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ROUTE STRUCTURE AND PRODUCTIVE EFFICIENCY IN
TRANSPACIFIC AIR SERVICES

by

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ABSTRACT

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Bilateral air service agreements have determined the nature of international air services through regulation of entry, service quality and pricing. Negotiations for such treaties reflect each government's aim to gain at least an equivalent right before granting certain traffic rights to the other party. Given these negotiated rights as endowments, each airline determines its strategies within the designated market. Station routing models and profit functions identify each firm's strategies. Using stage length as a proxy for network type, efficiency forecasting of stochastic frontiers measures productive efficiency for three primary transpacific airlines. The inclusion of input and output prices accounts for relative costs and revenues. Results indicate that international route structures must be linked to an extensive domestic route network in order to exhibit high productive efficiency. Changes in relative costs through exchange rate fluctuations furthermore reflect the vulnerabilities in the international trade of services.
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TABLE OF CONTENTS

Title Page i
Abstract ii
Acknowledgements iii
Table of Contents iv
List of Tables v
List of Figures vi
I. Introduction 1
II. Air Service Agreements and Route Structure 4
III. Econometrics 32
IV. Transpacific Operations via Japan 41
V. Concluding Remarks 66
Appendix
  Treaties 70
  Tables 137
Sources of Data 140
Bibliography 142
LIST OF TABLES

Table 1. Slots and Frequencies.
Table 2. Productive Efficiency.
Table 3. Productive Efficiency with Domestic Networks.
Table 4. Input Expenditure per Tonnes-Kilometers Performed (Index).
Table 5. Revenue per Tonnes Kilometers Performed (Index).
Table 6. Pool Services: Japan Airlines-Air New Zealand: Nagoya/Tokyo-Auckland/Christchurch.
Table 7. Airline Comfort Ratings: Pacific Routes Economy Class.
Table 8. The Window: Los Angeles-Tokyo (Narita).
LIST OF FIGURES

Figure 1. The Freedoms of the Air.
Figure 2. The Network.
Figure 3. Network of Airline C: Freedoms 1-4.
Figure 4. Network of Airline B: Freedoms 1-4.
Figure 5. Network of Airline A: Freedoms 1-4.
Figure 6. Network of Airline C: Freedoms 1-5.
Figure 7. Network of Airline B: Freedoms 1-5.
Figure 8. Network of Airline A: Freedoms 1-5.
Figure 9. The Alliance Model.
I. INTRODUCTION.

Bilateral air service agreements negotiated between individual governments have regulated international air services. The presence of numerous airlines with different costs, locational endowments and production opportunities resulted precisely from such negotiation processes. In a study of the deregulated industry within the United States, Elizabeth Bailey, and Jeffrey Williams (1988) examined the sources of economic rent. In their study, two sources of economic rent existed during this period: geographically based local monopoly sources and economies-of-scale based oligopoly sources. Bailey and Williams furthermore suggested that airlines may be differentiated according to their rent producing characteristics. In the case of international air services, the density of regional feeder lines into hub and spoke networks, and the advantages associated in the provision of major long-haul services with limited entry are two such sources. Rules related to cabotage, which prevent foreign carriers from competing on domestic routes, guarantee a geographically based source of economic rent. Dominance by a specific airline also leads to location and information based rents due to its control of computer reservation systems (CRS) and ticketing via the use such systems. The oligopolistic sources of rent are intimately linked to the local monopoly sources; with varying levels of antitrust regulation, the incentive to pursue stable rent sources may lead to an increasingly concentrated industry.\(^1\)

The best performers in the international airline industry would obviously be the carriers with both geographically based and economies-of-scale based sources of economic rent. Advantages due to dominance within

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an airport lead to a nonlinear increase in economic rent. Consumer preference for single carrier service and hub and spoke networks permit the extension of destinations served by a geographically dominant carrier. The presence of limited competition between geographically identical carriers only allows individual airlines to pursue strategies which further promote local monopolies. Scale-based advantages include high flight frequencies, complex price-optimizing practices, reservation and ticketing information from CRSs, and brand loyalty via frequent flyer programs. For international airlines, product differentiation becomes critical as carriers specialize around a particular segment of the market. Bailey indicates that such dependence on rent sources explain the diversity in cost and strategies related to product differentiation, and likewise that such differences rest upon a price-quantity continuum. The analysis of the various rent sources therefore allow the prediction of both financial and service related facets of the current market structure. The oligopolistic sources of profit, together with each airline's relentless pursuit for other stable sources of rent, form the foundations for the present character of the international air service industry.

International carriers attempt to achieve and protect positions which yield above normal profits, and leave positions which yield less than normal profits. Each carrier determines its possible strategies given the restrictions dictated by its endowment: the hub-and-spoke structure based in the home country, and specific traffic rights, as determined through bilateral air service agreements. Such agreements virtually assure a route-specific duopoly, and

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3 Due to demographics, some airlines require more than one hub and spoke--Abidjan/Dakar for Air Afrique, Geneva/Zurich for Swissair, Rio de Janeiro/São Paulo for VARIG--leading to
oligopolistic sources of economic rent. Furthermore, cabotage rules assured domestic feeder services to the home carrier and guaranteed monopoly sources of rent. It is only from these premises that a game which accurately describes the possible transpacific route structures of each national carrier can be constructed. Certain points within the various route structures become nodes within the interconnected networks within the market. Some nodes are the gateway cities of peripheral countries which links their international routes to their exclusive domestic networks. Other nodes link international routes from one end to another, or from one carrier to another. Advantages conferred to airlines dominating such nodes not only largely determine the relative efficiency of each carrier in the market but the subsequent steps in the ongoing mechanism of bilateral route negotiation.

Our examination of the transpacific market, if reduced to the negotiation process of bilateral air service treaties between Japan and the United States, would center upon an analysis of three primary carriers operating under those guidelines. Of immediate concern is productive efficiency, or the rate in which inputs are converted to an output—in this case, tonne-kilometers performed. The efficiency forecasting model of the stochastic frontiers compares firms yielding similar outputs, identifies the efficiencies of firms relative to their competitors and assigns values between zero and one to account for their inefficiencies. The statistics for Japan Airlines, Northwest Airlines and United Airlines used 1980-1990 data obtained from The International Air Transport Association (IATA) and The

inefficiencies in route planning and scheduling. International flights tend to originate in one city and makes one domestic stopover before continuing onward.

4 An agreement must otherwise specifically permit contracting parties to designate multiple carriers on a specific route or permit another country to sign separate agreements with both contracting parties in order to allow its airline to fly between the two contracting parties.
International Civil Aviation Organization (ICAO). Inputs consisted of aircraft, fuel, labor and materials. Systemwide load factor and average stage length served as proxies for service quality and network type; lower stage lengths reflected the predominance of feeder routes which funneled traffic into the international network. Input and output prices, when considered in conjunction with the relative productive efficiency of the airlines, reinforce the differences.

An analysis of both route structures and productive efficiency is essential in order to understand and predict the characteristics of the transpacific market. In order to pursue this end, the fundamentals of the transpacific market, as defined through the bilateral air service agreement between Japan and the United States, must first be examined.

II. AIR SERVICE AGREEMENTS AND ROUTE STRUCTURE.

Since various air service agreements determine its very existence, the market for international air services retains the characteristics of an oligopoly. In such a market a "very large number of buyers on the demand side, each of whom makes a negligible contribution to the market demand function...will take market conditions as given, but the few firms on the supply side will inevitably be preoccupied with guessing the behavior to be expected from rival sellers. Furthermore, in a market that will continue in operation for a long time, an oligopolistic firm will naturally be concerned with how its present actions may influence the behavior of its rivals in the future." In other words, "oligopolists are strategically linked to one another. The best policy for one firm is dependent on the policies being followed by each rival
firm in the market.” Since such a relationship holds for international air services, the relationship between the regulatory restrictions and their effects on each airline's strategies must be examined.

The bilateral entry process which limits the number of competitors on a particular route developed through a series of agreements. The Paris Conference (1919) determined that “each nation has a sovereign control over its airspace in order to protect national security and to promote reasonable operating safety level.” The Chicago Conference (1944) led to the passage of the multilateral International Air Services Transit Agreement, and the first and second freedoms of the air, namely the right of carriers to fly over sovereign airspace and the right to land for fuel or technical reasons. The Bermuda Agreement (1946) between the United Kingdom and the United States became the standard in terms of wording for subsequent bilateral agreements. Each nation controlled entry by designating an airline for traffic rights between specific city pairs according to a common criteria. Individual airlines operating on a given route determined capacity and frequency. Finally, the International Air Transport Association (IATA) determined appropriate fares which required final approval by the two governments. The Bermuda Agreement led to the third, fourth, and fifth freedoms of the air: “the right to set down traffic from the airline's country of origin in a second country; the right to pick up traffic designated for the airline's country of origin in a second country; and the right of one nation's airline to carry traffic from a second country to a third country.” In practice, however,

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6 Strashein, 32.
7 Stubbs, 185-186. The Sixth and Seventh Freedoms are variations of the fourth and fifth freedoms. The Sixth Freedom permits the designated airline to carry passengers originating in one country and terminating in another via the home country of the airline; the Seventh
governments tended to be more far more restrictive in granting such rights, especially in terms of fifth freedom traffic. The failure of the Geneva Conference (1947) in achieving multilateral free entry led to the subsequent exchange of traffic rights as a matter for bilateral state agreement, the control of capacity and frequency as a matter for interairline agreement, and tariff regulation by the IATA.

Since various agreements between different contracting parties regulate the international trade of air services in terms of price, quantity, and quality,

Figure 1. The Freedoms of the Air.

FIRST FREEDOM
SECOND FREEDOM
THIRD FREEDOM
FOURTH FREEDOM
FIFTH FREEDOM
SIXTH FREEDOM
SEVENTH FREEDOM

TRANSIT  DESTINATION  HOME

DIRECTION OF TRAFFIC

Freedom allows the airline to transports passengers on a route between two such countries without any reference to the home country.
the international market remains closed to all entrants unless participants expressly negotiate market openings through bilateral air traffic agreements. At the diplomatic level, negotiators continue to ensure that the home country obtain at least what would be considered economically equivalent rights abroad before granting new rights to foreign carriers.8 The bilateral nature of the negotiations, however, brings to question as to what constitutes “fairness” when implementing such policies.9 Although bilateral air service agreements may initially seek to create a new route between a point in one country to a point in another, subsequent revisions may ask for a second point in the second country or further beyond rights, i.e. the application of the “fifth freedom” to points beyond the second country. Since some countries may have only one or two cities where international air services would be viable, rules calling for the exchange of a specific points severely limited the options of their respective governments, especially when seeking to negotiate with larger countries with several points to offer in exchange. Present air service agreements, therefore, do not specifically seek to exchange cities available for international air services but seek more liberal regimes relating to “frequency and capacity, Fifth Freedom, multiple designations and rates.”10 Although the United States has often demanded for freer skies, the stance towards liberal international air service agreements has not always been

9 The “Free Skies” Agreement centered on the “fairness” issue—bilateral entry according to opportunity or reciprocity in terms of economic benefit, i.e. actual traffic flows. Although thirty U.S. carriers held traffic rights to the Netherlands, KLM transported eighty percent of the traffic in 1989. Far Eastern Economic Review, 15 April 1990:44-48.
10 William E. O’Connor, An Introduction to Airline Economics, 4th ed. (New York: Praeger, 1989) 44. In exchange for the transfer of TWA and Pan Am’s North Atlantic routes to American and United, the British government sought third country traffic rights from the U.S., increased limits in foreign ownership of U.S. carriers (currently limited to forty-nine percent, of which only twenty-five may be voting shares), code-sharing rights with U.S. carriers to improve their display on computer reservation systems (CRS), and possible release from cabotage rules.
consistent; the latter half of this paper discusses the stance as it reflects in the process of negotiation with Japan.

The liberal regimes cited above specifically refer to the government stance regarding possible restrictions which may be placed upon the entry of a specific airline into a particular market. Frequency refers to the possible number of flights per week in a specific route; capacity refers to the total number of available seats per week, sometimes otherwise measured in terms of narrow-bodied or wide-bodied aircraft. The "Bermuda principles" stated that each airline was free to determine both capacity and frequency on a specific route without approval from the foreign government; the government, however, may file a protest whenever it deemed a particular frequency or capacity was unreasonable. Although no formal division of the market exists, the two contracting parties implicitly will not let the market share of their designated carrier to fall beyond a certain level. Beneath the veneer of free international competition, however, the nature of such agreements assumes that the designated carriers of each of the contracting parties would be successful, and mechanisms would prevent continuing losses if the result turns out to be otherwise.

Signatories to the International Air Services Transit Agreement have granted the First and Second Freedoms to all other parties to the contract. Countries which have not signed the Agreement--the Commonwealth of Independent States, China and Brazil (respectively the first, third and fifth largest nations in terms of geographical area)--have an advantage when

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negotiating bilateral agreements\textsuperscript{13} Fifth Freedom traffic, together with its variations, the Sixth and Seventh Freedoms, requires approval from two contracting parties in addition to the one given by the government of the airline. Such rights would therefore normally require concessions beyond simple point to point agreements from the home country of the carrier.

Multiple designations permit a contracting party to a signed air service agreement to designate more than one airline to a particular route in order to promote competition as well as increased air services. Such rights require concessions by one party if the other contracting party does not wish to designate a second carrier on a given route or does not have a second airline which it can designate such routes. Since the two airlines designated by the first party may easily reduce the market share of the third carrier, the right to designate multiple carriers on particular route affects the outcome of negotiations. In the Pacific services from the United States, Northwest Orient Airlines and Pan American World Airways (henceforth referred respectively as Northwest (NW) and Pan Am (PA)) competed directly with the formerly nationalized Japan Airlines (JL).\textsuperscript{14}

The air transport services agreement and schedule, between the United States and Japan, signed in Tokyo, 11 August 1952, and entered into force 15 September 1953, is a Bermuda-type agreement (Appendix). Although the current form of the treaty and schedule differs from the original agreement--a

\textsuperscript{13} Nonstop flights between Tokyo and Europe through Russian and Chinese airspace reduced flight times by more than five hours. In exchange, Russian access to Tokyo increased and China raised its fee for such traffic rights. \textit{Far East Economic Review}.

\textsuperscript{14} State interests do not necessarily affect airline behavior. Liberal policies which grants traffic rights to foreign carriers and the active promotion of contestable markets by the government have more significant effects on the market. The Civil Aviation Authority (CAA) of the U.K. ruled that British Airways must reallocate two of its landing slots at Tokyo Narita so that Virgin Atlantic Airways may increase from four weekly flights to six. British Airways already operated two daily flights and no additional slots were available. \textit{The Economist}, 12 January 1991, 49. All Nippon Airways, Aeroflot and Japan Airlines serve the route.
result of subsequent amendments, exchange of letters and memos of understanding—the basic premise of the treaty forms the foundations for all international air service between the two countries.

The Civil Air Transport Agreement between the United States of America and Japan (4 UST / TIAS 2854), first and foremost, established both contracting parties as signatories to the Convention on International Civil Aviation, signed at Chicago on December 7, 1944 (Art. 1), thus assuring the legitimacy of the International Air Transit Agreement. Each contracting party obtained the right to designate an airline or airlines for each specified route, i.e. multiple designation (Art. 4), with each designated airline enjoying certain traffic rights, and each contracting party retained the right to refuse permission to any traffic originating and terminating within its territory (Art. 5). The contracting parties maintained the right to impose reasonable, but nondiscriminatory charges upon designated airlines for the use of public airports and other facilities but retained an exemption from duties for all consumable technical supplies, regular equipment and aircraft stores (Art. 6). Each contracting party agreed to recognize the other party’s certificates of airworthiness, certificates of competency and licenses which remained in force (Art. 7). Laws and regulation regarding arrival or departure of all aircraft from the territory of each contracting party applied to each of the designated airlines, while similar regulations relating to entry, clearance, immigration, passports, customs and quarantine applied to their crew, passengers and cargo (Art. 8). Traffic privileges granted in Art. 5 may be revoked by one party if either ownership or effective control of the designated airline no longer resides with the contracting party or nationals of the contracting party or when the designated airline fails to comply with the laws
and regulations in Art. 8 (Art. 9). The subsequent two articles assured "fair and equal opportunity" for all designated airlines, with the understanding that the operations by a designated airline does not infringe upon the interests of other airlines same route. Capacity on a designated route was deemed to follow traffic demands between the country of the airline providing the service and the country of the ultimate destination of the traffic, i.e. capacity largely resided with the airline operating upon the route, but capacity on routes to and from third countries should take into account the "traffic requirements of the area through which the airline passes after taking account of local and regional services (Art. 12)." The Agreement furthermore assured that rates between points within the two countries be "reasonable..., due regard being paid to all relevant factors, such as cost of operation, reasonable profit, and the rates charged by any other airline, as well as the characteristics of each service", and such rates to be approved by the aeronautical authorities of both contracting parties (Art. 13). In other words, the dual approval process for fares applied on the transpacific routes. The subsequent Articles (Art. 15 and 16) described the method of arbitration for any disputes arising from the application or the interpretation of the Agreement, and mechanism for any future amendments to the Agreement or changes in the Schedule. The Agreement remained in force as an intermediate measure prior to the acceptance of a general multilateral air transport agreement, and noted the procedure for its termination by either contracting party (Art. 17 and 18).

