INTELSAT does offer an alternative that could truly increase efficiency because most of the costs of providing INTELSAT space segment to U.S. users are INTELSAT-specific rather than COMSAT-specific. Thus, in contrast to direct access, restructuring of INTELSAT has a real potential to increase efficiency by abandoning a cumbersome bureaucratic governing structure in favor of a more streamlined organization that can quickly and effectively respond to its consumers' needs and desires in an ever more competitive international marketplace. Most parties—including COMSAT, customers, INTELSAT management, and a number of foreign Parties and Signatories—believe that some form of restructuring is highly desirable. Nevertheless, in an organization as complex as INTELSAT, significant change is not easy to achieve. The most effective way of moving toward a restructured INTELSAT is to have a unified U.S. voice at the table, and to concentrate rather than dilute or disperse the diplomatic and commercial influence that the United States wields.

By contrast, after INTELSAT is commercialized, any possible objective of direct access in the U.S. presumably would be accomplished. With full privatization, for instance, the U.S. (and most if not all other member countries) would not have a Signatory function to discharge. In such circumstances, INTELSAT would be able to make management decisions more efficiently and in accordance with the wishes of its Board and in the interest of its customers and equity holders. In compliance with the applicable laws in each country in which it operates, a commercialized INTELSAT would have a greater opportunity to offer its services to all firms and governmental entities.

---

[66] *Direct Access*, at 68.

In formulating regulatory policy for industries in transition, it is important to work towards the competitive environment and industry structure that ultimately best serves customers and has the highest potential to advance efficiency in the long run. If a commercialization of INTELSAT has been determined to facilitate a competitive telecommunication market and an industrial structure that provides these benefits, then encouraging restructuring should be the overriding objective of all reforms and regulatory changes. With a restructured INTELSAT as the goal, the intermediate and temporary step of direct access for U.S. customers would be counterproductive and allowing for direct access could mean to "put the cart before the horse." Transition mechanisms that are not well-coordinated with an industry's restructuring goals may lose the support of important allies, give away benefits prematurely, and, thus, reduce the size of overall benefits that can be distributed during restructuring. This alone would make support for commercialization even more difficult to find and, as a consequence, may inhibit or seriously delay the restructuring process. For example, if a direct access option did not fully compensate COMSAT, direct access customers would be able to access INTELSAT unfairly at rates below the full costs of the space segment service. These customers would most likely be opposed to any consequent restructuring proposals that would correct this problem but take away their unfair advantage. Thus, premature implementation of direct access may simply foreclose restructuring options that could be pursued otherwise.

The United States has wielded significant influence over international satellite policy by virtue of its voting share in INTELSAT. It does not make sense to work toward an intermediate goal with questionable benefits, such as mandating direct access for U.S. users of INTELSAT, if that temporary step could substantially delay, or even derail, the difficult restructuring process. This would delay or even preclude full competition and the evolution of the industry towards a more permanent and truly efficient structure.

3. Increased Costs: Loss of Scale Economies

INTELSAT and U.S. end users reap certain economies by dealing directly with a single entity in the sale of its space segment capacity for use in the United States. Serving over two hundred telecommunications carriers and broadcasters, COMSAT has more customers than INTELSAT has Signatories. As discussed below, accommodating many of these U.S. customers under a direct access scheme would be exceedingly complex from a U.S. regulatory point of view and would also increase INTELSAT O&M costs.

The administrative effort of regulation is one of the major cost components that is subject to significant returns to scale. As the FCC has previously pointed out, direct access "would merely be changing the form in which [COMSAT-related] expenses would be recovered, and in the process, *add an unnecessary layer of regulation* with its attendant costs. . . . Direct access would not eliminate the need to determine the level of Signatory-related . . . expenses which properly should be borne by the users of COMSAT's services."[67] The costs associated with a regulatory framework necessary to ensure adequate compensation of COMSAT for the risks and liabilities that it would retain in a direct access environment may even exceed the administrative costs of regulating COMSAT. The Commission was concerned that "[i]t might require significant regulatory involvement to assure COMSAT's receipt of sufficient administrative fees to continue to meet its statutorily-imposed responsibilities."[68]

If regulatory supervision had to encompass many new direct access customers, and had to focus on the much narrower (and possibly more elusive) cost categories that COMSAT needs to be compensated for, the current benefit of regulating a single entity through an already existing regulatory framework would be lost. Moreover, this would entail significant costs of creating a whole new regulatory framework to accommodate direct access. The formulation of this framework would take a considerable amount of administrative time and resources. Most likely,

---

[67] *Direct Access* at 317-318 (emphasis added).

[68] *Direct Access* at 325-326.

this effort will have been wasted if COMSAT and INTELSAT are restructured significantly in the near future. The administrative costs of implementing direct access would have to pay off over too short a period of time.

To allow direct access for U.S. users of the INTELSAT system—some of them on a very small scale—would also impose significant costs on INTELSAT that are already borne by COMSAT. These additional costs of INTELSAT *duplicating* many of COMSAT's legal, monitoring, sales, customer support, and administrative functions in dealing with numerous U.S. customers must not be underestimated and, at least in part, will have to be paid by U.S. end users.[69] If direct access were implemented before INTELSAT can be restructured, it would raise INTELSAT's costs without providing opportunities for true efficiency gains. The total cost of INTELSAT space segment as well as COMSAT's average costs would increase and, certainly, find their way into the charges paid by end users for telecommunications services.

COMSAT's larger customers would be more likely to choose direct access because, in contrast to COMSAT's other customers, they would be able to deal more easily with the significant and hard-to-forecast capital commitments that would have to be made up front under all direct access options but Contractual Access. This would leave COMSAT with the smaller subscribers that are relatively more expensive to service and have relatively less expertise in the technical aspects of telecommunications. Due to reduced economies of scale, it would be increasingly expensive for COMSAT to offer its traditional level of service to these remaining customers. However, the country benefits a great deal from offering satellite communications services on fair terms to users of all sizes and with differing capabilities. In a rapidly changing technological environment, it is important for public policy purposes to offer these services to small companies who can experiment with creative uses of technology in their markets.[70]

---

[69] Note that even if INTELSAT would provide all these service to U.S. customers *instead* of COMSAT, total costs of space segment service could only be lower if INTELSAT were more efficient in the provision of these services. However, given INTELSAT's cumbersome governing structure, this seems highly unlikely.

[70] COMSAT's obligation to provide INTELSAT space segment services on a non-discriminatory basis to all users effectively eliminates entry barriers to satellite service even for small users.

In fact, under *any* form of direct access, if COMSAT would not be compensated adequately for the functions that it continues to perform on behalf of direct access customers, it would be forced to spread many of its costs over a smaller base of remaining customers. Unavoidably, these customers would be placed at a competitive disadvantage and forced to reduce their reliance on satellite communications technology. However, the purpose of direct access should not be to benefit direct access customers by imposing costs on COMSAT and its remaining customers.

4. Mispricing of Space Segment and Competitive Distortions

The ability of U.S. firms to access INTELSAT directly could seriously distort intramodal and intermodal competition if customers could procure INTELSAT space segment at the utilization charges or net book values established by INTELSAT as a cost-sharing cooperative. In fact, "mispricing" of services and resulting competitive distortions could occur if:

- COMSAT were not adequately compensated for the services that it continued to perform on behalf of direct access customers;
- The structure of INTELSAT charges to direct access customers did not reflect the full cost of providing space segment capacity; or
- COMSAT's investment share of INTELSAT space segment capacity could be acquired at investment costs different from fair market value and/or COMSAT book value.