An airline makes three interrelated decisions related its strategy. The player must first determine the location of its operational hub or hubs. Since

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15 TIAS 2854.
international rules broadly require that a carrier be based within its home country, an airline's routes generally originate either from the airport of its most populous city or the central hub for domestic operations which can be used as a feeder network for its international services. For international carriers, the location of its central hub relative to the destinations designated through international agreements is an endowment since the airline must to accept the outcome of its government's negotiation with a foreign government. In other words, the airline's route structure has been largely predetermined.\footnote{To assume that no barrier to entry or to forming a hub exists in a deregulated environment would be misleading. An incumbent carrier in a particular market may raise barriers to entry through control of gates, landing slots or pricing. There are deep sunken costs associated with establishing new service, much less a hub. There is however no legal impediment in the deregulated market beyond those relating to air safety.} The airline subsequently decides whether or not it will enter each market where it holds designated traffic rights. Each market varies according to the specific nature of the route and the quality of service that needs to be provided. Finally, each carrier must determine the level of capital and labor needed to provide its service. All decisions are assumed to have long term consequences. Substantial hub and spoke networks develop only when the airline has been able to locate its hub in the midst of a significant air route, and international air service agreements permit development of air services which reflect such traffic patterns.\footnote{Until the merger of BEA and BOAC to form British Airways, BOAC and Cathay Pacific shared traffic rights from Hong Kong. As a result, BOAC's network in Asia severely hindered Cathay Pacific's expansion plans. After British government intervention, service to London began in 1980, followed by transpacific service to Vancouver and San Francisco in 1983, and those to other European destinations in 1986. Compared with Singapore Airlines, Cathay Pacific still earns twice as much of its revenue in percentage terms from its Asian operations while SIA earns twice as much on intercontinental services. The Sino-British treaty of 1984 allows China to be consulted on all air service agreements and gives China control of Hong Kong routes involving China. \textit{Far Eastern Economic Review}, 27 June 1991, 55. Under cabotage rules, only U.K. airlines hold traffic rights between Hong Kong and London. Cathay Pacific may serve London-Sydney via Hong Kong but QANTAS may not.} As a consequence, while Tokyo increasingly became a node for flights between North America and the rest of...
Asia, Anchorage declined in importance as nonstop transpacific flights became the norm.\footnote{With the decline in importance of their home airport as a stop on a major air route, flag carriers provide most necessary air services even while showing a loss. Icelandair provided eighty-two percent of departures from Reykjavik; Aer Lingus formed sixty-two percent of such departures from Shannon.}

Literature on airline industries defend hub-and-spoke route systems as a mean to "reduce the number of round trips necessary to carry a given number of passengers on a given set of itineraries, while increasing the number of passenger miles flown. If there are sufficient economies of scale in plane size, then the advantages of hubbing can overcome the disadvantages in passenger miles, resulting in lower total costs. By pooling passengers with different ultimate destinations, a hubbed system can also offer more frequent flights than would be economically feasible under a nonstop system."\footnote{Berry, 394.} The hub permits any passengers boarding at any one of the carrier's stations to reach their ultimate destination on-line with one or two aircraft changes. The chosen hub determines the reliability of an airline's network.

Without substantial on-line traffic to feed its international routes, gateway--rather than hub--airports develop: Pan Am and TWA offered transatlantic services from New York; Northwest and Pan Am launched transpacific routes from Los Angeles, San Francisco and Seattle; Miami was gateway to South America for Braniff and Pan Am. The absence of geographically based rent sources for U.S. flag carriers has been suggested as a reason for their weakened competitiveness in the late 1970s and early 1980.\footnote{Michael W. Pustay. "Liberalization of U.S. International Aviation Policy: A Preliminary Assessment," Quarterly Review of Economics and Business, 29.2 (summer 1989): 15-26.} During the period, U.S. airlines often carried less than half of the traffic on major intercontinental routes. Pustay (1989) argues that the result reflected
both the extent of competition within the domestic airline industry and the ability of foreign carriers to control their own on-line traffic feed. Since the U.S. airline industry is competitive, domestic carriers assist foreign flag carriers by feeding traffic to and from the U.S. gateway city to interior points. By doing so, both the domestic carrier and the foreign flag carrier would be able to serve passengers who would otherwise have taken the U.S. flag carrier from the point of origin to their final destination.\footnote{In the late 1980s, United Airlines, with its strengths in domestic and transpacific routes, signed and later reneged marketing and traffic agreements with British Airways; Delta Air Lines coordinated schedules and handled ticketing for Japan Airlines, Singapore Airlines and Swissair. KLM and Scandinavian Airlines System owned stakes in Northwest and Continental Airlines.} Since domestic carriers in foreign countries are usually monopolies, they have less incentive to feed such traffic to U.S. flag carriers. Secondly, the prominent U.S. flag carriers--Pan American, TWA and to a lesser extent, Northwest--had weak domestic hub-and-spoke networks, thereby limiting the extent of their on-line traffic. With increasing liberalization of international air service agreements and the decline, if not demise, of U.S. flag carriers in the turbulent process following deregulation, the domestic airlines have become universal carriers with international, as well as domestic services originating from their central hub airports. This not only changed the route structure of international services but added new gateway cities from interior points such as Atlanta, Chicago, Dallas, Detroit, and Minneapolis. Likewise in Europe, several carriers have made critical acquisitions in anticipation of future phased-in liberalization.\footnote{EC regulators approved Groupe Air France's stakes in Air Inter, CSA, SABENA and UTA. Alitalia holds stakes in MALEV. British Airways merged British Caledonian Airways and Danair, acquired stakes in TAT, QANTAS and USAIR, and launched Deuche BA and Air Russia. Lufthansa acquired Berlin Express from Pan Am. Austrian Airlines, British Midland Airways, Scandinavian Airlines System (SAS) and Swissair have declared a European Quality Alliance. All Nippon Airways and Japan Airlines have interline agreement with Austrian Airlines and Lufthansa. \textit{Aviation Week and Space Technology}, 14 October 1991, 19.}
The extent of future cooperation between the domestic airlines and the foreign flag carriers in the era of liberalization remains to be seen.

The consolidation into hub and spoke networks reflects each airline's emphasis upon acquiring sources of geographically based rents even while pressing for freer access to other international destinations. As a rule, passengers prefer to fly the airline which uses the passenger's point of origin as its hub. Berry notes that "consumers are willing to pay a premium for the services of the dominant airline; this premium may be related to a number of factors, including flight frequency, frequent flier miles, and travel agent commission overrides."

Berry subsequently constructs a model which explicitly acknowledges oligopoly product differentiation, treats price as an endogenous variable and allows for airport presence to affect both costs and demand. Since passengers measure convenience in terms of the number of nonstop flights offered and the number of destinations served with direct flights, this particular behavior generates higher rents for the airline. Such strategic moves, however, raise concerns in light of the higher fares that passengers must pay in return for the convenience. Studies within the U.S. indicate that fares for travel originating or ending in a hub city range from 15 to 40 percent higher than in similar trips not beginning or ending in a hub.

With the predominance of hub and spoke structure among international airlines, such results should likewise be expected.

Convenience in air travel rises as airlines' minimize travel time and offer a high number of frequencies and destinations. As an internationally

traded service, each air route links different locations; no two routes are perfect substitutes.\textsuperscript{25} Although travel time may be minimized by introducing faster aircraft, changes in route structure and scheduling account for most of the decrease. The exercise of fly-over rights and the introduction of nonstop air service using long-range aircraft eliminates time spent on the ground or in transit, and allows for timely connections. Furthermore, the distance between the origin and destination of travel affects the market. If the distance traveled is relatively short, few passengers would be willing to forgo the convenience of nonstop travel since the time otherwise spent in transit would be relatively long compared to the time spent aloft. In an industry which relies on route structure to define the quality of service, there are inherently weak players whose network cannot efficiently provide such service.

Airline passengers may be divided into either one of two categories. Turnaround traffic—passengers carried under the third and fourth freedoms of an airline—either originate and terminate their journey at the home country of the airline. Transit passengers—those carried under the fifth, and its variations, the sixth and seventh freedoms—commence travel from a foreign country and continue on to their final destination with appropriate flight connections at the airline hub. Service, defined through convenient departure and arrival times, frequency and routing, should follow demand by the different traffic types. Demand for air services by the turnaround traffic reflects in a singular traffic flow largely affected by the business cycle of the airline’s home country. Demand from transit traffic reflects in systemwide

travel; a network connects various points of origin with an array of destinations and offers competitive prices and service despite availability of better substitutes.\textsuperscript{26}

Although an airline dependent on transit traffic risks the possibility of route obsolescence from changes in aircraft technology or consumer preference, the carrier may expand without increases in its turnaround traffic.\textsuperscript{27} Networks with a strong central hub-and-spoke are important for transit passengers since the cost involved in change of aircraft factors into their decision to take a specific carrier or an alternative. On the other hand, if demand for air service consists largely of those for travel to or from the carrier's home country, decentralized point to point nonstop services from several cities to various destinations may become feasible and the carrier may not need to depend as extensively on a singular hub.\textsuperscript{28}

Consider three airlines which originate from three countries: large country A with two stations a and b, hub country B and small country C, each with a flag carrier with the same designation (Figure 2. The Network.).\textsuperscript{29} Possible routes between the stations are designated by numbers from one to six. If each country possessed the first four freedoms of the air, this would be traffic designated AaB (1), AbB (2), AaC (4) and AbC (5) for A; for B, such traffic are those designated AaB (1), AbB (2) and BC (3), while they are AaC (4), AbC

\textsuperscript{26}Service from the U.S. to China requires a change of aircraft in Tokyo. Northwest and United flights leave Tokyo in the evening and allow immediate connections for passengers arriving from the U.S. Japan Airlines provides convenient late morning departures for passengers originating in Japan but requires an overnight stay for its on-line passengers.
\textsuperscript{27}The collapse of oil prices caused the failure of British Caledonian in 1987; its major routes were from London to the Middle East, Lagos, Dallas, Houston, and Los Angeles.
\textsuperscript{28}This increasingly becomes the norm as air markets mature, airlines introduce new mid-size, long-range aircraft (A320, A330, A340, B767, B777, MD11) and regional airports accept international services.
Figure 2. The Network.

Figure 3. Network of Airline C: Freedoms 1-4.
Figure 4. Network for Airline B: Freedoms 1-4.

(5) and BC (3) for C. Fifth freedom traffic, likewise will be BC (3) for A, AaC (4) and AbC (5) for B and AaB (1) and AbB (2) for C. Cabotage denies access to AaAb (6) by airlines B and C since it is a domestic route.

\( P_i, Y_i \) and \( C(.) \), respectively indicate price in market \( i \) (assumed constant over alternatives), output measured in passengers in market \( i \) and total cost. \( Y_i^* \) indicates output from market \( i \) when routed through the hub and \( Y_i^* \) is always less than or equal to \( Y_i \), since routing through the hub increases travel time and decreases demand.\(^{30} \) If each airline has the first four freedoms, the profit functions of the flag carriers are as follows:

\[
\begin{align*}
\text{Carrier C} & \quad \pi_C = P_3 Y_3 + P_4 Y_4 + P_5 Y_5 - C(Y_3,0,0) - C(0,Y_4,0) - C(0,0,Y_5); \\
\text{Carrier B} & \quad \pi_B = P_1 Y_1 + P_2 Y_2 + P_3 Y_3 + P_4 Y_4^* + P_5 Y_5^*;
\end{align*}
\]

\(^{30} \) At this point, we assume that sixth freedom traffic is actually fourth freedom since the passengers actually transit the home country of the airline.
Carrier A can pursue a number of strategies, of which the two extremes are:

\[ \pi_A = P_1Y_1 + P_2Y_2 + P_4Y_4 + P_5Y_5 + P_6Y_6 \] (3)
\[ -C(Y_1,0,0,0,0) - C(0,Y_2,0,0,0) - C(0,0,Y_4,0,0) - C(0,0,0,Y_5,0) - C(0,0,0,0,Y_6) \]

or

\[ \pi_A = P_1Y_1 + P_2Y_2^* + P_4Y_4 + P_5Y_5^* + P_6Y_6 \] (4)
\[ -C(Y_1,Y_2^*,0,0,0) - C(0,0,Y_4,Y_5^*,0) - C(0,Y_2^*,0,Y_5^*,Y_6). \]

In the first case, the carrier flies four routes, from Aa and Ab to both B and C.
In the second case, the airline uses Aa as its domestic hub and transports all passengers originating or terminating their voyage in Ab through Aa.

Carrier A adopts the first strategy only if:

\[ P_2(Y_2 - Y_2^*) + P_5(Y_5 - Y_5^*) > C(Y_1,0,0,0,0) + C(0,Y_2,0,0,0) + C(0,0,Y_4,0,0) \]
\[ + C(0,0,0,Y_5,0) + C(0,0,0,0,Y_6) - C(Y_1,Y_2^*,0,0,0) \]
\[ - C(0,0,Y_4,Y_5^*,0) - C(0,Y_2^*,0,Y_5^*,Y_6). \]

i.e., only if possible revenue gained from the provision of nonstop service from Ab exceeds the cost of providing such service separately rather than jointly with passenger traffic originating or terminating their journey from Aa. The carrier pursues the second strategy if otherwise.

In reality, the world is not as simple. To build a network which spans all three destinations, countries B and C need to negotiate only one point to point bilateral agreement between those two cities. Those two countries, however, must each negotiate two agreements with country A for the two destinations. Since airline A can provide on-line service without further traffic rights, Country A may deny the request for the second routes (AbB (2) and AbC (5)) if further concession are not forthcoming.

To further complicate the model, limitations in technology or flyover restrictions may curtail the aircraft range for nonstop service between A and C (AaC (5) and AbC (4)). Assume that all air services between the two countries
To further complicate the model, limitations in technology or flyover restrictions may curtail the aircraft range for nonstop service between A and C (AaC (5) and AbC (4)). Assume that all air services between the two countries Figure 5. Network for Airline A: Freedoms 1-4.

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 or
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**Figure 5**

<table>
<thead>
<tr>
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<th>FIFTH FREEDOM TRAFFIC</th>
<th>THIRD AND FOURTH FREEDOM TRAFFIC</th>
</tr>
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</table>
point of origin. The negotiators must offer additional concessions to country B since their airline face limited commercial viability on the route. Since this model reflects a closed globe with three players and only four routes, the only bargaining chip would be increased frequencies for the airline of B.

The profit function of C without the fifth freedom would be

$$\pi_C = P_3 Y_3 + P_4 Y_4^* + P_5 Y_5^*$$

$$-C(0,0,0,Y_4^*,0) - C(0,0,0,Y_5^*) - C(0,0,Y_3,Y_4^*,Y_5^*)$$

and with the fifth freedom,

$$\pi_C = P_1 Y_1 + P_2 Y_2 + P_3 Y_3 + P_4 Y_4^* + P_5 Y_5^*$$

$$-C(Y_1,0,0,Y_4^*,0) - C(0,Y_2,0,0,Y_5^*) - C(0,0,Y_3,Y_4^*,Y_5^*)$$.

For Airline B, the profit function will remain

$$\pi_B = P_1 Y_1 + P_2 Y_2 + P_3 Y_3 + P_4 Y_4^* + P_5 Y_5^*$$

$$-C(Y_1,0,0,Y_4^*,0) - C(0,Y_2,0,0,Y_5^*) - C(0,0,Y_3,Y_4^*,Y_5^*)$$.

Figure 6. Network for Airline C: Freedoms 1-5.
For Airline A, the profit function without the fifth freedom would be

\[ \pi_A = P_1 Y_1 + P_2 Y_2 + P_4 Y_4^* + P_5 Y_5^* + P_6 Y_6 \]

\[-C(Y_1,0,0,Y_4^*,0) - C(0,Y_2,0,0,Y_5^*) - C(0,0,0,Y_4^*,Y_5^*) - C(0,0,0,0,Y_6) \]

and with the fifth freedom,

\[ \pi_A = P_1 Y_1 + P_2 Y_2 + P_3 Y_3 + P_4 Y_4^* + P_5 Y_5^* + P_6 Y_6 \]

\[-C(Y_1,0,0,Y_4^*,0) - C(0,Y_2,0,0,Y_5^*) \]

\[-C(0,0,Y_3,Y_4^*,Y_5^*,0) - C(0,0,0,0,Y_6) \]

or

\[ \pi_A = P_1 Y_1 + P_2 Y_2^* + P_3 Y_3 + P_4 Y_4^* + P_5 Y_5^* + P_6 Y_6 \]

\[-C(Y_1,Y_2^*,0,Y_4^*,Y_5^*,0) - C(0,Y_3,Y_4^*,Y_5^*,0) - C(0,Y_2^*,0,0,Y_5^*,Y_6) \]

In the last case, one aircraft originates from Ab and transits through Aa and B in order to reach C. As in the previous case, the carrier engages in such
strategy only if the cost savings from transporting all passengers through Aa and B exceed the possible loss of revenue.

Consider the situation where airline C flies between A and B even though it does not have local traffic rights, i.e. all passengers are Y_4^* and Y_5^* traffic. If the airline cannot operate routes 4 and 5 due to causes other than
technical reasons (e.g. the overfly rules which restricts traffic to a narrow corridor including a mandatory technical stop) the rule forces the airline to fly a roundabout route with passengers who prefer to fly nonstop. The situation reflect profit function (5), or any other similar case where fifth freedom rights have not been granted. Even with explicit traffic rights, the airline C may not want to enter routes one or two between A and B, since it has less ability to raise rent from local monopoly sources at both A or B.

In this closed model, each fifth freedom flight for airline A or C equals an additional flight to A or C for airline B, through parity of landing slots. For airline A to have direct round-trip service from both Aa and Ab to C, four takeoff slots are necessary at B (three takeoff slots, if airline A creates a hub at B and requires a change of aircraft). Under normal circumstances, airline C would likewise require four takeoff slots to operate the same network, unless it has permission for a change of gauge at country B. Under these circumstances, airline B has the option of operating at least twice, and perhaps three times as many flights to countries A and C than its competitors. This advantage may become a liability for two different reasons. Government C

Table 1. Slots and Frequencies.

<table>
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<td>B to C vv</td>
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<td>2</td>
</tr>
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</table>
may decide to advocate a reciprocal free skies policy, i.e. free entry by any competitor because the value of its route BC (3) has quickly diminished with increased frequencies, while the value of the beyond rights AaB (1) and AbB (2) has not.\textsuperscript{31} This holds especially true if the rights previously granted cannot be used since the market cannot support the excess capacity from airline B. Airlines A and C may also offer fares between B and either point at a loss if they can operate their flights with the revenue from passengers originating and terminating at either A or C. Since airlines A and C originate in their respective countries, the airlines should be able to extract higher rent on such routes than airline B.

If country B granted only route specific beyond traffic rights, its airline will retain its dominant position. The ability of airline B to extract rents diminish if blanket beyond rights permit unlimited entry into the market by its competitors. The two sources of economic rent earlier acknowledged--the geographically based local monopoly source, defined as the density of regional feeder lines into the carriers hub and spoke network, and economies-of-scale based oligopoly sources, such as the advantages associated with providing long-haul services with limited entry--are no longer exclusive.

The greatest difference in an airline's operating costs rises from the economy-of-scale in larger airlines, especially where "route network allows a large fleet of standardized aircraft; scale is associated with large participation in particular markets; and marketing effectiveness requires a wide coverage of routes and sales outlets, such that passengers can make reservations for a

\textsuperscript{31} Small countries with large airlines--the Netherlands, Singapore, South Korea--press for easier access since they have a significant competitive advantage in the provision of such services. David H. Good and Edward L. Rhodes, "Productive Efficiency, Technological Change and the Competitiveness of U.S. Airlines in the Pacific Rim," photocopy, 21.
complex route and remain with one airline throughout the whole journey." 32 Direct flying expenses decrease with the use of larger, more efficient aircraft; indirect expenses fall with longer stage length while productivity rises in relative terms. With a larger, standardized aircraft fleet, training of both flight and ground crew becomes easier and efficient. A standardized fleet, furthermore, decreases inventory and maintenance costs while increasing flexibility in scheduling. Bargaining strength in aircraft purchases, fuel purchases, and insurance cover parallels a larger fleet size. Finally, larger airlines use their own operating and computer systems rather than relying on others.

In the earlier stages of transpacific services, the route structure of Northwest and Pan American resembled that of airline Aa and Ab. Although the services originated from different gateway cities and took different routes, the two airlines used Tokyo as the first point of entry into the rest of Asia. Their domestic networks which fed traffic into their international services were less than robust, but in the era of limited international air traffic, and even more limited competition between carriers, such mattered little. Japan Airlines resembled airline B; its domestic network hardly fed traffic into its international network.

The original agreement signed in 1952 (TIAS 2854) allowed Northwest to serve the Great Circle route "from the United States, including Alaska, via intermediate points in Canada, Alaska and the Kurile Islands, to Tokyo and beyond.” The American government designated Pan Am as the airline to serve "from the United States, including its territorial possessions, via intermediate points in the Central Pacific, to Tokyo and beyond”; the route

32 Stubbs, 197.
allowed Pan Am to link Japan to its Pacific route to the Philippines via Hawaii, Midway and Guam. The two airlines, together with TWA served transpacific routes from the United States to Okinawa and onward to Tokyo. Such approval of routes permitted the airlines to inaugurate any number of flights originating from anywhere within the United States. The beyond traffic rights enabled them to continue onward to other points in Asia and permitted each airline to create a transpacific and Asian network which rivaled Japan Airlines.

In contrast, Japan Airlines started operations with chartered aircraft and crew from Northwest, and two routes to the United States: one, “from Japan, via intermediate points in the Central Pacific, to Honolulu and San Francisco, and beyond,” and the other, “from Japan, via intermediate points in the North Pacific and Canada, to Seattle.” The final schedule also allowed service from Japan to Okinawa, a U.S.-administered territory, and beyond. The first route, JL 001 and 002, had a domestic segment within the United States which did not permit local traffic due to cabotage rules but held a possibility of a future route extension using its beyond right. On the other hand, traffic on the route to Seattle was too thin for the service to be truly viable. Although the two U.S. airlines exhibited higher operating costs, they had full traffic rights on all segments and a domestic route network which fed traffic into their international services. Since most traffic originated in the United States, and all transpacific gateway cities were on the Pacific coast, a domestic feeder system within the United States was a significant factor influencing customer preference.

The first revision to the schedule in 1959 (TIAS 4158) allowed Japan Airlines to fly from Tokyo to Honolulu and to continue to two different
points: "to Los Angeles and beyond to points in South America", and "to San Francisco, to points other than South America." The rule opened a third gateway, but again under local traffic restrictions, and designated the general destinations possible using the beyond traffic rights.33

The second revision to the schedule occurred in 1965 (TIAS 5939) when Japan Airlines sought New York as its first East Coast destination. Under this revision, Japan Airlines lost traffic rights to Seattle, but was able to extend its route from Honolulu and San Francisco to New York and onward to Europe and beyond, inaugurating the airline's "Around-the-World" service. Its approval, however, required that Japan Airlines fly the now circuitous Central Pacific route and have at least one segment without local traffic rights. Since rates for passenger traffic were based according to the lesser mileage of the North Pacific route, U.S. airlines could propose rates significantly lower than that of Japan Airlines. The beyond rights to Central America now designated Mexico and Central America as an extension from San Francisco but did not permit any local stopover rights on that route and on the route to South America via Los Angeles.34 In exchange, the amendment opened Osaka International Airport at Itami to American carriers.

The amendment of 1969 (TIAS 6787) introduced Japan Airlines' direct service to New York via Anchorage and ended the transcontinental route via Honolulu and San Francisco. The amendment also introduced Japan Airlines service from Japan to Guam via Saipan which was subsequently modified to read "from Japan to Guam and Saipan" (TIAS 8882). The

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33Beyond traffic rights were necessary since the largest Japanese communities outside Japan settled in the Brazilian states of Paraná and São Paulo. Japan Airlines needed Los Angeles in order to extend service to South America.

34Japan Airlines routed service to Mexico City via Vancouver after obtaining full traffic rights from Canadian authorities.
amendment of 1972 (TIAS 7333) recognized the return of the Ryukyu Islands to Japan; all services by Japanese airlines between Naha and the rest of Japan became domestic routes subject only to the supervision of the Ministry of Transport. U.S. airlines retained the right to serve Naha, but only as a new Japanese gateway for international services and TWA ceased transpacific services.

The amendment signed in 1980 (TIAS 9861), as well as subsequent modifications to the agreement, were specific and limited capacity, frequency and the exact points to be served: Air Micronesia would introduce seven weekly flights, to be increased to eleven, using B727 aircraft between Saipan and Tokyo, and seven such flights between Saipan and Nagoya. This not only recognized Nagoya as a gateway to international services by American carriers, but also acknowledged the physical constraints at the Osaka Airport. The agreement also put a capacity ceiling on routes to Guam and Saipan by requiring reciprocal increases in frequencies. In return, the agreement authorized a Japanese airline to offer scheduled cargo services to Chicago on the basis of two narrow-body or one wide-body flights per week.

Modifications agreed in 1982 (TIAS 10434) introduced a new airline to serve Japan for the first time since the original treaty; United Airlines, which had sought entry for several years, began seven weekly combination flights from Seattle and Portland. Japan Airlines renewed its service—curtailed in 1965—to Seattle with five weekly flights which continued onward to Chicago. Japan Airlines also received full traffic rights for two round trip combination flights to Rio de Janeiro / São Paulo. Without full traffic rights, the flights to Brazil had required a change of gauge from a B747 on the transpacific leg to a DC 8 from either Los Angeles or New York to Rio de Janeiro via San Jose,
Costa Rica, or Miami. The agreement furthermore added 300 one-way charters by airlines of each countries.

Despite acrimonious opposition from Flying Tigers (now Federal Express against new entry, an agreement signed in 1985 permitted Nippon Cargo Airlines—a cargo carrier owned by 27 steamship companies, Nissho Iwai and All Nippon Airways—to commence service from Tokyo to San Francisco and New York. The agreement lifted aircraft size limitations on Air Micronesia’s services and additional services commenced between Guam / Saipan and Japanese cities including Tokyo, Osaka, Nagoya, Fukuoka and Naha. Each country also exchanged the right to designate three new routes to its airlines. All Nippon Airways commenced services to Los Angeles and Washington, D.C. while Japan Airlines extended its flight to Seattle onward to Atlanta and routed its Chicago flights to a nonstop. American Airlines commenced nonstop services from Dallas-Fort Worth and Delta Airlines began daily services from Atlanta via Portland. The schedule also specified a timetable for phasing in the increases in frequency on the new routes.

The most recent amendment (1989) introduced three new routes between Tokyo and the United States for each party, and recognizing the capacity limits at Narita, from three non-Tokyo cities to the United States. From Tokyo, All Nippon Airways began service to New York, Japan Airlines to Washington, D.C., and Japan Air System—formerly Toa Domestic Airways—to Honolulu. All Nippon Airways commenced service on the Nagoya-Honolulu route. American Airlines began service to Tokyo from San Jose, United from Chicago, and Continental-Air Micronesia from Honolulu. American Airlines began service to Tokyo from San Jose, United from Chicago, and Continental-Air Micronesia from Honolulu.35 Delta commenced service between Los Angeles and Nagoya, and from

35Continental, which had won United’s original route between Tokyo and Seattle/Portland, subsequently sold the route to American Airlines.
Honolulu, America West and Hawaiian Airlines, to Fukuoka and Nagoya. Japanese airlines also received the right to continue flights to three additional cities: Japan Airlines extended its flight from Honolulu to Kahului using Hawaiian Airlines aircraft, and All Nippon Airways added Orlando using USAir aircraft. Japan Airlines increased frequencies on the Chicago route to seven; Northwest entered the Guam/Saipan routes to Nagoya and Fukuoka. The agreement noted that a new American cargo airline would be designated on transpacific routes, while Japan Airlines and Nippon Cargo would serve Chicago with eight weekly flights, with the latter also serving Los Angeles. Charter airlines would increase from 300 to 450 per year, and any airline continuing onward would be allowed to serve Alaska en route.

III. ECONOMETRICS.

During the period from 1980 to 1990 three airlines used the New Tokyo International Airport (Narita) as a hub for their transpacific routes: Japan Airlines, Northwest Airlines and United Airlines, which had acquired the Pacific assets of Pan American World Airways. Until 1983 Japan Airlines, together with its wholly owned subsidiary Japan Asia Airways, was the only scheduled Japanese airline with route authority for international services. Within the United States, United had the most extensive domestic feeder network, followed by Northwest, which had acquired Republic Airlines during the period, and Pan American. Unlike the U.S. carriers, Japan Airlines’ domestic network formed a weak feeder for its international

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36 These routes have been sold to Northwest.
37 Since the Chinese government insisted that the national airline of Japan could not recognize Taiwan, Japan Airlines created Japan Asia Airways in 1976. Initially Pan Am served Beijing and Shanghai while Northwest continued service to Taipei. For the same reason, Air China (formerly known as the CAAC) flies to Narita while China Airlines serves Haneda, the domestic airport for Tokyo.
services since most domestic and international services used separate airports. All international airlines used either All Nippon Airways or Japan Airlines for connecting passengers under interline agreements or operated certain domestic stages of international flights within Japan.

In addition to All Nippon Airways, Japan Air System, American Airlines, Continental Airlines and Delta Air Lines, seven other airlines flew between Tokyo and the United States: Thai Airways International (TG) offered service to Seattle with continuing service to Dallas; Air China (CA), to San Francisco; Korean (KE), Malaysian (MH), Singapore (SQ), and VARIG (RG) to Los Angeles; and China Airlines to Honolulu from Tokyo-Haneda. The frequencies of these airlines are not expected to rise due to limitations at Narita, the Japanese stance towards liberal air service agreements and the beyond-Tokyo right necessary from other countries.\(^{38}\) The collective effect of these airlines within the market will be considered minor and will not be considered.

Data available from the International Civil Aviation Organization (ICAO) and the International Air Transport Organization (IATA) placed several limitations on the methodology.\(^{39}\) The analysis uses systemwide data for each airline. An extensive domestic network would feed passengers into the international routes and would increase geographically based local monopoly sources and the economies-of-scale based oligopoly sources of rent. Although such assertions would support United Airline's dominance in transpacific services from its San Francisco hub, the clear division of Japan

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Airlines' domestic and international services in Tokyo would somehow need to be accounted for. Furthermore this argument would suggest that the domestic routes of Delta Air Lines should also be factored into Japan Airlines' interline service agreement. The characteristics of long-haul transpacific services, whether due to the stage length or equipment, differ significantly from the ones exhibited on domestic services. Other sectors included in the systemwide data—Japan Airlines services to Europe or Pan American's Latin American operations—are only indirectly related to transpacific operations and thus increases the margin for errors.

An alternative method would be differentiate the cost, output, revenue and traffic for the transpacific services of each airline from the systemwide data. Even if transpacific data could be isolated, it would be difficult to construct a parallel set for each airline. Japan Airlines, for example, reported only its systemwide operating revenues and did not differentiate the data according to region of international service. During the period from 1980 to 1990, however, the Japanese airline earned more than seventy percent of its revenue through international services; since the equipment used on both domestic and international services were similar, the reported data may not be far from what we seek. Although Pan American and Northwest reported their financial statistics according to international sector, the data relating to output remained systemwide for all international services. A possibility would be to consider the statistics for systemwide services in the case of Northwest and United Airlines since the most of their capacity are on the transpacific routes, and to compare them with the systemwide data for Japan Airlines. The equipment used and the entailing operating costs should be similar for each player. In the case of Pan American, we would have to
consider the transpacific data carefully in light of their other international services and judge the obtained result. In all cases, the figures for cargo and charter services have been included as well as data for revenue passenger traffic.

The model, efficiency forecasting given stochastic frontiers, attempts to consider the productive efficiency—the rate inputs are transformed into outputs—of three airline networks in light of their respective systemwide networks.\textsuperscript{40} The method compares firms in a particular industry producing similar sets of output. For the moment, the model does not consider either input or output prices. The method identifies firms which are efficient relative to their competitors and assigns a value of one; their competitors are assigned values between zero and one in order to account for their relative inefficiencies. The model implicitly assumes that all air routes and networks are imperfect substitutes for each other, and that an equilibrium fare with some kind of relationship to costs and quality exist.

In our model, output per unit of labor can be expressed as a function of input per unit of labor:

\[
\ln X - \ln L = \alpha_2 (\ln K - \ln L) + \alpha_3 (\ln F - \ln L) + \alpha_4 (\ln R - \ln L) + \alpha_5 \ln W + \alpha_6 \ln S + \alpha_7 \ln P + \alpha_8 T + \alpha_9 D_1 + \alpha_{10} D_2 + \alpha_{11} D_3 + \alpha_{12} D_4 + \varepsilon. \quad (11)
\]

The data from the ICAO Digest of Statistics and the IATA World Air Transport Statistics covered the period from 1980 to 1990, yielding thirty-eight observations. All airlines yielded data for eleven years, with the exception of Pan American which had exited the market in May 1985. In order to test for efficiency, we regress measures of outputs for each airline upon four broad indicators of inputs: labor (L), aircraft (K), fuel (F) and materials (R). The

\textsuperscript{40} Good and Rhodes. Productive Efficiency, Technological Change and the Competitiveness of U.S. Airlines in the Pacific Rim.
output of our concern is tonnes-kilometers performed (X). Labor includes cockpit crew, flight crew, overhaul and maintenance crew, and sales and ticketing staff. Aircraft considers the total number of aircraft in scheduled operations (K), and the percentage of wide-bodied aircraft in the fleet (W). Fuel expenditure in dollars, deflated by the producers price index for kerosene based aircraft fuel, determines fuel as an input. Materials includes all other expenses in dollars, less those directly related to flight operations (5.1, 5.2, 5.3, 5.4) and aircraft depreciation and amortization (7.0), deflated by the producer price index of the home country. Other measures placed into consideration are systemwide load factor (P) and average stage length (S) as broad indicators of service quality and network type.

The regression indicates that under these conditions, the most efficient airline is Northwest (D2), followed by United (D3), Pan American (D4) and Japan Airlines (D1) (Table 2). Since certain measures for each airline network--flight frequency, route network size and number of stations--were unavailable, average stage length, as a proxy for network type, operates as the sole indicator of service quality. The high average stage length for Japan Airlines is indicates its inefficiency; without a feeder system within the United States, traffic on its transpacific routes becomes largely limited to point to point passengers from its gateway cities. If cabotage rules did not exist and Japan Airlines had a significant presence comparable to Northwest's U.S. domestic route system, results should differ. If we calibrate the model for the difference in stage length as a measure of network type, the productive efficiency of Japan Airlines increased relative to all other airlines (Table 3).  

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41 Shorter stage lengths would imply lower average aircraft utilization rates since the aircraft will spend proportionately more time loading and unloading passengers. Percentage of widebody aircraft falls since many routes with shorter stage lengths would require higher flight frequencies rather than large aircrafts.
Table 2. Results and Productive Efficiency.

| VARIABLE | DF | PARAMETER ESTIMATE | STANDARD ERROR | T FOR Ho: PARAMETER =0 | PROB>|T| |
|----------|----|---------------------|----------------|------------------------|-------------|
| LNK      | 1  | 0.344942            | 0.12001836     | 2.874                  | 0.0088      |
| LNF      | 1  | 0.041851            | 0.13308903     | 0.314                  | 0.7561      |
| LNM      | 1  | 0.168929            | 0.18010172     | 0.938                  | 0.3584      |
| LNW      | 1  | 0.445073            | 0.05581049     | 7.975                  | 0.0001      |
| LNS      | 1  | 0.415679            | 0.15270845     | 2.722                  | 0.0124      |
| LNP      | 1  | 0.574945            | 0.32369281     | 1.776                  | 0.0895      |
| T        | 1  | 0.015462            | 0.00932731     | 1.658                  | 0.1116      |
| D1       | 1  | -33.692788          | 17.32684125    | -1.945                 | 0.0647      |
| D2       | 1  | -33.262455          | 17.45102571    | -1.906                 | 0.0698      |
| D3       | 1  | -33.493596          | 17.43354277    | -1.921                 | 0.0678      |
| D4       | 1  | -33.665646          | 17.39386438    | -1.935                 | 0.0659      |

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After considering the relative productive efficiency of the airlines, input and output prices must be considered in conjunction with the productive efficiency of these firms. Lower input prices allows an airline to charge lower prices for its services and yet yield an operating profit even if the firm is only as equally efficient as its competitors. Northwest Airlines in addition to being the most efficient firm, consistently had the lowest input
Table 3. Results and Productive Efficiency.

| VARIABLE | DF | PARAMETER ESTIMATE | STANDARD ERROR | T FOR H₀: PARAMETER = 0 | PROB > |T| |
|----------|----|-------------------|----------------|-------------------------|--------|---|
| LNK      | 1  | 0.300133          | 0.11995601     | 2.502                   | 0.0203 |
| LNF      | 1  | 0.093533          | 0.13349081     | 0.701                   | 0.4909 |
| LNM      | 1  | 0.161770          | 0.18316008     | 0.883                   | 0.3867 |
| LNW      | 1  | 0.408525          | 0.05233186     | 7.806                   | 0.0001 |
| LNS      | 1  | 0.336164          | 0.13050832     | 2.576                   | 0.0172 |
| LNP      | 1  | 0.475433          | 0.31973966     | 1.487                   | 0.1512 |
| T        | 1  | 0.016223          | 0.00942892     | 1.721                   | 0.0994 |
| D₁       | 1  | -34.931564        | 17.52296871    | -1.993                  | 0.0588 |
| D₂       | 1  | -34.757976        | 17.63906991    | -1.985                  | 0.0597 |
| D₃       | 1  | -34.985582        | 17.62153252    | -1.985                  | 0.0597 |
| D₄       | 1  | -35.125984        | 17.50387468    | -1.998                  | 0.0583 |

**AIRLINE**

**TECHNICAL EFFICIENCY**

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</tr>
<tr>
<td>UNITED</td>
<td>0.772394</td>
</tr>
<tr>
<td>PAN AMERICAN</td>
<td>0.631992</td>
</tr>
</tbody>
</table>

prices throughout the period. Due to the change in yen-dollar exchange rate, Japan Airlines, which had previously shown relatively low input prices, exhibited the highest costs per tonnes-kilometers performed by the second half of the period. Although the appreciation of the yen lowered cost for fuel and other dollar based purchases, wages and cost for other materials increased stratospherically relative to U.S. carriers. Output prices during the period
closely followed that of input prices for airlines during the time period. Since the markets for the airlines are not identical nor fully competitive, the prices for the airlines are likewise not the same. Higher output prices have been associated with less competitive services, while lower ones are generally indicative of highly competitive routes.\textsuperscript{42} In the transpacific routes, however, the prevalence of a fractured market may account for the difference.