First, if COMSAT were not adequately compensated for the functions that it would continue to perform on behalf of direct access customers, INTELSAT space segment services would be available to direct access customers below costs. Under any direct access proposal short of multiple signatories, a number of financial and operating responsibilities would remain with COMSAT. Because COMSAT would have to incur significant costs in order to carry out these responsibilities, there is a clear risk that COMSAT would not be adequately compensated by

direct access customers.[71] Indeed, such an approach could effectively require COMSAT to subsidize those competitors and their customers. If COMSAT could not obtain full compensation, direct access customers would be able to acquire services at rates that did not reflect the full cost of space segment service.[72] As a result, COMSAT would effectively subsidize direct access customers—who, in reality, would be COMSAT's competitors. This would competitively disadvantage COMSAT, its remaining customers, as well as users of other international telecommunications systems.

Second, even if COMSAT could obtain compensation for the services that it would continue to provide under the various direct access options, strict reliance on INTELSAT's IUC as a surrogate access charge would risk mispricing of individual services such as video, private line, and public-switched services of various commitment terms. The reason is that the IUC primarily is a measure of INTELSAT space segment utilization and an internal "transfer price" between Signatories that enables INTELSAT to operate as a cost-sharing international cooperative. In contrast, COMSAT's tariffs are subject to FCC regulation and based on an allocation of COMSAT's jurisdictional revenue requirements rather than IUCs. COMSAT's rates are also directly exposed to competitive market forces.[73] Thus, while COMSAT's rates are designed to recover the full costs of each space segment service and reflect market forces, INTELSAT's utilization charges do not. This problem is likely to remain until INTELSAT is no longer

---

[71] The FCC has recognized that the administrative fees direct access users might be willing to pay are unlikely to compensate COMSAT adequately for all the activities it legitimately undertakes as U.S. Signatory (*Direct Access* at 325-326).

[72] Note that INTELSAT utilization charges were never intended to recover the full costs associated with providing space segment capacity to INTELSAT users. In fact, INTELSAT's own accounting practices and financing guidelines recognize that the IUC does not represent the full cost of space segment service. (See Appendix A).

[73] See Appendix A. The U.S. market for international telecommunications services is the most competitive in the world. In fact, telecommunications customers and carriers in no other part of the world have the option to use as many alternative cable and satellite facilities in order to satisfy their service requirements.

structured as a cost sharing intergovernmental cooperative and can implement a rate structure that is more than an internal transfer price and accounting mechanism.[74]

Third, any form of direct access with an investment obligation could seriously distort the competitive playing field if direct access customers were able to acquire part of INTELSAT space segment at investment costs different from market value. INTELSAT's unconventional accounting treatment of Signatories' investment makes "mispricing" of investment shares very likely. INTELSAT currently allows for adjustments to investment shares only once a year. Because ownership shares of Signatories are tied to utilization, only a small fraction of total INTELSAT investment changes hands every year. The few shares that do change hands are strictly reallocated based on INTELSAT book values rather than through price discovery in a market environment. Moreover, in contrast to COMSAT, INTELSAT is not obligated to conform to internationally-accepted accounting standards.[75] While INTELSAT has made considerable strides toward bringing its financial reporting activities into greater compliance with generally-accepted standards, the one area where this is not the case is in the calculation of INTELSAT book values, which continue to represent investment values incorrectly. Thus, if direct access customers could acquire any part of COMSAT's share of INTELSAT space segment at investment costs below fair market value and/or COMSAT book value, serious competitive distortions could arise in the industry.

---

[74] Even if the structure of IUCs were to reflect correctly the price structure in competitive markets, this may no longer be true after a direct access surcharge is added. For example, if the IUC correctly reflected the relationship between market prices for long-term and short-term commitments, a constant surcharge for COMSAT's remaining services would not preserve this relationship. Also, if it were determined that the IUCs did not appropriately reflect the structure of space segment costs, direct access surcharges would have to vary significantly between service categories to preserve a competitively neutral structure of total space segment charges. This, however, would require a complicated rate structure and significant administrative effort.

[75] For example, INTELSAT does not currently capitalize interest during the construction of facilities. In contrast to standard accounting practices, INTELSAT also accumulates the difference between annually quantified returns and its agreed-upon target return in an "RC/EC account" that, like depreciation, is subtracted from gross book value (see Appendix A).

In sum, direct access would make mispricing of INTELSAT space segment a real risk. This could result in profound inefficiencies in the selection of international telecommunications services, seriously distort the competitive playing field, and adversely impact intramodal and intermodal competition.

5. Reduced Regulatory Control

Direct access proposals of all forms would remove from the purview of regulatory agencies some market participants' activities that are now subject to U.S. regulation. In its provision of INTELSAT space segment on a common carrier basis, COMSAT is subject to applicable U.S. economic regulation. For example, the FCC monitors all cost items of COMSAT's jurisdictional revenue requirements (including cost allocations to COMSAT World Systems from its parent), and must accept COMSAT's tariff filings before they can become effective. In fact, COMSAT still is required to justify any rate changes with cost-support studies that are open to challenges by COMSAT's competitors.[76]

COMSAT has argued elsewhere[77] that, because of its competitive posture, it should be substantially deregulated. But even it if were deregulated, COMSAT would still be subject to U.S. regulatory *jurisdiction*. In contrast, INTELSAT as currently structured is a treaty-based international organization which—under its privileges and immunities—is not subject to U.S. regulatory jurisdiction at all. As a result, any form of direct access based on INTELSAT utilization charges or investment standards would, in effect, allow INTELSAT to offer services in the U.S. in competition with U.S. carriers and other facilities providers, while remaining immune from any oversight of its rates and practices.[78]

---

[76] See "Free Comsat and Fix International Rates," *Business Communications Review*, September 1994.

[77] *Petition for Partial Relief From the Current Regulatory Treatment of COMSAT World Systems' Switched Voice, Private Line, and Video and Audio Services*, FCC, RM-7913, June 24, 1994.

[78] The FCC could regulate direct access surcharges implemented to compensate COMSAT for the functions that it would continue to provide on behalf of direct access customers. However, that would still leave the large majority of total INTELSAT space segment costs outside of U.S. jurisdiction. Moreover, as (continued...)

6. Other Areas of Concern

U.S. carriers that own and operate trans-oceanic fiber-optic cables are among INTELSAT's biggest competitors. If direct access provided an opportunity for these companies also to own the INTELSAT space segment capacity they are using, this could lead to a significant increase in the concentration of control over fiber-optic cable and satellite facilities. The FCC has previously raised this concern about the anti-competitive potential of allowing communications carriers with large investments in undersea cable to control competing satellites. In its 1984 *Direct Access* decision, the Commission pointed out that direct access could be "detrimental to the promotion of intermodal competition" because, with AT&T as COMSAT's largest customer, it would enable AT&T to "bias investment and circuit utilization decisions in favor of one medium over the other." Moreover, "the Commission would have less effective and timely means of monitoring and curbing AT&T should it attempt to engage in anti-competitive practices with respect to space segment utilization and control."[79]

AT&T is still the largest U.S. international carrier by a considerable margin. In fact, AT&T builds, owns, operates, and utilizes *most* of the trans-oceanic fiber-optic capacity that is competing with COMSAT in the provision of telecommunications service to and from the U.S. To the extent that the impact of direct access on competition has been a concern in the past, it is difficult to see how that concern would have diminished over time. Moreover, all direct access options (with the exception of contractual access) would effectively reverse past U.S. policy decisions that INTELSAT Signatory functions should not be provided by a U.S. telecommunications carrier but by an independent corporation (*i.e.*, COMSAT).