The results of this foray into econometrics indicate that the airlines serving the transpacific market do exhibit distinct characteristics. Although Japan Airlines, Northwest and Pan American held route authority for transpacific services from the United States to Japan and to other points in

\begin{table}[h]
\centering
\caption{Input Expenditure per Tonnes Kilometer Performed (Index).}
\begin{tabular}{|c|c|c|c|c|}
\hline
\textbf{YEAR} & \textbf{JAPAN AIRLINES} & \textbf{NORTHWEST} & \textbf{PAN AMERICAN} & \textbf{UNITED} \\
\hline
1981 & 625.66 (0.929) & 594.10 (0.883) & 674.78 (1.002) & 749.87 (1.114) \\
1982 & 585.02 (0.908) & 563.03 (0.874) & 678.67 (1.054) & 699.39 (1.086) \\
1983 & 571.21 (0.923) & 534.28 (0.863) & 644.04 (1.040) & 678.83 (1.097) \\
1984 & 532.33 (0.866) & 522.37 (0.850) & 663.41 (1.080) & 693.37 (1.129) \\
1985 & 588.47 (0.915) & 528.87 (0.823) & 668.74 (1.040) & 750.28 (1.167) \\
1986 & 702.80 (1.014) & - (-) & - (-) & 661.07 (0.954) \\
1987 & 757.80 (1.112) & 617.81 (0.907) & - (-) & 676.38 (0.976) \\
1988 & 794.38 (1.128) & 646.97 (0.918) & - (-) & 684.00 (0.971) \\
1989 & 761.85 (1.046) & 662.39 (0.910) & - (-) & 755.74 (1.038) \\
1990 & 848.90 (1.044) & 750.68 (0.923) & - (-) & 836.78 (1.029) \\
\hline
\end{tabular}
\end{table}

\textsuperscript{42}Good and Rhodes, “Productive Efficiency, Technological Change and the Competitiveness of U.S. Airlines in the Pacific Rim”, 18.
Table 5. Revenue Per Tonnes-Kilometers Performed (Index).

<table>
<thead>
<tr>
<th>YEAR</th>
<th>JAPAN AIRLINES</th>
<th>NORTHWEST</th>
<th>PAN AMERICAN</th>
<th>UNITED</th>
</tr>
</thead>
<tbody>
<tr>
<td>1981</td>
<td>636.60 (0.981)</td>
<td>589.78 (0.909)</td>
<td>610.52 (0.940)</td>
<td>726.04 (1.119)</td>
</tr>
<tr>
<td>1982</td>
<td>578.35 (0.932)</td>
<td>560.66 (0.903)</td>
<td>612.86 (0.987)</td>
<td>689.15 (1.110)</td>
</tr>
<tr>
<td>1983</td>
<td>588.27 (0.929)</td>
<td>551.58 (0.871)</td>
<td>646.44 (1.020)</td>
<td>698.97 (1.103)</td>
</tr>
<tr>
<td>1984</td>
<td>559.18 (0.870)</td>
<td>543.75 (0.846)</td>
<td>637.90 (0.993)</td>
<td>762.12 (1.186)</td>
</tr>
<tr>
<td>1985</td>
<td>599.81 (0.959)</td>
<td>544.54 (0.870)</td>
<td>627.48 (1.002)</td>
<td>703.39 (1.124)</td>
</tr>
<tr>
<td>1986</td>
<td>731.03 (1.039)</td>
<td>- (-)</td>
<td>-</td>
<td>660.09 (0.939)</td>
</tr>
<tr>
<td>1987</td>
<td>812.53 (1.145)</td>
<td>643.84 (0.907)</td>
<td>-</td>
<td>689.64 (0.972)</td>
</tr>
<tr>
<td>1988</td>
<td>867.28 (1.148)</td>
<td>670.45 (0.887)</td>
<td>-</td>
<td>740.26 (0.979)</td>
</tr>
<tr>
<td>1989</td>
<td>822.16 (1.065)</td>
<td>694.18 (0.899)</td>
<td>-</td>
<td>797.67 (1.033)</td>
</tr>
<tr>
<td>1990</td>
<td>871.41 (1.072)</td>
<td>736.31 (0.906)</td>
<td>-</td>
<td>832.66 (1.024)</td>
</tr>
</tbody>
</table>

Asia, only Northwest and United were able to feed passengers from other cities within the continental United States to their international gateways. The shorter average stage lengths of these carriers reflect their abilities to accommodate transit passengers through their network. Japan Airlines and Pan American developed as the international carrier for their respective countries; without a domestic traffic feed through their networks, they can depend only on point to point international travelers for their revenues. In the case of these two airlines, the input expenditures reflect costs associated with the provision of an internationally traded service. Output prices reflect the sections of the market served by each airline. Product quality, until now, has been assumed to be homogenous; the differences in the output prices indicates that assumption may not necessarily be true.
IV. TRANSPACIFIC OPERATIONS VIA JAPAN.

In the period from 1981 to 1990, the transpacific market underwent a series of rapid transformations. Although the restrictive wording of the air service agreements only seemed to imply a certain rigidity in the transpacific market, changes beyond the scope of such agreements have affected each carrier. Rapid appreciation of the yen distorted fares which had been largely been fixed. Costs—especially in terms of wages for Japanese airlines—rose significantly vis à vis American and other Asian airlines. Privatization of the national carrier and the entry of other airlines into international services changed the role of Japan Airlines, which incidentally was the only major Asian airline to report financial losses in 1992 and 1993. The transfer of Pan American’s transpacific routes to United Airlines, an exceedingly dominant player, posed threats to the incumbents. The leveraged buyout of Northwest Airlines, meanwhile, brought questions to its long term viability.43 Finally, the limited landing and takeoff slots at Narita and Osaka and the reluctance of Japanese authorities to increase capacity curtailed entry by other competitors and encouraged the rise of regional airports.

Tokyo functions as the center for transpacific services and a point of embarkation for Japanese travelers. Despite recessionary signs within Japan and a slow maturation of the market, the high growth rate ranging from eight to twelve percent on transpacific sectors between 1989 and 1993 illustrates the remarkably rapid development.44 The New Tokyo International Airport at Narita handled seventy percent of the international traffic originating in Japan and accounted for more than half of all transpacific travel.45 For

43 Speculation asserted that Northwest was taken over largely for its undervalued real estate assets in Tokyo.
45 Japan Economic Almanac 1987, 200.
transpacific flights originating elsewhere in Asia, a stopover with full beyond traffic rights in Japan enabled an airline operating long-range aircraft to sell additional seats, thereby enabling thin routes--Kuala Lumpur to Los Angeles, for example--to become feasible. As traffic patterns shifted, the movement to and from Japan became more important than the transit traffic for all airlines, and Japan Airlines in particular.

An airline hub in Japan made networks within Asia possible for American carriers. Limitations in aircraft range imposed a technological barrier; until recently, aircraft from the eastern United States could not fly nonstop to points further west. The lack of diplomatic relations and air corridors between other countries in northeast Asia eliminated the possibility of other viable hub-and-spoke networks. Since all international travel from Japan occurred over water, comparable alternate means of transportation did not exist.\textsuperscript{46} Higher income levels and population density correlated with the rising demand for air services. In 1964 Japan had eliminated foreign exchange controls and travel restrictions. Finally, the origin, transit and termination of transpacific flights in Japan make other cities less favorable since the availability of other on-line or interline connections increase the service quality of each individual carrier. For European and Middle Eastern airlines flying eastward bound to Japan, Tokyo is a terminal point in their network, and holds less importance in terms of beyond traffic.

Since air service is internationally traded, the exchange rate has been an influential factor for determining the relative advantages or disadvantages of each airline. Unlike domestic markets where only one currency matters,

\textsuperscript{46} For stage lengths between 250 to 900 miles (400 to 1500 kms), high speed rail generally provides a practical alternative to air transport. Kenneth Button, 107. This is especially true already in Europe on routes of 350-500 miles. \textit{Aviation Week and Space Technology}, 10 June 1991.
changes in exchange rate are external shocks which affect both revenue and costs of international operations, which are both capital and labor intensive. In the ten years from 1981 to 1990, the Japanese yen appreciated from 228.94 yen to 141.62 yen against the U.S. dollar.\textsuperscript{47} Although cabotage shielded the domestic sector of Japanese airlines, their international services faced challenges from airlines whose currencies were denominated in the dollar or in other Asian currencies. Since costs and wages were denominated in yen, the rapid change in the exchange rate pressured Japanese airlines, and Japan Airlines in particular, to take certain measures.

Each airline offering transpacific services faces different operating costs, with labor accounting for the largest share of the input prices. When comparing transpacific carriers, Japanese airlines have exhibited the highest input costs at twenty-nine percent above the average, followed by the American carriers at twenty-one percent above the average. All other Asian carriers displayed significantly lower costs.\textsuperscript{48} In order to reduce labor costs, Japanese airlines increasingly recruit and base their flight and cabin crews overseas, and pay in local currencies from a different wage scale.\textsuperscript{49} The charter divisions of All Nippon Airways and Japan Airlines received authorization to hire all aircraft personnel abroad despite a protests from the pilot and flight attendant unions.\textsuperscript{50} The Ministry of Transport and the Defense Agency furthermore agreed that up to thirty pilots may be transferred

\textsuperscript{47} In August 1993, the dollar reached a historic low of 101 yen to the US dollar.
\textsuperscript{48} David H. Good and Edwardo L. Rhodes, 16. The study included thirty seven carriers from Asia, Australia, and North and South America.
\textsuperscript{49} Cathay Pacific hires and bases its flight crew in Australia, Britain and New Zealand in order to reduce expatriate housing and education allowances. \textit{Aviation Week and Space Technology}, December 7, 1992, 17. Cathay Pacific shifted its accounting division to Guangzhou, China, while Singapore Airlines moved its data processing division to Bombay, India.
\textsuperscript{50} \textit{The Economist}. July 13 1991. 66. All Nippon Airways hired 20 Australians from Ansett Wet Leasing Corp in 1992 and plans to hire 150 more, ninety for the B747 and sixty for the B767 before 1995. The airline plans to double its flight crew to 3000. \textit{Aviation Week and Space
to civilian airlines in 1992, with numbers increasing in 1993. Maintenance of aircraft has been increasingly handled abroad ever since foreign facilities had been approved. In 1991 Japan Airlines, in conjunction with Singapore Airlines, purchased a stake in Singapore Aviation Services Co.; All Nippon Airways contracted Hong Kong Aircraft Engineering Co. (HAECO), a subsidiary of the Swire Group and sister company of Cathay Pacific Airways, to handle maintenance.\textsuperscript{51}

The high capital costs involved in the airline industry was an early argument for regulation of air services. Competing airlines tend to operate similar equipment since the aircraft manufacturing industry remains highly concentrated, and the range of transpacific and Asian routes limits the types of appropriate equipment.\textsuperscript{52} In order to take advantage of scale, airlines prefer to use similar aircraft and a single engine type which may be used on several aircraft models.\textsuperscript{53} During the period of our interest, Japan Airlines, Northwest, Pan American and United used various series of Boeing 747 (100, 200, 300 and 400 series and the SP version) and DC-10-30 as their standard equipment. Discrepancies in the aircraft market occur due to increased


\textsuperscript{52}The north and central transpacific routes are the longest nonstop journeys, according to ICAO classification by route groups, averaging 5004 km, with the highest number of seats at an average of 333 seats, the highest load factor at 69 percent and the lowest average passenger cost per passenger kilometer at 5.3 U.S. cents. Average revenue per passenger kilometer was the second lowest, at 5.2 U.S. cents. ICAO, Digest of Statistics, 1984, 9.

\textsuperscript{53}A airline also may create a subsidiary which exclusively serves short haul routes, while the parent company concentrates only on long haul routes. Until the mid-1980s the Ministry of Transportation designated routes to each airline according to the type of service: Japan Airlines exclusively handled long haul domestic routes and all international services; All Nippon Airways served medium haul and long haul domestic routes, and a number of international charter flights; Toa Domestic Airways served medium haul and short distance flights. The Ministry approved a standard domestic rate structure and allowed full endorsability of domestic air tickets on routes served by more than one airline.
purchasing power for larger aircraft fleets.\footnote{In May 1991, Japan Airlines placed 63 Boeing 747-400s and 20 MD-11s on orders and options, while All Nippon Airways had orders for 40 Boeing 747-400s, 25 Boeing 777s, and 10 Airbus 340s, totaling $21 billion between the two. \textit{Aviation Week and Space Technology}, 13 May 1991, 7. In October 1991, Japan Airlines placed an additional order for 10 Boeing 777s, with options for another 10. Singapore Airlines had placed 32 Boeing 747-400 and 7 Airbus 340-300s on firm order with 21 additional Boeings and 14 Airbuses on reconfirmable commitments or options. \textit{Aviation Week and Space Technology}, 27 May 1991, 87. \textit{Aviation Week and Space Technology}, 4 November 1991. Northwest Airlines had the largest order among North American carriers with 24 firm and 10 options for A340-300. \textit{Aviation Week and Space Technology}, 4 November 1991, 47. Airlines--especially those with younger fleets--increasingly tend to finance-lease their aircraft in order to lower their effective interest rate. The carriers sell their equipment to companies needing a tax loss and lease their aircraft back. Since many of those companies were Japanese, airlines with extensive operations in Japan linked their lease payments to their revenues in yen, and were less exposed to currency risk. \textit{Far Eastern Economic Review}, 27 June 1991, 56.} Aircraft manufacturers, furthermore, consult major operators of their equipment when developing future aircraft. Due to similarities in aircraft type, each airline required similar type of fuel, maintenance, and crew members. Only a standardized inventory of equipment need be maintained. An airline which operated between two countries has the option of purchasing inputs at either end making costs route-specific. As indicated by the treaty, fuel costs, and landing charges are assumed to be nondiscriminatory. The airport authority assures equal access to landing and takeoff slots, as well as to the boarding gates at the international terminal once entry has been granted.\footnote{Japan Airlines, All Nippon Airways, Continental and Delta moved to Terminal II at Narita in December 1992. Northwest and United continue to use Terminal I. In the United States, aircrafts usually arrive at the international terminal but depart from their own terminals--increasing rents for airlines with domestic networks.}

Inherent inefficiencies in the scheduling of aircraft and personnel causes differences in operating costs. Although an aircraft depreciates slowly, flying hours must be maximized in order to maximize revenue. The route structure of international airlines must originate or terminate in their home country and denies the use of more efficient round robin schedules. Since Northwest and United timed all of their departures and arrivals at Narita
during peak afternoon hours, the aircraft used on relatively short routes sits on the tarmac overnight unless the airline has other traffic rights. Although aircraft may easily be substitutable among a number of routes, the differences in capacity, configuration and range place limitations. Older B747-100 series with limited range can only be used on routes with intermediate stops. Routes to holiday destinations such as Hawaii require aircraft configured in only one or two classes. First and business class section may extend to two-thirds of the passenger deck on nonstop long-haul routes using the B747-300 and -400 series aircraft. Thin routes, on the other hand, require either a smaller aircraft or a Combi version capable of carrying freight on the upper deck. Finally, an airline must maximize the use of its flight crew, since they may not work more than a given number of hours. Japanese airlines ordered B747-400 aircraft since it reduced the number of cockpit crew members from three to two. Japan’s Ministry of Transport allowed a crew of one captain and two first officers on flights exceeding twelve hours, and lengthened each shift from eight to twelve hours, after considering the level of fatigue experienced on transpacific flights.  

Frequency of international flights corresponds directly to the airline’s position within a market. Passengers prefer to travel on airlines flying the most direct route with the most convenient on-time departures and arrivals. Since the most convenient times determine service quality, landing and takeoff slots at peak periods become assets. Since demand for air service is not necessarily spread uniformly, a regular shuttle service departing at evenly spaced intervals will not suffice. Demand for air travel rises early and late

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56 The introduction of the B747-400 in 1990 required changes in work rules since it was the first long-haul aircraft to require only two crew members. Fuel consumption was 15% less than the earlier series. Aviation Week and Space Technology, 18 January 1993, 15.
during the week, with lulls during the midweek. International travel through time zones require most arrivals and departures at certain hours so that passengers may make further connections. Finally, demand for air travel on specific days shifts depending on whether the flight is eastward and westward bound.

Periods of peak demand force competing carriers to offer parallel schedules: instead of product differentiation through different departure times, airlines offer similar schedules. As a prime example of Hotelling’s model of spatial duopoly, each airline guarantees 1/nth of the market with n-number of carriers by departing at the most preferred time. One airline will otherwise transport more passengers if the other decided to shift its departure time, leading to lower revenues for the second airline despite higher social welfare for passengers. An airline will change its schedule or add a second flight only when it knows that enough passengers require a different departure time.57 Theoretically, the government may undertake a slot auction, with each carrier paying a premium for the most preferred takeoffs or landings. If the route is a duopoly subject to government approval, variations in schedules through a revenue-sharing pool may lead to cost savings; the two carriers use a single, larger aircraft and operate on alternate days or share revenue while using equipment from the carrier with the lower cost.

In recent years, Japan Airlines has ceased true hub and spoke operations and has altered the schedule for transpacific services. Unlike the early years of transpacific travel, a clear majority of passengers now originate

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Table 6. Pool Services:
Japan Airlines-Air New Zealand: Nagoya/Tokyo-Christchurch/Auckland.