---

[78](...continued)
shown above, the regulation of direct access surcharges would be very costly. It could, for example, require the determination of service-specific mark-ups over IUCs that adequately compensate COMSAT and also ensure that total space segment charges reflect the full cost of individual space segment services.

[79] *Direct Access* at 324. If direct access carriers were able to "bias investment and circuit utilization decisions in favor of one medium over the other" this could, presumably, also effect competing satellite systems.

V. CONCLUSIONS

Current efforts underway to restructure INTELSAT have led to renewed interest in the issue of "direct access" to the INTELSAT system for U.S. telecommunications carriers other than COMSAT. Direct access has been made available in a few countries to emerging telecommunications carriers that are now competing with deregulated former postal and telecommunications monopolies. In these countries, direct access has for the first time introduced a somewhat level playing field in carriers' access to INTELSAT space segment. However, because of COMSAT's status as an independent corporation, which requires it to provide non-discriminatory service to all U.S. users of INTELSAT to and from the U.S., competitive access concerns never existed here.

When the FCC considered previously whether U.S. firms other than COMSAT should be given direct access to INTELSAT, it concluded that direct access would not serve the public interest because "whatever benefits would be derived" would not be sufficient "as to outweigh the adverse consequences." Since this decision, the FCC has implemented a number of additional policy decisions that have significantly increased intermodal and intramodal competition in the provision of international telecommunications services to and from the U.S. These policy actions accompanied by technological change also have had a dramatic impact on market structure. COMSAT market shares have decreased dramatically and effective competition—from existing fiber-optic cable and separate satellite systems, from planned facilities currently attempting to presubscribe capacity, and from the threat of additional entrants—is now exerting intensive competitive pressure on COMSAT in its function to provide INTELSAT space segment service to and from the U.S. Under these conditions, the benefits that direct access could provide before INTELSAT is restructured can only be small compared to its costs.

COMSAT's Role as U.S. Signatory and Options for Direct Access

As simple as the notion of "direct access" may appear, the concept generally is not well defined. However, any definition of direct access must take INTELSAT Signatory functions into account and evaluate COMSAT's role as the U.S. Signatory. INTELSAT provides international telecommunications services primarily through its Signatories. As a consequence, COMSAT performs a number of important functions on behalf of its customers and INTELSAT. In particular, it:

- Conducts a range of sales, marketing, billing, and coordinating functions for its U.S. customers;
- Represents the interests of the U.S. Government and customers before INTELSAT;
- Contributes to INTELSAT's capital requirements, and assumes investment responsibilities and financial liabilities;
- Participates in the IUC mechanism and pays INTELSAT operating and maintenance costs;
- Assumes operating liabilities; and
- Performs research and development on behalf of U.S. customers;

Direct access to INTELSAT for U.S. customers would bypass some of COMSAT's roles as the U.S. Signatory. Based on the functions of COMSAT as U.S. Signatory, several direct access options were defined: multiple signatories, non-signatory shareholders, investment participation, and contractual access. For direct access to be economically desirable, it is critical that any option chosen be both efficient and competitively neutral. This would require a regulatory framework to ensure adequate compensation for the remaining roles COMSAT would continue to perform on behalf of direct access customers.

ALLEGED BENEFITS AND POTENTIAL COSTS OF DIRECT ACCESS

We have found that the overall benefits of direct access prior to INTELSAT restructuring are likely to be small, or possibly even non-existent:

- If there are any additional *"efficiency incentives"* that direct access would create, such benefits could only be very small because: (1) COMSAT's provision of INTELSAT space segment capacity is already exposed to effective competition in all market segments; and (2) the COMSAT-specific costs to which such incentives would apply are only a fraction of total space segment costs.

- Direct access as a means to *"avoid costs of the 'middleman'"* ignores the fact that COMSAT is not merely a "reseller" of INTELSAT capacity but provides a number of important functions for its customers and end users in the U.S. Indeed, as a so-called "middleman," COMSAT provides scope and scale economies that would be lost under direct access.

- It is highly unlikely that direct access, at this point, could *"reduce the potential for cross-subsidization within COMSAT"* because effective competition accompanied by continued regulatory oversight leaves little incentive or opportunity for cross-subsidization.

- Direct access would not *"create a more level playing field"* in the U.S. because COMSAT by law already provides non-discriminatory access for all its customers. This is in stark contrast to many foreign markets that are controlled by fully-integrated monopoly PTTs.

- While direct access would *"increase customer choice"* in a strict sense, this is unlikely to create any efficiency gains and may, in this case, even create an environment that discriminates among customers.

- Direct access would not *"decrease regulation"* but would have to require an additional layer of regulation to ensure that COMSAT is adequately

compensated for the costs and liabilities it would continue to bear on behalf of direct access customers.

While implementing direct access *before* INTELSAT is restructured offers few (if any) benefits, we find that direct access for U.S. users of INTELSAT potentially is associated with significant costs. In particular, direct access policies are likely to:

- *Decrease the representation of U.S. policy interests* within INTELSAT by dispersing U.S. representation, and thereby weakening the effectiveness, credibility, and influence of the U.S. within INTELSAT;
- *Delay the restructuring of INTELSAT* and, thus, prevent the realization of true efficiency gains in the provision of satellite service because it may further complicate INTELSAT's governance process and foreclose restructuring options that could otherwise be available;
- *Increase total costs* by (1) requiring significant regulatory involvement to assure adequate compensation of COMSAT for its remaining cost and liabilities; and (2) imposing additional costs on INTELSAT that are also borne by COMSAT.
- *Artificially price services* because: (1) COMSAT may be unable to obtain adequate compensation for its remaining obligations and liabilities; (2) INTELSAT's utilization charges do not reflect the full cost of space segment service; and (3) COMSAT's investment in INTELSAT space segment could be made available at below market value and COMSAT book value;
- Result in *reduced U.S. regulatory control* because, in contrast to COMSAT, INTELSAT is not directly subject to U.S. regulatory jurisdiction; and

- *Not mitigate any previously-raised regulatory concerns* about direct access and increase the U.S. carrier "concentration of control" over fiber-optic cable and satellite facilities.

As a result, the economic costs of allowing for direct access before INTELSAT restructuring is addressed may be significant and are most likely to outweigh any benefits of such a policy by a substantial margin. Given this, there is no reasonable basis to assume that direct access would result in lower costs to INTELSAT users or that, in turn, U.S. consumers would see any benefits. To the contrary, they would be likely to be encumbered with the added costs of direct access.