<table>
<thead>
<tr>
<th>Day</th>
<th>Tu</th>
<th>MoFr</th>
<th>SaSu</th>
<th>Mo</th>
<th>Sa</th>
<th>Mo</th>
<th>Su</th>
<th>We</th>
</tr>
</thead>
<tbody>
<tr>
<td>Airline</td>
<td>JL/NZ</td>
<td>JL</td>
<td>JL/NZ</td>
<td>JL/NZ</td>
<td>NZ</td>
<td>NZ</td>
<td>NZ</td>
<td>NZ</td>
</tr>
<tr>
<td>Flight</td>
<td>90*</td>
<td>773</td>
<td>96*</td>
<td>96*</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>24</td>
</tr>
<tr>
<td>Aircraft</td>
<td>747</td>
<td>747</td>
<td>767</td>
<td>767</td>
<td>747</td>
<td>747</td>
<td>747</td>
<td>747</td>
</tr>
</tbody>
</table>

JL Japan Airlines. NZ Air New Zealand. Flight 773 is operated by Qantas cockpit crew and aircraft with Japan Airlines cabin attendants. *Flights 90 and 96 are operated jointly with Air New Zealand, using Air New Zealand aircraft and crew. Air New Zealand Flights 24 and 34 are crosslisted in Japan Airlines’ Pool Operating Schedule.

from Japan.58 Under the Agreement, flights on American carriers must originate in the United States, arrive in Tokyo during peak afternoon hours and continue immediately onward to their final destination. Since flights are

58 On routes between Japan and the United States, only one seventh of the passengers are American. The exact mix varies according to route and airline. Aviation Week and Space Technology: 5 October 1992, 34.
timed so that passengers originating elsewhere may depart and arrive at a convenient hour, passengers originating in Tokyo must leave Japan at a predetermined time. With changing traffic patterns and nonstop flight capability to interior points within the United States, Japan Airlines times its flight departures earlier in the day. The rescheduling has made same-day online connections at Tokyo difficult, unless the connecting routes involve high traffic volumes with several daily departures. The airline has abandoned the transpacific timetable between North America and Asia since a distinct new peak hour increases the number of its passengers.

Monopoly pricing occurred on routes where the airlines of the home and destination country dwarfed any other fifth freedom carrier, and effectively created a revenue-sharing pool, where carriers shared revenue according to capacity provided. Interairline agreements limited capacity, discounted few fares and maintained high load factors. Conversely, such pricing policies sometimes encouraged overcapacity since each carrier operating the revenue sharing pool attempted to increase its revenue share by ensuring the availability of seats on short notice, even when demand remained low. Such practices prevented the downward shift of fares despite the use of more efficient aircraft. Broad agreements in order to reduce operating costs included spare parts pools, maintenance pools, and equipment pools which reduced overhead costs and introduced an economy-of-scale for smaller carriers. Training of personnel and technical cooperation performed a similar function. In other cases, especially in routes with low traffic volume, a “revenue/cost” pool (joint service) developed where an airline operated a service for other carriers and shares costs, revenue, and airline codes on a prearranged basis. Although the United States largely forbids the
practice, an increasing number of flights operated by All Nippon Airways and Japan Airlines use such arrangements in an attempt to reduce costs.\textsuperscript{59}

Demand for air services increases as airfares fall relative to income levels, fares on substitute forms of transport rise and quality of service improves. Since demand for air services is largely derived from other purposes, i.e. as a requirement for business or leisure activities, it is also largely a function of general economic conditions. Two broadly defined groups of passengers exist: business passengers who rate convenience of service highly and leisure passengers who are more price-sensitive.\textsuperscript{60} Since business passengers are willing to pay higher fares for increased convenience, airlines promote activities which would increase such passengers. The cost minimization behavior of the business firm constrains the traveler who determines his probability of taking mode of transportation \textit{i} (Probi) as:

\[
\text{Probi}=g(\text{travel cost}_j, \text{travel time}_j, \text{average time between scheduled departures}_j, \text{number of travelers}, \ j=1,\ldots,4).
\]

The leisure traveler maximizes utility:

\[
\text{Probi}=f(\text{travel cost}_j, \text{travel time}_j, \text{average time between scheduled departures}_j, \text{number of travelers, age of travelers, household income level}, \ j=1,\ldots,4).
\]

Airlines consider the possibility of future transactions from satisfied business travelers since such travel may occur repeatedly and yields higher revenue. Leisure passengers travel less often and purchases depend heavily on price at the time of transaction. Airlines offer different qualities of service at different

\textsuperscript{59} Only All Nippon Airways services to Frankfurt, London, Moscow and Paris use ANA aircraft and crew. Services to Brussels, Stockholm and Vienna use SABENA, SAS and Austrian Airlines aircrafts and crew. ANA has a nine percent stake in Austrian Airlines and plans to use Vienna as its European hub.

\textsuperscript{60} Morrison and Winston, 16.
price ranges in order to reach certain segments of the market and to attain the appropriate mix of passengers throughout their network.

The International Air Transport Association (IATA) began as a mechanism to facilitate interline agreements and to govern technical and safety matters. The regulation of fares through the IATA created a system where airlines negotiated fares according to their projected demand and cost curves. The unanimity rule in voting permitted the airlines to charge according to the demand and cost curve of the most inefficient carrier serving a particular route. Although a ban on capacity regulation remained in effect, pooling and scheduling arrangements limited capacities. Since governments limited the entry of fifth freedom carriers, capacity could not be increased beyond the initial two carrier on an interline basis. Although the IATA fare mechanism prevented rising tariffs, the unanimity rule limited the downward movement of fares. Government approval of fares under Bermuda type agreements had often become automatic and the system prevented the necessary examination of what should be the proper fare.

IATA’s pricing policies included cross-subsidization between routes and between various classes of service on the same route. As a general rule, pricing policies require a reduction in fares as stage length increases to reflect the reduction in costs. Value of service pricing prevented the reduction of fares and created a price structure which subsidized short-haul from long-haul travelers. Only in highly competitive long-haul routes did fares show a decrease in fare per seat-mile. Fares also did not reflect the lower cost of high-density routes, thereby illustrating another geographical cross-subsidization. Since fares did not reflect journey length or route density, the densest long-

haul routes became the most profitable. Value-of-service pricing, contrary to marginal-cost pricing, also created a cross-subsidization from economy to first class service. Although price differences between the two classes remained quite large, the airlines preferred to maintain availability of first class until departure and the lower load factor led to average revenue which did not cover cost. Due to elasticity of demand, increasing the fare differential produced a switch to economy class. The first class area or the fare differential needed to be reduced. Reduction of service through limited availability of first class on selected flights decreased scheduling convenience, discouraged demand and encouraged a further switch to economy class.\textsuperscript{62} A need for a different class of inflight service, as well as a different pricing scheme, became evident.

Although an industry standard, not all carriers accepted IATA's fares on international routes. Although most early U.S. airlines had participated in the association, Japan Airlines was the only major Asian airline in the scheme. Illegal fare discounting occurred and enforcement, due to technical difficulties, were rarely applied.\textsuperscript{63} IATA faced competition from nonmember carriers as well as charters, which charged significantly lower fares, and used older equipment and denser seating to maintain higher load factors. The deregulation of U.S. domestic airfares, combined with pressure from the U.S. government to separate the trade association functions of IATA from the control of competition, led to the end of price control by IATA. Since November 1978, international airfares has been subject only to bilateral agreements.

\textsuperscript{62} Straszheim, 101, 145-146.
\textsuperscript{63} Only in 1987 did the U.S. Department of Transportation decide not to prosecute discount ticket consolidators who sold tickets at unpublished fares unless loss to consumers in some form could be proven.
An airline, as a provider of a service, can differentiate its products and price them in such a way that revenue can be maximized. Quality and price are intimately linked. Since air travel is a service, buyers of the service face obstacles when they attempt to engage in arbitrage. In order to maximize the number of passengers, the airline practices quality discrimination. The use of two, three or even four different classes of inflight services allow each airline to create various price-quality bundles for different passengers. In each class of inflight service, airlines can restrict frequency, routing, availability of seats, or impose advance purchase restrictions, cancellation penalties, minimum / maximum stay requirements, and price each product accordingly. In second degree price discrimination, the passengers self-select the quality of service given the choices offered. Differences in costs to the provider of the service may or may not occur, depending on the restrictions attached. The airline also engages in third degree price discrimination, albeit to a lesser extent, when the carrier offers discounted fares for full service to certain market segments exhibiting higher price elasticities. Airlines seldom sell premium class tickets at a discount since such methods undermine the purpose of the quantity-price bundle; they would rather estimate premium fare traffic and adjust aircraft configuration as necessary.

In order to maintain a system of price and quality discrimination, airlines use sophisticated pricing mechanism which links fares to each quality of a service. Capacity controlled reservations system estimate the number of seats to be sold at a particular fare in order to maximize yield for each flight.

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64 Passengers who opt for the Concorde between London and New York, for example, must find first class subsonic travel too restrictive. The Concorde minimizes travel time and each passenger pays for such quality of the product.

65 Child, youth and senior fares fall into this category. Jean Tirole, 133-152, examines the topic in depth.
Discounted seats allow airlines to increase passengers and revenue far more than what uniform pricing policies would have permitted. Since the marginal cost of transporting an additional passenger is nil, airlines increase load factors and revenues through discounted fares directed to passengers who would not have otherwise flown. On competitive routes, discounting intensifies, widening the difference between the highest and lowest fares. Full economy class fares on international routes are two and a half to three times that of the lowest economy class fares. Since the least restrictive tickets yield the highest revenue, airlines continued to maintain excess capacity at higher fare levels until departure time in order to accommodate last minute passengers.

According to the dual approval process for fares (Art. 13 of the Civil Aviation Agreement), each airline filed tariffs with both American and Japanese governments. When the exchange rates were fixed prior to 1975, the yen-denominated fares were the yen equivalent of the dollar denominated fares. With the advent of floating exchange rates, however, fares from a passenger's country of origin did not necessarily equal the fares for passengers originating at one's destination. Since fares for travel originating in Japan did not follow the rapid appreciation of the yen, huge disparities between inbound and outbound fares appeared. Transpacific passengers purchased two one-way tickets (one denominated in yen, the other in dollars) or tickets issued elsewhere in Asia (denominated in Hong Kong dollars, for example, with a Japan stopover). The Japanese government issued warnings that all passengers must pay fares denominated in yen and that it was illegal to sell,
purchase or hold tickets for travel originating elsewhere, unless the passenger was already in possession of a ticket exiting Japan. The appreciation of the yen unwittingly created a legally sanctioned price discrimination, or "pricing to market" with geography being the barrier to arbitrage. Since market share on transpacific sectors could not be easily increased, entrenched airlines had less incentive to discount fares. Since Japanese passengers paid a disproportionately high fare, all airlines without a previous presence in Japan clamored for entry.

Since early IATA regulations limited price competition, international airlines engaged in competition through inflight services. As in the U.S. domestic market, demand increased largely through higher flight frequency and use of newer, more comfortable aircraft. On competitive routes, the introduction of new equipment became necessary while older equipment were relegated to less competitive routes. Service through higher capacities and frequencies led to higher operating costs for the airlines. Early international airlines differentiated their products through gifts until IATA regulation on services limited such practices. IATA regulations on services delayed the introduction of inflight entertainment and intermediate classes of inflight service since smaller airlines saw unfair advantages in carriers providing such service. International carriers used their respective nationalities to promote inflight services and exploited foreign allure in their advertisements. Implicit patriotism encouraged passengers to board their national airlines.

Long-haul international flights place a premium on inflight services since all passengers, including those willing to endure discomfort on short

68 Krugman's term.
69 Straszheim, 105.
Table 7. Airline Comfort Rating: Pacific Routes Economy Class.

<table>
<thead>
<tr>
<th>Airline</th>
<th>Aircraft</th>
<th>Seat Pitch (inches)</th>
<th>Seat Width (inches)</th>
<th>Configuration</th>
<th>Comfort Score 70</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air China</td>
<td>B747</td>
<td>34</td>
<td>19</td>
<td>3-4-3</td>
<td>74</td>
</tr>
<tr>
<td>All Nippon</td>
<td>B747</td>
<td>34</td>
<td>19.5</td>
<td>3-4-3</td>
<td>77</td>
</tr>
<tr>
<td>American</td>
<td>B747SP</td>
<td>34</td>
<td>19.5</td>
<td>3-4-3</td>
<td>77</td>
</tr>
<tr>
<td>China</td>
<td>B747</td>
<td>34</td>
<td>19</td>
<td>3-4-3</td>
<td>74</td>
</tr>
<tr>
<td>Continental</td>
<td>B727-200</td>
<td>32</td>
<td>19</td>
<td>3-3</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>B747</td>
<td>34</td>
<td>19</td>
<td>3-4-3</td>
<td>74</td>
</tr>
<tr>
<td>Delta</td>
<td>L1011</td>
<td>32</td>
<td>19.5</td>
<td>2-5-2</td>
<td>75</td>
</tr>
<tr>
<td>JAL</td>
<td>B747</td>
<td>33</td>
<td>19.5</td>
<td>3-4-3</td>
<td>74</td>
</tr>
<tr>
<td>Korean</td>
<td>B747</td>
<td>34</td>
<td>19.5</td>
<td>3-4-3</td>
<td>77</td>
</tr>
<tr>
<td>Malaysian</td>
<td>B747</td>
<td>32</td>
<td>19</td>
<td>3-4-3</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>DC10</td>
<td>32</td>
<td>18.5</td>
<td>3-4-3</td>
<td>67</td>
</tr>
<tr>
<td>Northwest</td>
<td>B727</td>
<td>32</td>
<td>19</td>
<td>3-3</td>
<td>69</td>
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<tr>
<td></td>
<td>B747</td>
<td>32</td>
<td>19</td>
<td>3-4-3</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>DC10</td>
<td>32</td>
<td>19</td>
<td>2-5-2</td>
<td>73</td>
</tr>
<tr>
<td>Singapore</td>
<td>B747</td>
<td>33</td>
<td>19.5</td>
<td>3-4-3</td>
<td>74</td>
</tr>
<tr>
<td>Thai</td>
<td>B747</td>
<td>34</td>
<td>19.5</td>
<td>3-4-3</td>
<td>77</td>
</tr>
<tr>
<td>United</td>
<td>B747</td>
<td>34</td>
<td>19</td>
<td>3-4-3</td>
<td>74</td>
</tr>
<tr>
<td></td>
<td>B747SP</td>
<td>33</td>
<td>19</td>
<td>3-4-3</td>
<td>72</td>
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<td>19</td>
<td>2-5-2</td>
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<td>VARIG</td>
<td>B747</td>
<td>34</td>
<td>19.5</td>
<td>3-4-3</td>
<td>77</td>
</tr>
<tr>
<td></td>
<td>DC10</td>
<td>33</td>
<td>20</td>
<td>2-5-2</td>
<td>80</td>
</tr>
</tbody>
</table>

70 A score of 100 represents the minimum seating dimensions judged comfortable for all passengers in a full plane: 36-in pitch, 22-in width, and 2-4-2 configuration as used for Business Class on widebody aircraft. Consumer Reports Travel Letter, 5.8, 87-89. Since the publication of the Report, several airlines have introduce MD-11 and B747-400 aircrafts with denser seating.
flights, become less willing to do so as time passes. Since operating costs on other Asian airlines are significantly lower than their American or Japanese rivals, they offer high levels of labor intensive inflight services. The introduction of an intermediate section, commonly termed business class, increasingly led to a smaller but upgraded first class and a downgraded economy class section as each airline attempted to distinguish each class of service from another.\textsuperscript{71} The newly introduced business class used first class seating but added standardized inflight services from economy class. The new section tried to separate full economy fare passengers from discount fare passengers. Singapore Airlines, quickly followed by all other transpacific airlines, introduced an expanded business class section with seven abreast seating on widebody aircraft, legrests, individual video monitors, and worldwide communication via satellite telephones. All major airlines defined first class with the introduction of sleeper seats and personalized inflight services. The quality of service in economy class has declined whether it is measured through decreasing seat pitch or declining meal services.\textsuperscript{72} This however reflects the changing pricing mechanism as economy class becomes devalued through introduction of discounted fares while business class fares increasingly equals full economy fares.\textsuperscript{73} For an

\textsuperscript{71} In describing the classes of train service in France, "It is not because of the few thousand francs which would have to be spent to put a roof over the third-class carriage or to upholster the third-class seats that some company or other has open carriages with wooden benches.... What the company is trying to do is prevent the passengers who can pay the second-class fare from traveling third class; it hits the poor, not because it wants to hurt them, but to frighten the rich.... And it is again for the same reason that the companies, having proved almost cruel to third-class passengers and mean to second-class ones, become lavish in dealing with first-class passengers. Having refused the poor what is necessary, they give the rich what is superfluous." Jean Tirole, \textit{The Theory of Industrial Organization}, (Cambridge, MA: MIT P), 150.

\textsuperscript{72} Sickles, Roeller, Good, Nadiri and van der Broeck, "The Proposal for the Future of the International Airline Industry: Implications of EC Integration and Domestic Deregulation on Firm Cost Structures, Efficiencies and Prospects." 34.

\textsuperscript{73} When United introduced the B747-400 series on transpacific routes, the decreased pitch of economy class seats to 30-in compensated for the expanded Business Class section. The total
average international airline, first and business class passengers compose a fifth of total passengers carried but provide two-third of total revenue; excessive services retain such passengers.\textsuperscript{74}

Although air service agreements generally affect transpacific operations in one form or another, several dramatic changes have occurred without requiring any modifications to previously signed bilaterals. Changes in assets through outright transfer of designated routes between American carriers included United Airlines’ acquisition of Pan Am’s routes. The acquisition of the transpacific routes raised a number of concerns, both in the United States and in Japan. Since regulation of air services made new entry into the market difficult, outright acquisition of international routes from weaker airlines became the norm, and led to increased concentration of firms within the market. The shortage of landing slots, the absence of a slot trading market and the rising use of computer reservation system skewed the costs of weaker airlines even further. Regulators argued that even if United’s acquisition of the transpacific routes led to efficiencies, the authorities could have approved other methods of increasing efficiencies without stifling competition.\textsuperscript{75}

The Civil Aviation Agreement signed in 1952 limits the degree of contestability in the transpacific market. An amendment signed in 1985 increased entry in the U.S.-Japan market but did not grant further beyond rights to American carriers. The two largest international airports had operational restrictions: in 1984 only 270 daily movements (each take-off or

\textsuperscript{74} The Economist, 19 October 1991, 75.
\textsuperscript{75} Fisher, 55. United and Americans’ acquisition of Pan Am and TWA’s transatlantic routes raised the issue of access at London-Heathrow. Virgin Atlantic and Cathay Pacific gained access. Airlines prefer Heathrow since it provides the most connections to passengers flying to other destinations and has ready access to central London. The Economist, 12 January 1991, 49.
landing constitutes a movement) occurred with a maximum of twenty-six operations per hour between 06:00 and 20:00, fewer from 20:00 to 23:00 and a curfew thereafter. The one runway at Narita handled 320 to 350 operations per day. Although fifty-two airlines from thirty-eight countries served the airport, an additional fifty airlines from forty-three countries had applications pending approval.\textsuperscript{76} Since flights from North America used a "window" of only a few hours, peak period restrictions formed a barrier to entry. Since slots were not tradable to new entrants, potential competitors could not purchase unused slots and enter routes with high fares. United's purchase of

Table 8. The Window: Los Angeles to Tokyo (Narita).

<table>
<thead>
<tr>
<th>Departure</th>
<th>Arrival</th>
<th>Frequency</th>
<th>Airline</th>
<th>Aircraft</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:50</td>
<td>13:30+1</td>
<td>2 4 7</td>
<td>RG 830</td>
<td>743 / 74D</td>
</tr>
<tr>
<td>09:00</td>
<td>13:40+1</td>
<td>3 6</td>
<td>JL 063</td>
<td>747</td>
</tr>
<tr>
<td>10:00</td>
<td>13:55+1</td>
<td>1234567</td>
<td>KE 001</td>
<td>744</td>
</tr>
<tr>
<td>11:00</td>
<td>15:40+1</td>
<td>1 567</td>
<td>JL 065</td>
<td>747</td>
</tr>
<tr>
<td>11:00</td>
<td>16:00+1</td>
<td>1234567</td>
<td>NW 001</td>
<td>747</td>
</tr>
<tr>
<td>11:30</td>
<td>15:55+1</td>
<td>4 6</td>
<td>MH 093</td>
<td>74M</td>
</tr>
<tr>
<td>12:00</td>
<td>16:40+1</td>
<td>1234567</td>
<td>JL 061</td>
<td>747</td>
</tr>
<tr>
<td>12:10</td>
<td>16:40+1</td>
<td>1234567</td>
<td>NH 005</td>
<td>747</td>
</tr>
<tr>
<td>12:10</td>
<td>16:55+1</td>
<td>1234567</td>
<td>UA 097</td>
<td>747</td>
</tr>
<tr>
<td>13:00</td>
<td>18:00+1</td>
<td>1234567</td>
<td>SQ 011</td>
<td>743</td>
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<td>15:35</td>
<td>20:00+1</td>
<td>1</td>
<td>MH 093</td>
<td>747</td>
</tr>
</tbody>
</table>


\textsuperscript{76} \textit{Aviation Week and Space Technology}, 25 November 1991, 97.
Pan American's Pacific routes was primarily for its intangible assets, i.e. its route network and rights to carry passenger to and beyond Japan, as noted in Article 12 of the air service agreement.77

Given the scarcity of slots, hub operations at Narita increased congestion. Flights from the United States to points in Asia via Tokyo required four slots per round trip--two for landing and two for takeoff. Unless all passengers originated or terminated their journey in Japan, the routes did not maximize their usage. On a dense route, such as between San Francisco and Hong Kong, inaugurating a nonstop service would increase utility for passengers while freeing four slots at Narita. Since San Francisco is a United hub, all connecting passengers have access to their final destinations. The freed slots would enable two new flights between San Francisco and Tokyo. Although the number of slots have not increased, United and Northwest have been able to increase the number of their flights to Japan by inaugurating new nonstop routes to Hong Kong, Osaka, Seoul and Taipei. Since other airlines have limited traffic rights, they have not been able to do the same.

Increased market concentration due to changes in route authority may have diminished price competition. Although international air fares between Japan and the United States are regulated, forms of price competition

has always existed. Although an airline must file the tariff between Japan and the American gateway city with both governments, the rule did not apply to fares between the gateway and the final destination within the United States. When United commenced service to Japan in April 1983, the airline offered 'Visit USA' (VUSA) fares which allowed on-line passengers to travel anywhere in the United States for a flat fee. In November, United advertised a promotional one dollar add-on fare between the gateway city and final destination, and in May 1985, promoted a four-coupon pass valid for any domestic U.S. travel. United as well as other second-tier airlines extensively used consolidators and select travel agents who rebated commissions to their customers.\(^{78}\) Since United owned its computer reservation system (APOLLO/COVIA), the airline was able to closely monitor fares, limit excessive discounting and provide incentives to certain travel agents.\(^ {79}\) The biases inherent in the dominant computer reservations systems in Japan—notably Japan Airlines' JALCOM—served likewise.\(^ {80}\)

Competition in the transpacific market may have been better served if the United States government had denied the route transfer to United, but had instead recommended several other measures to foster such conditions. United could have established an alternative hub elsewhere in Asia which provided a route network which competed against established carriers. The government could have pressed Japan for further entry into the transpacific market; in exchange for denying the transpacific route transfer to United and offering full beyond traffic rights to Japanese carriers, the United States could have pressed for greater access to other Asian destinations via Tokyo. The

\(^{78}\) On transpacific routes the rebate could reach up to forty percent of the full economy fare.

\(^{79}\) Fisher, 63-64.

\(^{80}\) Fisher, 65.
government could have assured United access to Japan from the 1985, or any subsequent agreement, which permitted additional routes for American carriers.\textsuperscript{81}

Since United's acquisition of the transpacific routes, several measures to enhance competition have been taken. Seven new entrants have received route authority to provide transpacific services; Continental acquired and later sold United's route between Seattle and Tokyo; United Airlines established "mini-hubs" in Seoul and Taipei to accommodate increasing demand. Asian airlines, on the other hand, expanded service to North America, using Seoul, Taipei, Hong Kong or European points as intermediate stops\textsuperscript{82}. The presence of United has in no way stagnated the transpacific market.

The sudden sale of Pan American's transpacific routes to United Airlines for $750 million implied more, rather than less, competition to Japan Airlines. United which had already entered the transpacific market in 1983 was then the largest domestic airline in the United States. At the onset of deregulatory period in the United States, Pan American had unsuccessfully attempted to merge National Airlines' routes into its domestic feeder network. After a turbulent labor dispute, Republic likewise merged with Northwest, which had few routes to the southeastern states. In light of growing competition from airlines with a substantial network within the United States, Japan Airlines responded in a simultaneous "alliance" with both Delta and Western Airlines (later merged into Delta). The two airlines commenced transpacific services between Atlanta and Tokyo, coordinated

\textsuperscript{81} Fisher, 70.
\textsuperscript{82} Singapore Airlines--despite protests from TWA--began transatlantic services to New York via Brussels and Frankfurt, and to Toronto via Vienna. Additional slots at Narita were not forthcoming.
connections for each other's passengers, handled ticketing, offered frequent flier mileage and "Around the World" fares, and shared crew.\textsuperscript{83}

"Alliances" by two or more airlines permitted passengers from any one point to reach any destination served by any member carriers in a "seamless" service. Unlike the simple transfer of passengers from a domestic airline to a foreign flag carrier discussed previously, the airlines offering the "seamless" service attempt to create a singular brand identity so that ideally, passenger fail to realize that they have changed airlines. The airlines not only handled the each others passenger reservation, ticketing, boarding and transfers, but offered through-fares, coordinated schedules, code-sharing of flight numbers, and shared advertising, terminals, maintenance, crew and aircraft. In the "alliance," (Figure 9), airlines B and C offer their own services between the two airlines' hubs. With a maximum of two intermediate stops, a passenger boarding at any one of the two carriers' stations may arrive in any of the carriers' destinations. Each airline employs a larger economy of scale and offers the increased service of a larger network without having to obtain any other traffic rights. If the airline which originally boarded the passenger receives all of the revenue from all passengers using the combined network, the profit functions of the two airlines involved in an "alliance" is as follows:

\[ \pi_B = P_1 Y_1 + P_2 Y_2 + P_4 Y_4^* + P_5 Y_5^* + P_6 Y_6^* \]
\[ -C(Y_1, 0, Y_4^*, Y_5^*, 0) - C(0, Y_2, Y_4^*, Y_5^*, Y_6^*) \]

\textsuperscript{83}Swissair coordinates marketing and flight scheduling with Delta and Singapore Airlines. Swissair--member of the European Quality Alliance with Austrian Airlines, British Midlands, and SAS--shares operations and personnel. SAS terminated Chicago service in exchange for Austrian Airlines service from Vienna to Chicago via Copenhagen. KLM, SAS, Swissair and UTA have coordinated aircraft purchases and maintenance through the KSSU alliance. The carriers have standardized their fleets to Boeing 747, DC-10 and DC-9 (and their respective derivatives, the MD-11 and MD-80), and Airbus A310. Swissair performs maintenance on the A310 for Balair, Austrian Airlines, KLM and Delta. \textit{Aviation Week and Space Technology}, 28 October 1991. Swissair has five percent stake in Delta Airlines and Singapore Airlines, and ten percent stake in Austrian Airlines and SAS. \textit{Far Eastern Economic Review}, 15 February 1990, 37.
Figure 9. The Alliance Model.

\[ \pi_C = P_2 Y_2 + P_3 Y_3 + P_4 Y_4^* + P_5 Y_5^* + P_6 Y_6^* 
- C(Y_2,0,Y_4^*,Y_5^*,Y_6^*) - C(0,Y_3,0,Y_5^*,Y_6^*). \]

In this fashion, the route network carries the most number of passengers from different points in each flight, illustrating the increasing of advantages in scale.

Airlines specialize in particular niches of the market depending on their relative costs. Since its costs are high, Japan Airlines seeks to limit its costs denominated in yen. Maintenance and hiring of personnel occur abroad where payment can be done in other currencies. Aircraft deliveries have
been postponed and domestic services increased. All Nippon Airways and Japan Airlines have introduced ticket vending machines and automated check-in on domestic routes, and electronic turnstiles which read magnetic strips on boarding passes on all flights departing from Japan. With the retirement of its last DC 8 in 1987, all routes have only used widebody aircraft. Since 1990, Japan Airlines has eliminated unprofitable services to Abu Dhabi, Adelaide, Anchorage, Athens, Cairo, Copenhagen, Jeddah, Karachi, Khabarovsk, Kuwait, New Delhi, Perth and Seattle, and has reduced service to Madrid, Rome and Zurich to once a week.\textsuperscript{84} The airline currently uses less than half of its available traffic rights. In order to reduce costs, Japan Airlines has a large number of pool operations, commercial cooperation flights, and joint operation flights using partner aircraft and crew.\textsuperscript{85} With the exception of four flights per week, all flights to Australia and New Zealand under Japan Airlines designation use Air New Zealand and QANTAS aircraft and crew.\textsuperscript{86}

In order to increase revenue, the Japan Airlines has increased frequencies on flights within Asia and those to Hawaii and certain European destinations which yield higher revenues. Japan Airlines concentrates long-haul routes with large numbers of business and first class passengers, such as nonstop services to Atlanta, Chicago, New York, and Washington, D.C. In order to appeal to passengers seeking full services, Japan Airlines handled reservations and ticketing for its passengers continuing on other carriers. The

\textsuperscript{84}Japan Airlines timetable, 1 July-31 August 1991.
\textsuperscript{85}Athens and Kahului (Maui) are commercial cooperation flights on Olympic Airways and Hawaiian Airlines. Joint operations using partner aircraft and crew include flights to Auckland and Christchurch (Air New Zealand); Adelaide, Brisbane, Cairns, Melbourne and Sydney (QANTAS); Papeete (Air France); Rio de Janeiro and Sãö Paulo (VARIG); Toronto (Canadian International); Madrid and Moscow (Iberia); Milan and Rome (Alitalia); and Moscow and Zurich (Swissair). Joint operation flights from Sapporo to Hong Kong and from Nagoya to Bangkok use Cathay Pacific and Thai Airways International.
\textsuperscript{86}Japan Airlines holds a 7.5 percent stake in Air New Zealand.
airline reserved limousine services and hotel accommodations at preferred rates, handled baggage pickup and delivery, and booked rail tickets between Narita and Tokyo. Japan Airlines has attempted to maintain its base of high fare traffic through the introduction of its new terminal at Narita and its two new first and business class lounges.\textsuperscript{87} The frequent flyer programs--JAL Mileage Bank (Canada and U.S.) and JAL Sky Plus (Japan)--allowed mileage accumulation, but primarily for First and Business class passengers.

Despite constraints imposed upon the airlines through the bilateral air service agreement, these changes have occurred in the transpacific market. Strengthened by deregulation, domestic U.S. carriers have encroached upon the established cozy arrangement between the international airlines. The long-term fluctuations in the exchange rate have shown the vulnerabilities inherent in the international trade of services. The establishment of new routes coupled with the availability of new equipment and the conclusion of other bilateral agreements reflects ongoing changes beyond the framework of a single treaty.

V. CONCLUSION.

The Civil Air Transport Agreement and Exchange of Notes Relating to Provisional Application [signed in Tokyo on August 11, 1952 (TIAS 2854)], and its Amendments [May 9, 1977 and July 26, 1977 (TIAS 7333, 8882), and on September 7, 1982 (TIAS 10434), May 1 1985, and December 27, 1989] still remain in force. Ongoing consultations between Japan and the United States now focus shifts on new entry by American, Delta and Federal Express at the

\textsuperscript{87} As a result of a civil discrimination suit, U.S. airport lounges have been required to admit non-First or Business Class passengers. The ruling diminishes the value of the lounges for the airlines and their passengers.
New Kansai International Airport, scheduled to open in 1994, and at Narita following the completion of its second runway.\textsuperscript{88} American carriers newly entering the market do not enjoy the same advantages as their incumbents; limited access to Tokyo and Osaka and the absence of beyond traffic rights restrict their presence in the profitable Asian market. Beyond perhaps one or two additional destinations in the United States, the Pacific routes no longer interest Japanese airlines. Their relative costs are high, profit margins on Pacific routes are thin, and additional beyond traffic rights across the Atlantic or onward to South America hold limited promise relative to the regional Asian routes.

The bilateral agreements have lent to an unequal distribution of landing slots at capacity restricted Narita. American airlines control 804 weekly slots at Narita, compared to 856 by all Japanese airlines. Japanese airlines use 303 of those slots for transpacific services to the United States and have only two weekly fifth freedom flights from Los Angeles to Saõ Paulo; American carriers on the other hand devote 532 slots for transpacific services and 272 for flights to points in Asia and Australia. Although beyond rights originally enabled airlines to continue to their final destination, carriers increasingly use such rights to transport local traffic.\textsuperscript{89} The most serious disagreement in the current round of the bilateral air service agreements results from the definition of Article 12. The article stated that capacity increases by American

\textsuperscript{88} A spate of bilateral agreements have been signed in recent months: Italy (July 1992), New Zealand (April 1992), Russia (November 1992), United Kingdom (November 1992), Vietnam (April 1993)

\textsuperscript{89} Although Northwest had assured Japanese authorities that at least fifty percent of its passengers on its flight from New York to Sydney via Osaka would originate in the United States, more than ninety percent of the travelers were Japanese. The airline advertised $600 round-trip fares for the flight from New York—which incidentally was 3000 miles longer than the original routing—in an attempt to increase its American passengers. Australian authorities have ordered the cancellation of the flight.
carriers should consider traffic requirements of an area after taking into account local and regional services; the agreement however did not offer a mechanism to determine such capacity. Of the passengers on Northwest and United's Asian flights, seventy percent originate from Tokyo. Large hub and spoke operations meanwhile unnecessarily engages airport capacity. The introduction of extended range aircraft and new air corridors have eliminated the need to stop at Narita on several transpacific routes. If all transit passengers could be routed directly to their destinations or shifted to regional airports, slots at Narita may be freed for further Japan-destined traffic.\textsuperscript{90} Public outcry has delayed plans for further airport construction and expansion near densely populated metropolitan centers; this has increased not only the direct construction costs, but also the inconveniences to passengers.

The future negotiations must balance the viewpoints of the two parties. Japan Airlines sees an inherent inequity in the current bilateral treaty in terms of access. The chairman has advocated a new capacity restricting agreement based on the Bermuda II which establishes air transport between the United States and the United Kingdom. Such an agreement would "exchange routes instead of points between the two countries; establish adequate capacity and the number of designated carriers on each route and base beyond rights on the current market situation."\textsuperscript{91} On the other hand, U.S. carriers seek further access to Japan and into Asia under the "Open Skies" policy. Northwest sees the more restrictive attitude towards new entry into Japan as a means to handicap one of the few American firms doing well

\textsuperscript{90} Thirty airlines still await permission for entry to Japan.
\textsuperscript{91} \textit{Aviation Week and Space Technology}; 9 November 1992, 31.
in the Japanese market, and as a matter of "basic fairness..., suggests that air transport policy occurs in a broader trade context."\textsuperscript{92}

The story of the transpacific services is very much a story of three dominant airlines—Japan Airlines, Northwest Airlines and United Airlines. Although the Japanese flag carrier held an enviable position in terms of access to international routes, its endowment alone was not a sufficient condition for profitability. With appreciation of the yen, costs spiraled upward; in response the airline aggressively trimmed expenses and pursued high yield passengers. Northwest and United entered both transpacific and regional markets vacated by the Japanese airline. Since route structure as well as scale properties and individual costs determine the viability of each firm, the transpacific market should nevertheless continue to evolve with the three dominant players.

\textsuperscript{92}Aviation Week and Space Technology; 5 October 1992, 34.
APPENDIX

TREATIES

I. TIAS 2854

AIR TRANSPORT SERVICES

Agreement, with Schedule, between the UNITED STATES OF AMERICA and JAPAN

• Signed at Tokyo August 11, 1952
• Entered into Force September 15, 1953; provisionally in force August 11, 1952 and Supplementing and Amending Agreements
• Effected by Exchange of Notes
• Signed at Tokyo August 11, 1952; Entered into force August 11, 1952
• Signed at Tokyo September 15, 1953; Entered into force September 15, 1953

CIVIL AIR TRANSPORT AGREEMENT BETWEEN THE UNITED STATES OF AMERICA AND JAPAN

The Government of the United States of America and the Government of Japan,

Desiring to conclude an agreement for the purpose of promoting civil air transport between their respective territories,

Have accordingly appointed their respective representatives for this purpose, who have agreed as follows:

ARTICLE 1

Each Contracting Party agrees that the principles and provisions of the Convention on International Civil Aviation, signed at Chicago on December
7, 1944, applicable to the international navigation of aircraft, shall to the extent to which they are applicable to the air services provided for the present Agreement, be observed by both parties.

ARTICLE 2

For the purpose of the present Agreement, except where the text provides as otherwise:

(a) The term “aeronautical authorities” shall mean in the case of Japan, the Ministry of Transportation and any person or agency authorized to perform the functions of the said Ministry and, in the case of the United States, the Civil Aeronautics Board and any person or agency authorized to perform the functions of the said Civil Aeronautics Board.

(b) The term “designated airlines” shall mean those airlines which one of the Contracting Parties has designated in writing to the other Contracting Party in accordance with Article 4 of the present Agreement for the routes specified in such designation.

(c) The term “territory” in relation to a State shall mean the land areas and territorial waters adjacent thereto under the sovereignty, suzerainty protection or trusteeship of that State.

(d) The definitions contained in paragraphs (a), (b), (c) and (d) of Article 96 of the Convention on International Civil Aviation, signed at Chicago on December 7, 1944, shall be applied to the present Agreement.