APPENDICES

APPENDIX A: THE IUC MECHANISM AND COMSAT REVENUE REQUIREMENTS

INTELSAT UTILIZATION CHARGES

INTELSAT utilization charges (IUCs) are a measure of space segment usage and internal "transfer prices" established by INTELSAT as a cost-sharing cooperative. Signatories, including COMSAT, are obligated to pay IUCs based on the type and amount of INTELSAT capacity used by their customers. Total revenues collected through IUCs are meant to cover: (1) INTELSAT O&M costs (*i.e.*, operating costs, maintenance costs, administrative costs, and operating fund requirements); (2) repayment of capital contributions (*i.e.*, through depreciation of assets or adjustment of investment shares); and, to the extent available, (3) a nominal return for the use of Signatories' capital (in form of a before-tax return on investment).[80] However, with respect to the discussion of direct access, it is critical to recognize that:

- IUCs do not represent the full cost of providing the space segment;
- IUCs are not the equivalent of market-based "prices" for space segment service; and
- IUCs are not the basis for COMSAT revenue requirements or rates.

As the FCC has recognized, IUCs do "not include any amount to compensate COMSAT for the internal costs which COMSAT incurs making satellite circuits available to U.S. customers and engaging in other activities connected with its role as U.S. Signatory to INTELSAT."[81] This point is also clearly stated in Article 11 of INTELSAT's Operating Agreement. It specifically

---

[80] INTELSAT, *Operating Agreement*, Article 8. If IUC revenues are insufficient to cover all of these expense items, Signatories remain responsible to provide any additional financial resources necessary.

[81] *Direct Access* at 311. See Appendix B for a detailed summary of *Direct Access*.

stresses that the following costs are *not* included as INTELSAT costs and are, thus, not part of IUCs:

- Taxes on income derived from INTELSAT of any of the Signatories;
- Design and development expenditures on launchers and launching facilities; and
- The cost that representatives of Parties and Signatories incur in attending any INTELSAT meetings.

Moreover, IUCs do not provide a return on investment sufficient to cover the market cost of capital. This was already recognized by the FCC when it noted that "the amount of compensation COMSAT receives as a return on its INTELSAT investment through the IUC mechanism does not provide COMSAT a full return on its total investment in INTELSAT."[82] For example, until 1994, INTELSAT's target rate of return on Signatories' capital has been 14 percent. Any actual returns above this target were accumulated into a "RC/EC account"[83] that INTELSAT interprets as a reduction (*i.e.*, repayment) of Signatories' invested capital. As a result, Signatories' average return on INTELSAT capital contributions has been held constant at target return of 14 percent on INTELSAT book value.[84] However, given that taxes are not part of INTELSAT costs, the 14 percent return on INTELSAT book value is only a *pre-tax* return and, thus, would be insufficient to provide a full (after-tax) return on COMSAT's investment in INTELSAT.[85]

---

[82] *Direct Access* at 312.

[83] RC/EC stands for "Return of Capital, Excess Compensation."

[84] INTELSAT's actual returns have been in the 16 percent range for a number of years. This "excess" above the target return of 14 percent has accumulated to a considerable amount and significantly reduces INTELSAT's book value of Signatories' investments. As a result of understated INTELSAT book values, the return on INTELSAT book value overstates the return on Signatories' investments. Furthermore, the fact that INTELSAT does not capitalize interest during construction understates INTELSAT's book value and, correspondingly, also overstates the return on book value.

[85] For example, at a 40 percent combined state and federal income tax rate, 14 percent pre-tax returns only results in after-tax returns of 8.4 percent.

INTELSAT utilization charges only play a very limited role in signaling the "cost" (or "price") of INTELSAT services to signatories. As explained in detail below, Signatories' net payments to INTELSAT are largely independent from the level of the IUC. Furthermore, the IUC was primarily designed to measure INTELSAT space segment usage in order to define Signatories' ownership shares. A Signatory's utilization share is not its physically used share of actual capacity, but the share of the Signatory's IUC payments relative to INTELSAT's total IUC revenues.[86] In fact, INTELSAT's transformation of the IUC from a simple monthly charge per utilized circuit, to utilization charges that are differentiated by usage type and commitment length has unusual implications for ownership rights. For example, a Signatory's decision to shift from a short-term commitment to a long-term commitment of space segment capacity (*i.e.*, to services with lower utilization charges), will reduce the Signatory's usage share and, correspondingly, its ownership share as determined by this mechanism.[87] However, because voting rights depend on ownership share, the Signatory's "voice" within INTELSAT will decline even though the Signatory increases its commitment to the INTELSAT system.

Although designed as a measure of Signatories' capacity utilization, IUCs do provide an internal "transfer price" between Signatories for imbalances of ownership and utilization shares. However, because the disparity between ownership and usage shares has been so small (*i.e.*, no more than a few percent of total investment across all Signatories) and often temporary, a Signatory's net payments to INTELSAT are essentially *independent* of the actual level of utilization charges. A closer look at INTELSAT "Revenue Distributions" can make this more clear.

INTELSAT REVENUE DISTRIBUTIONS

Each quarter, INTELSAT's total revenues from utilization charges are redistributed back to its Signatories through revenue distributions in proportion to their investment shares. Because IUCs

---

[86] *Operating Agreement*, Article 6.

[87] Note that utilization share and ownership share would decrease even though the Signatory's utilized share of physical capacity would not change at all.

are collected based on *utilization*, and revenues are distributed based on *investment* shares, there may be a difference between the two amounts. This difference ("INTELSAT Net") provides a contribution to a return on and a repayment of capital for Signatories whose investment shares exceed their utilization shares. The INTELSAT Net is paid by those Signatories whose usage exceeds their ownership.

INTELSAT also issues quarterly calls for capital and for INTELSAT O&M costs (*i.e.*, operating, maintenance, and administrative costs, as well as operating fund requirements). These are due immediately after the receipt of revenue distributions. Thus, a Signatory's quarterly payments[88] are equal to:

+ INTELSAT Utilization Charges;

– Revenue Distributions;

= INTELSAT Net;

+ INTELSAT O&M;

+ INTELSAT Capital Calls.

This mechanism of quarterly payments and capital calls is equivalent to:

- The share of total INTELSAT O&M costs;[89]
- A contribution to the costs associated with the fraction of INTELSAT assets used but not owned; and
- INTELSAT capital calls.

---

[88] Receipts, if the sum is negative.

[89] The effect of (1) receiving INTELSAT Net and (2) paying INTELSAT O&M based on ownership share is also equivalent to (a) paying the utilization share of INTELSAT O&M and (b) a nominal payment for space segment usage that exceeds ownership.

If a Signatory's utilization share is identical to its investment share (*i.e.*, it uses as much as it owns), the difference between utilization charges and revenue distributions (*i.e.*, the "INTELSAT Net") will be *zero*. In this case a Signatory's quarterly payments net out to be:

- INTELSAT O&M; and
- INTELSAT Capital Calls.

Thus, when usage share is equal to ownership share, payments to INTELSAT are fully independent from the actual level of utilization charges. Moreover, in addition to Signatory-specific cost, the INTELSAT-specific "costs" that a Signatory needs to recover from its customers are not its IUC payments but INTELSAT O&M costs and the costs associated with the Signatory's investment responsibility in INTELSAT. This also becomes quite clear by analyzing COMSAT revenue requirements.

COMSAT Revenue Requirements

COMSAT's revenue requirements are largely independent from INTELSAT utilization charges.[90] Only INTELSAT Net—the *difference* between COMSAT's payment of utilization charges to INTELSAT and the revenue distributions COMSAT receives from INTELSAT—becomes part of COMSAT revenue requirements. Revenue requirements are calculated as the sum of:

- COMSAT World Systems G&A Expenses (INTELSAT Affairs, Engineering and Operations, Sales and Marketing, Finance, Legal);
- COMSAT World Systems R&D Expenses;
- COMSAT Corporate Expenses (allocation);

---

[90] This also means INTELSAT utilization charges only play a limited role in setting COMSAT's regulated rates. COMSAT's rates are based on allocation of total revenue requirements (that, in contrast to IUCs, need to conform to U.S. accounting standards) and individual cost support filed with the Federal Communications Commission (FCC).