ARTICLE 3

Each Contracting Party grants to the other Contracting Party the rights specified in the present Agreement necessary for establishing international air services on the routes specified in the appropriate paragraph of the Schedule attached thereto or as amended in accordance with Article 16 of the present
Agreement (hereinafter called "agreed services" and "specified routes" respectively).

ARTICLE 4

(A) The agreed services may be inaugurated immediately or at a later date at the option of the Contracting Party to whom the rights are granted under Article 3 of the present Agreement, but not before

1. the Contracting Party to whom the rights have been granted has designated an airline or airlines for the specified routes, and

2. the Contracting Party granting the rights has given the appropriate operating permission to the airline or airlines concerned; which it shall, subject to the provisions of paragraph (B) of this Article and of Article 9, be bound to grant without undue delay.

(B) Each of the designated airlines may be required to qualify before the competent aeronautical authorities of the other Contracting Party granting the rights, under the laws and regulations normally applied by those authorities, before being permitted to engage in the operations contemplated by the present Agreement.

ARTICLE 5

(A) Subject to the provisions of the present Agreement, the airlines designated by each Contracting Party shall enjoy, while operating an agreed service on a specified route, the following privileges:

1. To fly without landing across the territory of the other Contracting Party;

2. To make stops in the said territory for non-traffic purposes; and
3. To make stops in the said territory at the points specified for that route in the Schedule attached hereto for the purpose of putting down and taking on international traffic in passengers, cargo and mail.

(B) Each Contracting Party retains the right to refuse permission to the aircraft of the other Contracting Party to take on in its territory passengers, cargo or mail carried for remuneration or hire and destined for another point in its territory.

ARTICLE 6

In order to prevent discriminatory practices and to assure equality of treatment, both Contracting Parties agree that:

(a) Each of the Contracting Parties may impose or permit to be imposed on the designated airlines of the other Contracting Party just and reasonable charges for the use of public airports and other facilities under its control. Each of the Contracting Parties agrees, however, that these charges shall not be higher than would be paid for the use of such airports and facilities by its national aircraft engaged in similar international services.

(b) Fuel, lubricating oils, spare parts (assembled or unassembled), other consumable technical supplies, regular equipment and aircraft stores introduced into the territory of one Contracting Party by or on behalf of the other Contracting Party or its nationals and intended solely for use of the designated airlines of the latter Contracting Party in providing the agreed services shall, subject to regulations prescribed by the appropriate authorities of the first Contracting Party, be exempt on a basis of reciprocity from all national duties or charges, including custom duties and inspection fees.

(c) Fuel, lubricating oils, spare parts (assembled or unassembled), other consumable technical supplies, regular equipment and aircraft stores taken on
board aircraft of the designated airlines of one Contracting Party in the territory of the other and used the agreed services shall be exemption a basis of reciprocity from custom duties, excise taxes, inspection fees or other national duties or charges, subject to regulations prescribed by the appropriate authorities of the latter Contracting Party.

(d) Fuel, lubricating oils, spare parts (assembled or unassembled), other consumable technical supplies, regular equipment and aircraft stores retained on board aircraft of the designated airlines of one Contracting Party authorized to operate the agreed services on the specified routes shall, upon arriving in or leaving the territory of the other Contracting Party, be exempt on a basis of reciprocity, from custom duties, inspection fees or similar duties or charges, even though such supplies be used or consumed by such aircraft on flights in that territory.

ARTICLE 7
Certificates of air worthiness, certificates of competency and licenses issued or rendered valid by one Contracting Party, and still in force, shall be recognized as valid by the other Contracting Party for the purpose of operating the agreed services on the specified routes, provided that the requirements under which such certificates or licenses were issued or rendered valid are equal to or above the minimum standards which may be established pursuant to the Convention on International Civil Aviation. Each Contracting Party reserves the right, however, to refuse to recognize, for the purpose of flight above its own territory, certificates of competency and licenses granted to its own nationals by another State.

ARTICLE 8
(A) The laws and regulations of one Contracting Party relating to the admission to or departure from its territory of aircraft engaged in international air navigation, or to the operation and navigation of such aircraft while within its territory, shall be applied to the aircraft of the airlines designated by the other Contracting Party, and shall be complied with by such aircraft upon entrance into or departure from or while within the territory of the first Contracting Party.

(B) The laws and regulations of one Contracting Party relating to the admission to or departure from its territory of passengers, crew or cargo of aircraft, such as regulations relating to entry, clearance, immigration, passports, customs and quarantine, shall be complied with by or on behalf of such passengers, crew or cargo of the aircraft of the airlines designated by the other Contracting Party upon entrance into or departure from or while within the territory of the first Contracting Party.

ARTICLE 9

(A) Each Contracting Party reserves the right to withhold or revoke the privileges specified in paragraphs (A) of Article 5 of the present Agreement enjoyed or to be enjoyed by an airline designated by the other Contracting Party, or to impose such conditions as it may deem necessary on the exercise by the airline of those privileges, in any case where it is not satisfied that substantial ownership and effective control of such airline are vested in the Contracting Party designating the airlines or in nationals of such Contracting Party.

(B) Each Contracting Party reserves the right to suspend the exercise by an airline designated by the other Contracting Party of the privileges referred to in paragraph (A) above, in any case where the airline fails to comply with
the laws and regulations referred to in Article 8 of the present Agreement, or in case of failure of the airline or the Government designating it to perform its obligations under the present Agreement; provided that, unless immediate suspension is essential to prevent further infringements of such laws and regulations, or for reasons of safety, this right shall be exercised only after consultations with the other Contracting Party.

ARTICLE 10

There shall be fair and equal opportunity for the airlines of both Contracting Parties to operate the agreed services on the specified routes between their respective territories.

ARTICLE 11

In the operation by the designated airlines of either Contracting Party of the agreed services, the interests of the designated airlines of the other Contracting Party shall be taken into consideration so as not to affect unduly the services which the latter provides on all or part of the same routes.

ARTICLE 12

The agreed services available hereunder to the public shall bear a close relationship to the requirements of the public for such services and shall retain as their primary objective the provision of capacity adequate to the traffic demands between the country of which the airline providing such services is a national and the countries of ultimate destination of the traffic. The right to embark or disembark on such services international traffic destined for and coming from third countries at a point or points on the specified routes shall be applied in accordance with the general principles of orderly development to which both Contracting Parties subscribe and shall be subject to the general principle that capacity should be related:
(a) To traffic requirements between the country of which the airline is a national and the countries of ultimate destination of the traffic;

(b) To the requirements of through airline operation; and

(c) To the traffic requirements of the area through which the airline passes after taking account of local and regional services.

ARTICLE 13

(A) The determination of rates in accordance with the following paragraphs shall be made at reasonable levels, due regard being paid to all relevant factors, such as cost of operation, reasonable profit, and the rates charged by any other airlines, as well as the characteristics of each service.

(B) The rates to be charged by the airlines of either Contracting Party between points in the territory of the United States and points in the territory of Japan referred to in the attached Schedule shall, consistent with the provisions of the present Agreement, be subject to the approval of the aeronautical authorities of the Contracting Parties, who shall act in accordance with their obligations under the present Agreement within the limits of their legal powers.

(C) Any rate proposed by the airline or airlines of either Contracting Party shall be filed with the aeronautical authorities of both Contracting Parties at least thirty (30) days before the proposed date of introduction; provided that this period of thirty (30) days may be reduced in particular cases if so agreed by the aeronautical authorities of both Contracting Parties.

(D) The Civil Aeronautics Board of the United States having approved the traffic conference machinery of the International Air Transport Association (hereinafter called IATA), for a period of three years beginning July 1, 1952, any rate agreements involving United States airlines, concluded
through this machinery during this period and during subsequent periods for which the Board may similarly approve such machinery, will be subject to approval of the Board. Rate agreements concluded through this machinery may also be required to be subject to the approval of the aeronautical authorities of Japan pursuant to the principles enunciated in paragraph (B) above.

(E) The Contracting Parties agree that the procedures described in paragraphs (F), (G) and (H) of this Article shall apply:

1. If, during the period of the Civil Aeronautics Board's approval of the IATA traffic conference machinery, either any specific rate agreement is not approved within a reasonable time by either Contracting Party, or a conference of IATA is unable to agree on a rate, or

2. At any time no IATA machinery is applicable, or

3. If either Contracting Party at any time withdraws or fails to renew its approval of that part of the IATA traffic conference machinery relevant to this Article.

(F) In the event that power is conferred by law upon the aeronautical authorities of the United States to fix fair and economic rates for the transport of persons and property by air on international services and to suspend proposed rates in a manner comparable to that in which the Civil Aeronautics Board at present is empowered to act with respect to such rates for the transport of persons and property by air within the United States, each of the Contracting Parties shall thereafter exercise its authority in such manner as to prevent any rate or rates proposed by one of its airlines for services from the territory of one Contracting Party to a point or points in the territory of the other Contracting Party from becoming effective, if in the
judgment of the aeronautical authorities of the Contracting Party whose airline or airlines is or are proposing such rate, that rate is unfair or uneconomic. If one of the Contracting Parties on receipt of the notification referred to in paragraph (C) above is dissatisfied with the rate proposed by the airline or airlines of the other Contracting Party prior to the expiration of the first fifteen (15) of the thirty (30) days referred to, and the Contracting Parties shall endeavor to reach agreement on the appropriate rate.

In the event that such agreement is reached, each Contracting Party will exercise its best efforts to put such rate into effect as regards its airline or airlines.

If agreement has not been reached at the end of the thirty (30) day period referred to in paragraph (C) above, the proposed rate may, unless the aeronautical authorities of the country of the airline concerned see fit to suspend its application, go into effect provisionally pending the settlement of any dispute in accordance with the procedure outlined in paragraph (H) below.

(G) Prior to the time when such power may be conferred by law upon the aeronautical authorities of the United States, if one of the Contracting Parties is dissatisfied with any rate proposed by the airline or airlines of either Contracting Party for services from the territory of one Contracting Party to a point or points in the territory of the other Contracting Party, it shall so notify the other prior to the expiration of the first fifteen (15) of the thirty (30) day period referred to in paragraph (C) above, and the Contracting Parties shall endeavor to reach agreement on the appropriate rate.
In the event that such agreement is reached, each Contracting Party will use its best efforts to cause such agreed rate to be put into effect by its airline or airlines.

It is recognized that if no such agreement can be reached prior to the expiration of such thirty (30) days, the Contracting Party raising the objection to the rate may take such steps as it may consider necessary to prevent the inauguration or continuation of the service in question at the rate complained of.

(H) When in any case under paragraphs (F) and (G) above the aeronautical authorities of the two contracting Parties cannot agree within a reasonable time upon the appropriate rate after consultation initiated by the complaint of one Contracting Party concerning the proposed rate or an existing rate of the airline or airlines of the other Contracting Party, upon the request of either, both Contracting Parties shall submit the question to the International Civil Aviation Organization for an advisory report, and each party will use its best efforts under the powers available to it to put into effect the opinion expressed in such report.

It is the intention of both Contracting Parties that there should be regular and frequent consultation between the aeronautical authorities of the Contracting Parties to ensure close collaboration in all matters affecting the fulfillment of the present Agreement.

ARTICLE 15

(A) Except as otherwise provided in the present Agreement, any dispute between the Contracting Parties relating to the interpretation or application of the present Agreement, which cannot be settled through consultation, shall be submitted for an advisory report to a tribunal of three
arbitrators, one to be designated by each Contracting Party, and the third to be agreed upon by the two arbitrators so chosen, provided that such third arbitrator shall not be a national of either Contracting Party. Each of the Contracting Parties shall designate an arbitrator within two months of the date of delivery by either Contracting Party to the other Contracting Party of a diplomatic note requesting arbitration of a dispute; and the third arbitrator shall be agreed upon within one month after such period of two months.

If either of the Contracting Parties fails to designate its own arbitrator within two months, or if the third arbitrator is not agreed upon within the time limit indicated, the President of the International Court of Justice shall be requested to make the necessary appointments by choosing the arbitrator or arbitrators.

(B) The Contracting Parties will use their best efforts under the powers available to them to put into effect the opinion expressed in any such advisory report. A moiety of the expenses of the arbitral tribunal shall be borne by each party.

ARTICLE 16

(A) In the event either of the Contracting Parties considers it desirable to modify the Schedule attached hereto, it may request consultation between the competent aeronautical authorities of both Contracting Parties, such consultation to begin within a period of sixty (60) days from the date of the request. When these authorities mutually agree on a new or revised Schedule, their recommendations on the matter will come into effect after they have been confirmed by an exchange of diplomatic notes.

(B) Changes made by either Contracting Party in the specified routes, except those which change the points served by its airline in the territory of
the other Contracting Party, shall not be considered as modifications of the Schedule. The aeronautical authorities of either Contracting Party may therefore proceed unilaterally to make such changes, provided, however, that notice of any change is given without delay to the aeronautical authorities of the other Contracting Party.

If such other Contracting Party finds that, having regard to the principles set forth in Article 12 of the present Agreement, the interests of its airline or airlines are prejudiced by the carriage by the airline or airlines of the first Contracting Party of traffic between the territory of the second Contracting Party and the new point in the territory of a third country, the two Contracting Parties shall consult with each other with a view to arriving at a satisfactory agreement.

(C) Either Contracting Party may at any time request consultation with the other for the purpose of amending the present Agreement, such consultation to begin within a period of sixty (60) days from the date of the request.

ARTICLE 17

If a general multilateral air transport convention accepted by both Contracting Parties enters into force, the present Agreement shall be amended so as to conform with the provisions of such convention.

ARTICLE 18

Either of the Contracting Parties may at any time notify the other of its intention to terminate the present Agreement. Such a notice shall be sent simultaneously to the International Civil Aviation Organization. In the event such notice is given, the present Agreement shall terminate one year after the date of receipt by the other Contracting Party of the notice to
terminate, unless by agreement between the Contracting Parties the notice under reference is withdrawn before the expiration of that period. If the other Contracting Party fails to acknowledge receipt, notice shall be deemed as having been received fourteen (14) days after its receipt by the International Civil Aviation Organization.

ARTICLE 19

The present Agreement, all contracts connected therewith and any exchange of diplomatic notes in accordance with Article 16 shall be registered with the International Civil Aviation Organization.

ARTICLE 20

The present Agreement will be approved by each Contracting Party in accordance with its legal procedures and the Agreement shall enter into force upon an exchange of diplomatic notes indicating such approval.¹

IN WITNESS WHEREOF, the undersigned, being duly authorized by their respective Governments, have signed the present Agreement.

DONE in Tokyo, this 11th day of August, 1952, in duplicate in the English and Japanese languages, both equally authentic.

FOR THE UNITED STATES OF AMERICA:
ROBERT MURPHY
FOR JAPAN
KATSUO OKAZAKI

[SEAL] [SEAL]

SCHEDULE

¹ Provisionally entered into force Aug. 11, 1952. Exchange of notes of Sept. 15, 1953, definitively bringing the agreement into force not printed herein.
An airline or airlines designated by the Governments of the United States of America shall be entitled to operate air services on each of the air routes specified via intermediate points, in both directions, and to make scheduled landings in Japan at the points specified in this paragraph:

1. From the United States, including Alaska, via intermediate points in Canada, Alaska and the Kurile Islands, to Tokyo and beyond.

From the United States, including its territorial possessions, via intermediate points in the Central Pacific, to Tokyo and beyond.

3. From Okinawa to Tokyo.*

An airline or airlines designated by the Government of Japan shall be entitled to operate air services on each of the air routes specified via intermediate points, in both directions, and to make scheduled landings in the United States of America at the points specified in this paragraph:

1. From Japan, via intermediate points in the Central Pacific, to Honolulu and San Francisco, and beyond.

2. From Japan, via intermediate points in the North Pacific and Canada, to Seattle.

3. From Japan to Okinawa.*

Points on any of the specified routes may at the option of the designated airline be omitted on any or all flights.

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* In granting these routes, the respective Contracting Parties are cognizant of the provisions of Article 3 of the Treaty of Peace with Japan, signed at San Francisco on September 8, 1951, under which the United States of America exercises the powers of administration, legislation and jurisdiction over Okinawa.

* In granting these routes, the respective Contracting Parties are cognizant of the provisions of Article 3 of the Treaty of Peace with Japan, signed at San Francisco on September 8, 1951, under which the United States of America exercises the powers of administration, legislation and jurisdiction over Okinawa.
THE FOREIGN SERVICE OF THE UNITED STATES OF AMERICA

AMERICAN EMBASSY, TOKYO

August 11, 1952

EXCELLENCY:

I have the honor to refer to Article 20 of the Civil Air Transport Agreement between the United States of America and Japan, signed at Tokyo on August 11, 1952, which provides that the Agreement shall enter into force upon the exchange of diplomatic notes indicating that the two Contracting Parties have approved the Agreement in accordance with their respective legal procedures.

In view of the desirability of establishing as soon as possible the relations between the two countries in matters of civil air transport, the Government of the United States of America undertakes, within the limit of its constitutional powers, to make effective the provisions of the said agreement as of today's date pending the exchange of the above-mentioned notes.

Accept, Excellency, the renewed assurances of my most distinguished consideration.

ROBERT MURPHY

His Excellency

KATSUO OKAZAKI

Minister for Foreign Affairs

Tokyo.

TRANSLATION

AUGUST 11, 1952
Your Excellency Ambassador ROBERT D. MURPHY

of the United States of America

I have the honor to write this letter.

With regards to the Civil Air Transport Agreement signed between Japan and the United States of America today in Tokyo, this Minister, considers that this Agreement, in accordance with ART. 20, shall take effect contingent on the exchange of official notes by both nations notifying approval pursuant to the procedures under the domestic laws of each signatory, and that establishment and promotion of relations between both nations in connection with civil air transportation is most desirable.

Hence, this Minister has the honor to inform Your Excellency that the Japanese Government promises to enforce the stipulations of the Agreement from the date of signing within the scope of its authority under the Constitution, pending the exchange of official notes as provided in Art. 20 and the approval as provided in the same article.

In forwarding this letter, this Minister extends his most cordial respects to Your Excellency.

[SEAL]                        KATSUO OKAZAKI

Minister for Foreign Affairs

The American Ambassador to the Japanese Minister for Foreign Affairs
THE FOREIGN SERVICE OF THE UNITED STATES OF AMERICA

AMERICAN EMBASSY

TOKYO, September 15, 1953

EXCELLENCY:
I have the honor to acknowledge receipt of Your Excellency's Note of September 15, 1953, in which Your Excellency has informed me as follows:

"I have the honor to refer to the Civil Air Transport Agreement between Japan and the United States of America, signed on August 11, 1952, which has entered into force this day, and to inform Your Excellency that the Government of Japan proposes that Route 3 in the Schedule attached thereto, to be operated by the airline or airlines of Japan, be modified to read as follows:--

'3. From Japan to Okinawa and beyond."