- Depreciation Expenses (based on COMSAT's investment in INTELSAT);
- Allowed Rate of Return (based on the cost of capital and COMSAT's investment in INTELSAT);
- U.S. Taxes;
- INTELSAT O&M costs (based on COMSAT's investment in INTELSAT);
- INTELSAT Net (INTELSAT Utilization Charges minus Revenue Distributions).

A closer look at revenue requirements makes it obvious that direct access could provide efficiency incentives merely to a fraction of total revenue requirements. This is because only *the first three* cost categories are under the control of COMSAT: G&A expenses, R&D expenses, and corporate allocations. The other cost categories—the large majority of total revenue requirements—are beyond COMSAT's control.

Depreciation, the allowed return on ratebase, taxes, and INTELSAT O&M are not within COMSAT's control. Direct access customers taking part of COMSAT's share of INTELSAT assets will face the same depreciation expenses. Moreover, the allowed rate of return has been set by the FCC as the cost of capital associated with COMSAT's share of INTELSAT investment and, thus, also is beyond COMSAT's control. Because the cost of capital is determined in financial markets *for projects of equivalent risk*, any party investing in INTELSAT on the same terms as COMSAT would face the same cost of capital. The cost of capital is project-specific and, thus, independent from the *average* cost of capital of the investing party.[91] Unless investment risks remained with COMSAT (or direct access customers faced very different

---

[91] In other words, the cost of capital depends only on the risk to which the capital is put. Thus, the cost of capital does not depend whether the project is undertaken by a company with (otherwise) low average risk or a company with (otherwise) high average risk.

For a general discussion of these principles, see R. A. Brealey and S. C. Myers, *Principles of Corporate Finance*, 4th Edition, 1991, Chapters 7-9 ("*[t]he true cost of capital depends on the use to which capital is put*" (p. 182, emphasis in original)).

transaction costs in capital markets),[92] their financing costs associated with an investment in INTELSAT would be identical to that of COMSAT. Direct access customers would only face a lower cost of capital if some of the INTELSAT investment risk remained with COMSAT. However, if this was the case, total risks would be unchanged and COMSAT would have to be compensated for assuming these remaining risks.

Finally, direct access could not provide efficiency incentives for COMSAT's tax liabilities or its share of INTELSAT O&M costs. Neither cost component is within COMSAT's control. Average tax liabilities would be the same for every for-profit corporation that, on average, earns its cost of capital. Similarly, any direct access customer that uses a particular fraction of INTELSAT capacity would face the same allocation of INTELSAT O&M costs.

---

[92] Small companies that are not traded on major stock exchanges may face higher transaction [illegible] financial markets than large, frequently-traded corporations like COMSAT.

APPENDIX B: REGULATORY ENVIRONMENT AND MARKET STRUCTURE

THE FCC'S 1984 DIRECT ACCESS DECISION

In its 1984 *Direct Access* decision,[93] the FCC considered whether U.S. carriers other than COMSAT should be given direct access to INTELSAT. It was argued before the Commission that sharing COMSAT's part of the INTELSAT space segment facilities would enhance competition in international satellite telecommunications and minimize COMSAT's ability to use its "monopoly position" in INTELSAT to engage in discriminatory space segment pricing, cross-subsidization and other anticompetitive conduct. Direct access by U.S. international service carriers (ISCs) was explored in the form of capitalized leaseholds and investment interests.[94] Under the "capitalized leasehold" proposal, carriers would have been permitted to lease from COMSAT the INTELSAT facilities they actually used at INTELSAT utilization charges plus an administrative fee to cover any of COMSAT's administrative and maintenance costs. Under the "investment" proposal, carriers could have acquired a capital investment interest in COMSAT's share of INTELSAT facilities and paid COMSAT for its share of INTELSAT operating costs plus any pro-rata share of COMSAT's costs for carrying out U.S. Signatory functions.[95]

The FCC found that these forms of direct access would not serve the public interest because "whatever benefits would be derived" would not be sufficient "as to outweigh the adverse

---

[93] *Regulatory Policies Concerning Direct Access to INTELSAT Space Segment for the U.S. International Service Carriers*, 97 FCC 2d 296 (1984) ("*Direct Access*").

[94] *Id.* at 296-297.

[95] *Id.* at 300-301.

consequences. . .of direct access."[96] The Commission based this conclusion on several important findings:

- INTELSAT utilization charges (IUCs) are "not a measure of COMSAT's cost of providing INTELSAT satellite service to its customers in the United States. . .[because IUCs do] not include any amount to compensate COMSAT for the internal costs which COMSAT incurs making satellite circuits available to U.S. customers and engaging in other activities connected with its role as U.S. Signatory to INTELSAT. . . ."[97]
- "[T]he amount of compensation Comsat receives as a return on its INTELSAT investment through the IUC mechanism does not provide Comsat a full return on its total investment in INTELSAT."[98]
- "[T]he IUC rate. . ., which includes a 14 percent pre-tax return, assumes economic significance for COMSAT only to the extent that others utilize a portion of the system in which COMSAT has invested."[99]
- "If direct access will produce savings to carriers and users, it will be from costs relating to COMSAT's (rather than INTELSAT's) activities and operations."[100]
- "[V]ery little [would] be gained from [direct access] in terms of cost savings or increased efficiency. . . . [D]irect access, in and of itself, will not produce efficiencies and cost savings. . . ."[101]

---

[96] *Id.* at 298.

[97] *Id.* at 311.

[98] *Id.* at 312.

[99] *Id.*

[100] *Id.* at 315.

[101] *Id.* at 318-319.

- Direct access "would merely be changing the form in which [COMSAT-related] expenses would be recovered, and in the process, add an unnecessary layer of regulation with its attendant costs. . . . Direct access would not eliminate the need to determine the level of Signatory-related. . .expenses which properly should be borne by the users of COMSAT's services."[102]

- "[D]irect access. . .would not be required to preserve fair competition."[103]

- Direct access could be "detrimental to the promotion of intermodal competition" because, with AT&T as COMSAT's largest customer, it would enable AT&T to "bias investment and circuit utilization decisions in favor of one medium over the other." Moreover, "the Commission would have less effective and timely means of monitoring and curbing AT&T should it attempt to engage in anti-competitive practices with respect to space segment utilization and control."[104]

- Direct access "could also adversely affect COMSAT's ability effectively to express, promote and protect the national and foreign policy interests of the United States before INTELSAT" because "the administrative fees that direct access proponents are willing to pay" may not "adequately compensate COMSAT for all the activities it legitimately undertakes as U.S. Signatory."[105]

---

[102] *Id.* at 317-318.

[103] *Id.* at 322.

[104] *Id.* at 324.

[105] *Id.* at 325-326.

- Furthermore, direct access "might require significant regulatory involvement to assure COMSAT's receipt of sufficient administrative fees to continue to meet its statutorily-imposed responsibilities."[106]

This FCC decision was followed by a number of important changes in the regulatory environment as well as in the market structure of international telecommunications services.

REGULATORY CHANGES SINCE *DIRECT ACCESS*

In the early and mid 1980s, paralleling *Direct Access*, the FCC launched a number of actions that were designed to increase competition in the international telecommunications market to and from the U.S.[107] This increase in competition was to be achieved by (1) allowing COMSAT to offer service directly to end users and, thus, increasing competition between common carriers and their leased-channel customers by enabling the latter to configure their own end-to-end service; (2) unbundling earth station ownership from the provision of the INTELSAT space segment; (3) promoting intermodal competition between submarine cables and satellites; and (4) authorizing intramodal competition between INTELSAT and alternative providers of international satellite service.

COMSAT Service to End Users

The FCC concluded that access by non-carriers to COMSAT would increase leased-channel customers' choice by enabling them to make their own connecting links to supplement COMSAT's space segment service, rather than obtaining these connecting services from common

---

[106] *Id.*

[107] For a more detailed discussion, see *Petition for Partial Relief From the Current Regulatory Treatment of COMSAT World Systems' Switched Voice, Private Line, and Video and Audio Services*, FCC, RM-7913, pp. 11-16.

carriers.[108] In the same decision, the Commission authorized the entry of a COMSAT subsidiary into the retail market for end-to-end service to non-carrier customers because it would also provide competitive pressure to keep common carriers' rates down.[109]

Earth Station Ownership

Originally, the "Earth Station Ownership Committee" (ESOC) gave COMSAT a central role in operating the U.S. ground stations. However, in 1984, the FCC first allowed competition in the earth station segment by licensing small earth stations to individual common carriers for the limited purpose of offering "international business service" (IBS).[110] In the same year, the Commission also permitted common carriers to construct and operate U.S. earth stations outside ESOC and concluded that "a more open and flexible earth station ownership policy will best serve the public interest by increasing efficiencies and reducing costs to users" and would not adversely affect INTELSAT.[111] To prevent cross-subsidization from COMSAT's space segment services to its earth station services, the Commission ordered COMSAT to transfer its earth station investment into a separate subsidiary and unbundle its combined earth station and space segment tariff. In 1989, the FCC also allowed non-common carriers to own earth stations interconnected with INTELSAT facilities.[112] Thus, the Commission effectively eliminated COMSAT's central role in operating the U.S. earth stations for international satellite communications. Both carriers and non-carriers could now own and operate earth stations independently of COMSAT's management and ownership interest. Indeed, COMSAT World

---

[108] *Modification of Authorized User Policy (Authorized User II)*, 90 FCC 2d 1394 (1982), *rev'd, ITT World Communications*, 725 F.2d at 746-41, and *Modification of Authorized User Policy (Authorized User III)*, 100 FCC 2d 177, 180 (1985), *aff'd, Western Union International v. FCC*, 804 F.2d 1280 (1986).

[109] COMSAT, however, generally has not provided end-to-end services through a subsidiary.

[110] *International Relay Inc.*, 97 FCC 2d 327 (1984).

[111] *Modification of Policy on Ownership and Operation of U.S. Earth Stations*, 100 FCC 2d 250, 251 (1984).

[112] *Licensing Private Transmit/Receive Earth Stations*, 3 FCC Rcd 1585 (1988), *aff'd, GTE Telecommunications Corp. v. FCC*, 876 F.2d 134 (1989).

Systems no longer owns or operates any earth stations, having sold its investments in the old ESOC stations to U.S. carriers.

Intermodal Competition

To promote intermodal competition between trans-oceanic submarine cables and satellite systems, the FCC abolished two key policies: (1) the "composite rate policy" that forced carriers to average satellite and cable costs; and (2) the "loading guidelines" that, initially, helped ensure the economic viability of INTELSAT by requiring U.S. carriers to add satellite and cable circuits in approximately equal proportions.

When the FCC recognized that technology-specific rates would enhance consumer choice, it made composite rates discretionary and encouraged carriers to file separate satellite and cable rates.[113] Loading guidelines were eliminated a few years later when the Commission concluded that agreements between COMSAT and its carrier customers gave INTELSAT a sufficient base of U.S. traffic: "circuit distribution guidelines that guarantee INTELSAT minimum levels of traffic have served their purpose and are no longer needed."[114]

Intramodal Competition

Starting in the mid 1980s, a number of regulatory policy actions laid the basis for intramodal competition between INTELSAT and third-party providers of international satellite service to and from the U.S. In 1984, President Reagan determined that alternatives to INTELSAT in the form of satellite systems separate from INTELSAT ("separate satellite systems") were "required in the [U.S.] national interest" within the meaning of the Satellite Act.[115] However, it was decided that two conditions needed to be met in order to protect the economic viability of

---

[113] *Authorized User III.*

[114] *Policy for Distribution of United States International Carrier Circuits Among Available Facilities During the Post-1988 Period*, 3 FCC Rcd 2156, 2160 (1988).

[115] *Presidential Determination No. 85-2* (1984).

INTELSAT: first, separate satellite systems were restricted to services not interconnected with the public switched telephone network ("PSTN"); and second, proposed satellite systems would need to obtain authorization from one or more foreign authorities and enter into INTELSAT consultation procedures.

In 1985, the FCC approved applications of the separate satellite systems to offer services limited to international private line and video services.[116] However, as of today, this restriction on separate satellite systems to non-PSTN services effectively has been eliminated. In 1992, the FCC adopted a determination by the Bush Administration that separate satellite operators could interconnect up to 100 64-kbps equivalent circuits *per system* to the PSTN and that this restriction should be completely eliminated by 1997.[117] In 1994 the FCC raised the limit of "permissible" PSTN service to 1,250 64-kbps equivalent circuits *per satellite*.[118] Most recently, the INTELSAT Assembly of Parties has decided to raise the PSTN threshold to 8,000 64-kbps equivalent circuits per satellite, and signalled its willingness to eliminate this threshold requirement altogether in the 1996-98 time frame.[119] As the FCC itself has recognized, the current limit already exceeds the capacity of many separate system satellites for switched services.[120]

---

[116] *Establishment of Satellite Systems Providing International Communications*, 101 FCC 2d 1046, 1178-79 (1985), *recon.*, 61 Rad Reg. 2d, P&F, 649 (1986).

[117] *Permissible Services of U.S. Licensed International Communications Satellite Systems Separate from the International Telecommunications Satellite Organization*, 7 FCC Rcd 2313, 2314 (1992).

[118] *Permissible Services of U.S. Licensed International Communications Satellite Systems Separate from the International Telecommunications Satellite Organization*, 9 FCC Rcd 347 (1994). Also, note that with digital compression technology, each 64-kbps equivalent circuit can carry up to four voice circuits (*i.e.*, regular telephone circuits).

[119] *Communications Daily*, Vol 14, No. 211, November 1, 1994, p. 2.

[120] *Amendment of the Commission's Regulatory Policies Governing Domestic Fixed Satellites and Separate International Satellite Systems*, IB Docket No 95-41 at ¶ 19, rel. April 25, 1995.

CHANGES IN MARKET STRUCTURE SINCE *DIRECT ACCESS*

As a result of both the FCC's regulatory actions and technological change, the market structure for international telecommunication services has changed significantly since *Direct Access*.[121] The emergence of fiber-optic cables and separate satellite systems has dramatically increased the capacity available on carriers other than INTELSAT. Since the late 1980s, competition from existing fiber-optic cable and separate satellite systems, competition from planned facilities attempting to presubscribe capacity, and competition from the threat of additional entrants has been exerting effective competitive pressure on COMSAT in its function of providing INTELSAT services to and from the U.S.

Fiber-optic technology on submarine cables has revolutionized the international telecommunications industry. The first trans-Atlantic fiber-optic cable from the U.S. to France and the U.K. started operation in 1988 and almost doubled the then-available capacity on submarine cables in the Atlantic. In 1993, only five years later, a total of five installed fiber-optic cable systems had increased available trans-Atlantic cable capacity by more than a factor of 10. By the end of 1996, this capacity will, again, have tripled from its 1993 levels. Similarly, cable capacity to the Caribbean and Latin America tripled when the Americas-1 and Columbus-2 interconnected cable systems became operational in 1994. In the Pacific, the first submarine fiber-optic cable started operation in 1989. By the end of 1993, fiber-optic technology had increased trans-Pacific cable capacity by almost 20-fold from 1988 levels. Between 1993 and 1996, this capacity will have quadrupled once again.[122]

---

[121] For a detailed discussion of market structure and competition, see Hendrik S. Houthakker and The Brattle Group, *Competition in the Market for Trans-Oceanic Facilities-Based Telecommunications Services*, filed with the Federal Communications Commission in the Matter of *Petition for Partial Relief From the Current Regulatory Treatment of COMSAT World Systems' Switched Voice, Private Line, and Video and Audio Services*, RM-7913, June 24, 1994.

[122] *Id.*, Exhibit HSH-10.3. Fiber optic cable systems that currently provide services to and from the U.S. include TAT-8, TAT-9, TAT-10, TAT-11, PTAT-1, CANTAT-3, TCS-1, COLUMBUS-2, AMERICAS-1, Trans-Gulf, HAW-4/TPC-3, NPC, TPC-4, and HAW-5/PACRIM East. TAT-12/TAT-13 and TCP-5 will become operational before the end of 1996. AT&T stresses that its installations of undersea telecommunications system by the end of 1994 spanned more than 230,000 kilometers providing

(continued...)

A similar explosion of service options has taken place since the emergence of international satellite systems separate from INTELSAT. Although non-existent before 1988, eight separate system satellites were providing international telecommunications service to and from the U.S. by the end of 1993. At the same time, six more satellites under construction and scheduled to start service before the end of 1996 were already competing in the market by seeking customers to presubscribe their capacity.[123]

This proliferation of cable and separate satellite systems has put COMSAT under substantial competitive pressure. Because of the rapid expansion of available capacity, competing cable and separate satellite systems already have sufficient idle capacity to accommodate all of COMSAT's service.[124] With additional facilities coming on line at a rapid pace and the introduction of digital compression technology that allows for more efficient use of capacity, the competitive pressure from idle capacity is only going to increase further. From 1987 to 1993, COMSAT's share of total trans-oceanic capacity available for service to and from the U.S. has decreased from between 75 and 90 percent to a share of only about 40 percent. By the end of 1996, COMSAT's share is expected to be below 30 percent of total trans-oceanic capacity available for service to and from the U.S.[125]

---

[122](...continued)
"individuals and businesses with instant state-of-the-art global connectivity." During 1994, AT&T Submarine Systems had completed nine major submarine fiber-optic cable system installations; continued construction on 4 major systems; began construction on three new systems; and won contracts for five additional cable projects of over 44,000 kilometers in length. (*AT&T Submarine Systems Annual Review for 1994*).

[123] *Id.*, Exhibit HSH-10.2. The satellite systems currently competing for service to and from the U.S. include Columbia, Hispasat, Intersputnik, Orion, PanAmSat, and a number of U.S. domestic satellite systems (transborder). New satellite systems such as Globostar, Rimsat, and TRW, already compete in the presubscription of capacity and are expected to provide service to and from the U.S. before the end of 1996. Regional and domestic satellite systems currently competing with INTELSAT in other geographic areas include Apstar, Arabsat, Asiasat, Astra, Eutelsat, and Palapa.

[124] *Id.*, pp. 84-94.

[125] *Id.*, p. 85.

This rapid emergence of both intramodal and intermodal competition in the international telecommunications market demonstrates the effectiveness of U.S. regulatory policies. Today, INTELSAT is only one of several systems available for international telecommunications. COMSAT, as U.S. Signatory to INTELSAT, is only a segment in the chain of entities and telecommunication facilities between end users on the U.S. and the foreign end of a telecommunication circuit. The relatively small size of COMSAT becomes even more obvious when expressed in terms of revenues. For example, COMSAT's total 1992 revenues from international communications[126] for switched voice, private line, and video and audio service amounted to $253 million. This number is less than 5 percent of the approximately $5,500 million in 1992 total retained revenues of U.S. international service carriers (ISCs) from trans-oceanic switched-voice traffic originating or terminating in the U.S.[127]

DEVELOPMENTS WITHIN COMSAT AND INTELSAT

If direct access to INTELSAT provided efficiency incentives through additional competitive pressure, this incremental competitive pressure would only apply to COMSAT-related (rather than INTELSAT-related) activities.[128] However, there is substantial evidence that the current

---

[126] International communications includes the FCC-regulated and non-regulated businesses of COMSAT World Systems as well as COMSAT International Ventures. (Source: COMSAT, 1993 Annual Report).

[127] This excludes telecommunications traffic to and from Canada, Mexico, and non-contiguous U.S. points that are not part of COMSAT international telecommunication service. Retained revenues equal U.S. billed revenues minus net foreign settlement charges. (Source: Houthakker *et al.*, *Competition in the Market for Trans-Oceanic Facilities-Based Telecommunications Services*, 1994, pp. 6-7).

These numbers still overstate COMSAT's role for two reasons. First, the $5,500 million that COMSAT's revenues of $253 millions are compared to) neither includes revenues from private line, video and audio services, nor any revenues from the foreign half of the telecommunication circuits. Second, COMSAT's effective role is limited because the majority of the total cost of INTELSAT space segment service for COMSAT's customers are INTELSAT-specific (rather than COMSAT-specific) costs.

[128] Under the very conservative assumption that rates paid for the foreign half of the telecommunications circuits are equal to those of the U.S. half circuits, COMSAT's total international telecommunications revenues would be less than 2.5 percent of revenues for switched voice service to and from the U.S. Because the large majority of COMSAT revenue requirements is beyond COMSAT's control, even providing COMSAT-specific services for free could reduce average rates of international telecommunications service for U.S. end users only by a fraction of a percent.

extent of competition already has been providing powerful incentives to which COMSAT must respond. COMSAT has responded to the substantial competitive pressures that exist in the international telecommunications market to and from the U.S. by decreasing rate levels and by introducing a variety of new rates and service offerings.[129] At the same time that rates for many existing services have decreased, COMSAT has introduced a host of new services and rate classes—frequently offering new, lower-cost options for customers' service requirements. Until 1982, COMSAT's service generally was available only at one standard monthly rate for analog switched voice service and a per-minute rate for occasional-use TV service. As of today, this simple one-rate tariff has become a multi-faceted rate structure filling detailed tariff manuals and offering numerous commitment terms, volume discounts, and a variety of rates and services tailored to suit customers' applications.[130]

Under pressure from competition from submarine fiber-optic cables and separate satellite systems, and because of privatization of several foreign state-owned telephone monopolies, INTELSAT has also begun considering measures to increase its flexibility in the accommodation of non-Signatory INTELSAT access.[131] When countries such as Chile, Argentina, the U.K., Australia and New Zealand deregulated their telecommunications industries, they faced the problem that the horizontally- and vertically-integrated former PTT monopolies fully controlled emerging competitors' access to international satellite facilities. To create a more level playing field for these countries' emerging telecommunications providers, non-Signatory telecommunications providers were allowed to access INTELSAT directly for space segment.[132] As a result of these overseas developments, INTELSAT also needed to deal with new problems such as technical coordination with and financial liabilities of non-Signatory

---

[129] Houthakker *et al.*, *Competition in the Market for Trans-Oceanic Facilities-Based Telecommunications Services*, 1994, pp. 95-97.

[130] *Id.*, p. 102 and Exhibit HSH-9.

[131] "INTELSAT Considers Measures to Accommodate Non-Signatory Satellite Service Providers," *Telecommunications Reports*, January 25, 1993.

[132] In the U.S., carriers (such as AT&T) were never allowed to control access to space segment capacity. From the very beginning, COMSAT has been created as an independent corporation providing a level playing field for all U.S. carriers with non-discriminatory access to the INTELSAT system.

entities. In a recent decision by its Board of Governors, INTELSAT has modified its policies to accommodate direct access by non-Signatory investors and users.[133] INTELSAT detailed various level of access that a Signatory may authorize for "appointed customers" operating within the country it represents.

Increased competition in the provision of international satellite service and the privatization of foreign PTTs that served as INTELSAT Signatories have initiated calls for a restructuring of INTELSAT. Even INTELSAT—realizing that its cumbersome treaty-based structure must be reformed to allow it to compete with new separate satellite systems and fiber-optic cables—recently has established a new task force to develop options for restructuring.[134]

In the U.S., the call for privatization of INTELSAT has come from the U.S. Government, COMSAT, COMSAT's customers, and some of COMSAT's competitors. In fact, the U.S. Government has been considering several models for privatization of INTELSAT ranging from divesture of the organization, to creating a corporate entity with publicly-traded shares, to creating a commercial affiliate and a scaled-down parent organization that retains its intergovernmental character.[135] In this context of reforming INTELSAT, direct access also has been raised as a possible transitional measure. However, as shown in this study, the possible benefits of direct access before restructuring INTELSAT would only be small compared to the costs.

---

[133] *Signatory Access, Liability and Investment Issues*, INTELSAT, December 27, 1993.

[134] L. Manuta, "Global Privatization and INTELSAT," *Satellite Communications*, Vol. 18, No. 6, June 1994, p. 22.

[135] See testimonies of Vonya McCann, Coordinator International Communications and Information Policy, Department of State; Reed E. Hundt, Chairman, Federal Communications Commission; Larry Irving, Assistant Secretary for Communications and Information, U.S. Department of Commerce; Bruce L. Crockett, President and Chief Executive Officer, COMSAT Corporation; Edward R. Cheramy, President, IDB Communications Group; and Rene Anselmo, Chairman, PanAmSat; before the House of Representatives, Subcommittee on Telecommunications and Finance, July 28, 1994. *See also*, "Clinton Administration Backs Affiliate Option Being Considered by INTELSAT Working Party," *Telecommunications Reports*, June 19, 1995, at 18.

APPENDIX C: ABOUT THE AUTHORS

JERRY R. GREEN

Jerry R. Green is a senior advisor to Brattle/IRI, and holds two professorships at Harvard University where he has been on the faculty since 1970. He is the David A. Wells Professor of Political Economy and the John Leverett Professor in the University. From 1984 to 1987 he chaired the Department of Economics and from 1992 to 1994 he was Provost of the University.

His research has centered on economic theory and related aspects of public policy. He is widely recognized for pioneering work in the theory of incentives, on economic equilibria based on rational expectations, and on theories of behavior in the presence of risk.

Professor Green was educated at the University of Rochester, receiving an A.B. in mathematics in 1967 and an M.A. and Ph.D. in economics in 1970. Professor Green is a Fellow of the Econometric Society and served on its Council from 1988 to 1993. He is an Overseas Fellow of Churchill College, Cambridge, England, and of the American Academy of Arts and Sciences. He has held a Guggenheim Fellowship, a Fellowship at the Center for Advanced Study in the Behavioral Sciences and an Erskine Fellowship at the University of Canterbury in New Zealand. He has been an advisor to many government agencies and to universities throughout the country. Professor Green edited *Economics Letters* from 1978 to 1992 and is the journal's founder; in addition, he has been a member of the advisory board for many other journals, for the Harvard University Press, and for the Harvard Business School Publishing Group.

He is the co-author of *Incentives in Public Decision-Making* (North-Holland, 1978), *Microeconomic Theory* (Oxford, 1995), and of over 80 articles in academic journals.

BRATTLE/IRI

Brattle/IRI provides economic, environmental, and management counsel throughout the U.S. and abroad. Clients include major corporations, law firms, trade associations, and government agencies. Brattle/IRI was founded in 1995 through the merger of The Brattle Group and Incentives Research, Inc. The firm assists corporations and their legal counsel in the areas of regulated industries, antitrust and transportation economics, finance, damage assessment, technology and R&D management, and energy and environmental issues. Members of Brattle/IRI have provided economic counsel and have been expert witnesses in many of the major litigation efforts of the past decade. Assignments have involved numerous industries such as telecommunications, airlines, railroads, ocean shipping, natural gas and electric utilities, pipelines, and natural resources. Brattle/IRI's analysis in this study was performed by William B. Tye and Johannes P. Pfeifenberger.

William B. Tye is a principal at Brattle/IRI. He received a B.A. in economics from Emory University and a Ph.D. in economics from Harvard University. Since 1972, after teaching economics for three years at United States Air Force Academy, he has been working as an economic consultant. Much of his consulting career has involved regulated industries. He has testified before numerous regulatory agencies and courts involving issues of rates, economics, management, and competition. Dr. Tye has authored or co-authored over 100 papers and publications, including four books on regulated industries. The books include *Regulatory Risk: Economic Principles and Applications to Natural Gas Pipelines and Other Industries* (Kluwer Academic Publishers, 1993) and *The Transition to Deregulation* (Quorum Books, 1991). The papers have appeared in journals such as *The American Economic Review*, *The Yale Journal on Regulation*, *Energy Law Journal*, and *The Rand Journal of Economics*. He frequently speaks on regulatory issues at seminars and meetings sponsored by organizations such as the National Association of Regulatory Utility Commissioners, the Federal Energy Bar Association, and the Antitrust Section of the American Bar Association.

Johannes P. Pfeifenberger is a member of Brattle/IRI with expertise in the areas of regulatory economics and finance. He has been involved in various litigation matters and proceedings in regulated industries, presented testimony for filing in a rate case, authored and coauthored a

number of articles on the subject of public utility regulation, and has been working on projects focusing on the economic implications of deregulation, innovative rate structures and incentive regulation since joining Brattle/IRI. Mr. Pfeifenberger received an M.A. in International Economics and Finance from Brandeis University and holds an M.S. (*Diplom Ingenieur*) in Electrical Engineering from the University of Technology in Vienna, Austria. In 1990, Mr. Pfeifenberger participated in the Program of International Business at Sophia University in Tokyo, Japan.