"If this proposal is acceptable to your Government, I have the honor to suggest that this Note and Your Excellency's reply accepting this proposal be regarded, in accordance with paragraph (A) of Article 16 of the said Agreement, as constituting an agreed modification of the Schedule to the extent specified in these Notes, such modification to be effective from the date of Your Excellency's reply."

I have the honor to inform Your Excellency that the Government of the United States of America accepts the proposals contained in Your Excellency's Note, which, with this reply, is regarded as constituting an agreed modification of the Schedule to the extent specified in these Notes, such modification to be effective from this date.

I avail myself of this opportunity to renew to your Excellency the assurances of my highest consideration.

John M. Allison

His Excellency

KatsuO Okazaki

Minister for Foreign Affairs,
TIAS 4158
Air Transport Services
Agreement amending the agreement of August 11, 1952, as supplemented and amended.
Effect of exchange of notes
Signed at Tokyo January 14, 1959;
Entered into force January 14, 1959.
The American Ambassador to the Japanese Minister for Foreign Affairs
THE FOREIGN SERVICES OF THE UNITED STATES OF AMERICA
TOKYO, January 14, 1959.
EXCELLENCY:

I have the honor to acknowledge receipt of Your Excellency's Note of January 14, 1959, in which Your Excellency has informed me as follows:

"I have the honor to refer to the civil aviation consultations which took place in Tokyo beginning in April 1958, pursuant to the request of the Government of Japan, in accordance with paragraph (A) of Article 16 of the Civil Air Transport Agreement between Japan and the United States of America which entered into force September 15, 1953. These consultations concluded with the delegations of Japan and of the United States having recommended to their respective governments the deletion of the Schedule attached to the said Agreement and the insertion of a new Schedule as follows:

SCHEDULE
An airline or airlines designated by the Government of Japan shall be entitled to operate air services on each of the air routes specified via intermediate points, in both directions, and to make scheduled landings in the United States of America at the points specified in this paragraph:

(1) From Japan, via intermediate points in the Central Pacific, to Honolulu and beyond:
   (a) To Los Angeles and beyond to points in South America.
   (b) To San Francisco and beyond to points other than in South America.

(2) From Japan, via intermediate points in the North Pacific and Canada, to Seattle

(3) From Japan to Okinawa and beyond.*

An airline or airlines designated by the Government of the United States of America shall be entitled to operate air services on each of the routes specified via intermediate points, in both directions, and to make scheduled landings in Japan at the points specified in this paragraph:

(1) From the United States, including Alaska, via intermediate points in Canada, Alaska and the Kurile Islands, to Tokyo and beyond.

(2) From the United States, including its territorial possessions via intermediate points in the Central Pacific, to Tokyo and beyond.

(3) From Okinawa to Tokyo*.

* In granting these routes, the respective contracting parties are cognizant of the provisions of Article 3 of the Treaty of Peace with Japan, signed at San Francisco on September 8, 1951, under which the United States of America exercises the powers of administration, legislation and jurisdiction over Okinawa.
Points on any of the specified routes may at the option of the designated airline be omitted on any or all flights.

"The above amendment of the Civil Air Transport Agreement is acceptable to the Government of Japan, and upon receipt of Our Excellency's Note indicating acceptance on behalf of the Government of the United States of America, the Government of Japan will consider the Schedule of the Civil Air Transport Agreement modified accordingly, such modification to be effective from the date of Your Excellency's reply."

I have the honor to inform Your Excellency the Government of the United States of America accepts the proposal contained in Your Excellency's Note which, with this reply, is regarded as constituting an agreed modification of the Schedule to the extent specified in these Notes, such modification to be effective from this date.

I avail myself of this opportunity to renew to Your Excellency the assurances of my highest consideration.

Douglas MacArthur II

His Excellency

AIICHIRO FUJIYAMA,

Minister for Foreign Affairs,

Tokyo.

III. TIAS 5939; 16 UST 2029

Air Transport Services

Agreement amending the agreement of August 11, 1952, as supplemented and amended.

Effected by exchange of notes
Signed at Tokyo December 28, 1965

Entered into force December 28, 1965

The American Ambassador to the Japanese Minister for Foreign Affairs

Embassy of the United States of America

Tokyo, December 28, 1965

EXCELLENCY:

I have the honor to acknowledge receipt of Your Excellency’s Note on December 28, 1965, in which Your Excellency has informed me as follows:

"I have the honour to refer to the civil aviation consultations which recently took place in Tokyo in accordance with the Civil Air Transport Agreement between Japan and the United States of America which was signed on August 11, 1952, and was amended on January 14, 1959. [1] The two delegations agreed to recommend to their respective Governments the deletion of the Schedule attached to the said Agreement and the insertion of a new Schedule, together with an Annex thereto, both of which are enclosed with this note.

"I have further the honour to inform Your Excellency that the Government of Japan accepts the new Schedule with the Annex, and to propose that this note and your reply thereto, indicating the acceptance of the new Schedule with the Annex by the Government of the United States of America, will constitute an agreement between the two Governments further amending the Civil Air Transport Agreement, as amended, which will enter into force on the date of your reply."

Enclose No. 1-Schedule

"(A) An airline or airlines designated by the Government of Japan shall be entitled to operate air services on each of the air routes specified, in
both directions, and to make scheduled landings in the United States of America at the points specified in this paragraph:

(1) From Japan to Honolulu, San Francisco, and:
   (a) New York and beyond New York to Europe (including the United Kingdom) and beyond.*
   (b) beyond Mexico and Central America**

(2) From Japan to Honolulu and Los Angeles and beyond to South America**

(3) From Japan to Okinawa and beyond.***

"(B) An airline or airlines designated by the Government of the United States of America shall be entitled to operate air services on each of the routes specified, in both directions, and to make scheduled landings in Japan at the points specified in this paragraph:

(1) From the United States via the North Pacific to Tokyo and Osaka and beyond.

(2) From the United States via the Central Pacific to Tokyo and Osaka and beyond.

(3) From Okinawa to Osaka and Tokyo***. 

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*** Any flight operating eastbound from Japan which makes a scheduled landing at New York, and any flight operating westbound to Japan which makes a scheduled departure from New York, must make a scheduled stop in San Francisco."

"*** Passengers, cargo, and mail destined for or originating at points beyond the United States may not make a stopover or be picked up or discharged at United States points on these routes."

"**** In granting these routes, the respective Contracting Parties are cognizant of the provisions of Article 3 of the Treaty of Peace with Japan, signed at San Francisco on September 8, 1951, [1] under which the United States of America exercises the powers of administration, legislation, and jurisdiction over Okinawa."

"**** In granting these routes, the respective Contracting Parties are cognizant of the provisions of Article 3 of the Treaty of Peace with Japan, signed at San Francisco on September 8, 1951, [1] under which the United States of America exercises the powers of administration, legislation, and jurisdiction over Okinawa."
“(C) Except as otherwise indicated, points on any of the specified routes may at the option of the designated airline be omitted on any or all flights.

Enclosure No.2--Annex to Schedule

“(A) In the event the Government of the United States intends to designate more than one United States airline to operate air services from New York to Japan under the United States route described in paragraph (B) (1) of the Schedule, the Government of the United States will notify the Government of Japan of this intention sixty days in advance of the designation. Without prejudice to the right of the Government of the United States to designate the airline or airlines concerned at the end of such sixty days, the United States will, on request of the Government of Japan, consult with Japan prior to the expiration of such sixty days in accordance with Article 16 of the Agreement. [1]

“(B) If during any time that Article 13 (F) of the Agreement is in effect, the Government of Japan is dissatisfied with a rate structure proposed by the airline or airlines of the United States which is based on the lower mileage of North Pacific as contrasted to Central Pacific air services, the United States will, without prejudice to the coming into effect of the rates as provided for in Article 13 (F), consult with Japan at its request in accordance with Article 16 of the Agreement.

“(C) The purpose of the consultations referred to in (A) and (B) above will be to determine whether the eventualities mentioned therein warrant modification of the Agreement in view of the changes which may be brought about in the competitive position of the designated airline or airlines of Japan which are permitted to operate only on the Central Pacific route.”
I have the honour to inform Your Excellency that the Government of the United States of America accepts the proposal contained in Your Excellency's note, which with this reply constitutes an agreement between the two Governments further amending the Civil Air Transport Agreement, as amended, which enters into force on this date.

I avail myself of this opportunity to renew to Your Excellency the assurances of my highest consideration.

Edwin O. Reischauer

His Excellency

ETSUSABURO SHIINA,

Minister for Foreign Affairs,

Tokyo.

IV. TIAS 6787; 20 UST 3086

Air Transport Services

Agreement amending the agreement of August 11, 1952, as supplemented and amended.

Effected by exchange of notes

Signed at Tokyo November 12, 1969;

Entered into force November 12, 1969.

The American Ambassador to the Japanese Minister for Foreign Affairs

Tokyo, November 12, 1969

EXCELLENCY:

I have the honor to acknowledge receipt of Your Excellency's Note of November 12, 1969, in which Your Excellency has informed me as follows:
"I have the honour to refer to the civil aviation consultations which took place in Washington from June 23, 1969 to July 9, 1969 and in Tokyo from September 16, 1969 to October 2, 1969 in accordance with the Civil Air Transport Agreement between Japan and the United States of America which was signed on August 11, 1952, and was amended on January 14, 1959 and December 28, 1965. The two Delegations agreed to recommend to their respective Governments the deletion of the Schedule together with the Annex thereto, attached to the said Agreement and the insertion of a new Schedule, which is enclosed with this Note.

"I have further the honor to inform Your Excellency that the Government of Japan accepts the new Schedule and to propose that this Note and your reply thereto, indicating the acceptance of the new Schedule by the Government of the United States of America, will constitute an agreement between the two Governments further amending the Civil Air Transport Agreement, as amended, which will enter into force on the date of your reply."

Enclosure-Schedule

"(A) An airline or airlines designated by the Government of Japan shall be entitled to operate air services on each of the air routes specified, in both directions, and to make scheduled landings in the United States of America at the points specified in this paragraph:

(1) From Japan to Honolulu, San Francisco, and:

(a) New York and beyond New York to Europe (including the United Kingdom) and beyond.*

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* Any flight operating eastbound from Japan which makes a scheduled landing at New York, and any flight operating westbound to Japan which makes a scheduled departure from New York, must make a scheduled stop in San Francisco."
(b) beyond Mexico and Central America**

(2) From Japan to Honolulu and Los Angeles and beyond to South America**

(3) From Japan to Okinawa and beyond.***

(4) From Japan via Anchorage to New York.

(5) From Japan via Saipan to Guam.

"(B) An airline or airlines designated by the Government of the United States of America shall be entitled to operate air services on each of the routes specified, in both directions, and to make scheduled landings in Japan at the points specified in this paragraph:

(1) From the United States via the North Pacific to Tokyo and Osaka and beyond.

(2) From the United States via the Central Pacific to Tokyo and Osaka and beyond.

(3) From Okinawa to Osaka and Tokyo***.

"(C) Except as otherwise indicated, points on any of the specified routes may at the option of the designated airline be omitted on any or all flights.

I have the honour to inform your Excellency that the Government of the United States of America accepts the proposal contained in Your Excellency's note which with this reply, constitutes an agreement between the two Governments further amending the Civil Air Transport Agreement, as amended, which enters force on this date.

** Passengers, cargo, and mail destined for or originating at points beyond the United States may not make a stopover or be picked up or discharged at United States points on these routes."

*** In granting these routes, the respective Contracting Parties are cognizant of the provisions of Article 3 of the Treaty of Peace with Japan, signed at San Francisco on September 8, 1951, [1] under which the United States of America exercises the powers of administration, legislation, and jurisdiction over Okinawa."
I avail myself of this opportunity to renew to Your Excellency the assurances of my highest consideration.

Armin H. Meyer

His Excellency

KIICHI AICHI

Minister for Foreign Affairs,

Tokyo.

V. TIAS 7333; 23 UST 677

Air Transport Services

Agreement amending the agreement of August 11, 1952, as amended.

Effected by exchange of notes

Signed at Tokyo May 9, 1972;

Entered into force May 15, 1972 (Tokyo time).

The American Ambassador to the Japanese Minister for Foreign Affairs

Embassy of the United States of America

Tokyo, May 9, 1972

Excellency:

I have the honor to acknowledge receipt of Your Excellency’s Note of May 9, 1972 in which Your Excellency has informed me as following:

“I have the honor to refer to the recent discussions concerning air transport services with respect to the return of administrative rights over Okinawa to Japan. The representatives of the two governments agreed to recommend to their respective Governments the deletion of the Schedule attached to the Civil Air Transport Agreement between Japan and the United States of
America which was signed at Tokyo on August 11, 1952, as amended, and the insertion of a new Schedule to that Agreement, together with an Annex thereto, both of which are enclosed with this Note.

"I have further the honor to inform Your Excellency that the Government of Japan accepts the new Schedule with the Annex and to propose that this note and your reply thereto, indicating the acceptance of the new schedule with the Annex by the Government of the United States of America, will constitute an agreement between the two Governments further amending the Civil Air Transport Agreement, as amended, which will enter into force on the date administrative rights over Okinawa are returned to Japan.

"I avail myself of this opportunity to renew to Your Excellency the assurances of my highest consideration."

Schedule

"(A) An airline or airlines designated by the Government of Japan shall be entitled to operate air services on each of the air routes specified, in both directions, and to make scheduled landings in the United States of America at the points specified in this paragraph:

(1) From Japan to Honolulu, San Francisco, and:

(a) New York and beyond New York to Europe (including the United Kingdom) and beyond.*

(b) beyond Mexico and Central America**

(2) From Japan to Honolulu and Los Angeles and beyond to South America**

* Any flight operating eastbound from Japan which makes a scheduled landing at New York, and any flight operating westbound to Japan which makes a scheduled departure from New York, must make a scheduled stop in San Francisco."

** Passengers, cargo, and mail destined for or originating at points beyond the United States may not make a stopover or be picked up or discharged at United States points on these routes."
(3) From Japan via Anchorage to New York.

(4) From Japan via Saipan to Guam.

"(B) An airline or airlines designated by the Government of the United States of America shall be entitled to operate air services on each of the routes specified, in both directions, and to make scheduled landings in Japan at the points specified in this paragraph:

(1) From the United States via the North Pacific to Tokyo, Osaka and Naha and beyond.

(2) From the United States via the Central Pacific to Tokyo, Osaka and Naha and beyond.

(C) Except as otherwise indicated, points on any of the specified routes may at the option of the designated airline be omitted on any or all flights.

ANNEX TO SCHEDULE

"Both Governments will consult prior to the end of the five year period to commence on the date of reversion of Okinawa to Japan to determine any necessary modification of the Schedule attached to the Civil Air Transport Agreement, as amended, through the granting of such additional traffic rights to the Government of Japan as are warranted by the overall balance of benefits at the end of the five year period including the value of the United States traffic rights at Naha."

I have the honor to inform Your Excellency the Government of the United States of America accepts the proposal contained in Your Excellency’s Note which, with this reply, constitutes an agreement between the two Governments further amending the Civil Air Transport Agreement, as amended, which will enter into force on the date administrative rights over Okinawa are returned to Japan.
I avail myself of this opportunity to renew to Your Excellency the assurances of my highest consideration.

Robert S. Ingersoll

His Excellency

TAKEO FUKUDA,

Minister for Foreign Affairs,

Tokyo.

VI. TIAS 8882; 29 UST
Air Transport Services

Agreement amending the agreement of August 11, 1952, as amended.

Effected by exchange of notes
Signed at Tokyo July 26, 1977;
Entered into force July 26, 1977.

The American Ambassador to the Japanese Minister for Foreign Affairs.

Tokyo, July 26, 1977

EXCELLENCY:

I have the honor to refer to the recent consultations on the Civil Air Transport Agreement between the United States of America and Japan, signed on August 11, 1952, as amended on January 14, 1959; December 28, 1965; November 12, 1969 and May 9, 1972, and to propose, on behalf of my Government, that paragraph (A) (4) of the schedule attached to that agreement be amended to read, AFrom Japan to Saipan and Guam.]

I have further the honor to propose that if the foregoing proposal is acceptable to your Government, this Note and Your Excellency's Note in reply indicating such acceptance shall be regarded as constituting an agreement
between our two Governments further amending the Civil Air Transport Agreement, as amended, which will enter into force on the date of Your Excellency's reply.

Accept, Excellency, the renewed assurances of my highest consideration.

MICHAEL J. MANSFIELD

His Excellency

IICHIRO HATOYAMA,

Minister of Foreign Affairs.

Tokyo

VII. 32 UST

Air Transport Services

Memorandum of consultations signed at Tokyo September 20, 1980;

Entered into force September 20, 1980.

MEMORANDUM OF CONSULTATIONS

Representatives of the Government of Japan and the Government of the United States, after consultations, have agreed to record that the following provisional measures will remain in effect until the conclusion of the revision talks on the Civil Air Transport Agreement between the two countries, or December 31, 1982, whichever is earlier, or until otherwise agreed by the two sides.

1. The Government of Japan, upon the filing of schedules with its aeronautical authorities, will promptly authorize an increase in Air
Micronesia’s* services from Saipan to Tokyo of seven round-trip flights per week, using B-727 series aircraft.

The Government of Japan, upon the filing of schedules with its aeronautical authorities, will approve an additional increase in Air Micronesia’s services from Saipan to Tokyo of four more round-trip flights per week using B-727 series aircraft, for implementation on October 1, 1981, or, at Air Micronesia’s discretion, a later date.

2. At a time subject to its discretion, the Government of Japan will permit Air Micronesia to operate seven round-trip flights by B-727 series aircraft per week between Saipan and Nagoya. (It is understood that Air Micronesia will have discretion to operate a lesser number of such round-trip flights and it is further understood that, subject to the provisions of paragraph 3, the total number of additional services in paragraph 1 and this paragraph will not exceed the level of eleven round-trip flights per week.)

3. For all services between Guam/Saipan and Japan, any increase above the present level** of services (or, in the case of Air Micronesia, any increase above the level mentioned in paragraphs 1 and 2), the following procedures will be used: an application for further increases in frequencies by the designated airlines of either country will be submitted in advance for approval by the aeronautical authorities of the other country in accordance with their respective laws and regulations. When such approval is granted, the airline(s) of that other country will be permitted an equal increase in frequencies. The Government of that other country has the sole discretion to

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* As used in this memorandum, “Air Micronesia” means Continental/Air Micronesia or its corporate successor.

** The “present level” with regard to the Japanese designated airline on the Tokyo-Saipan-Guam route means seven round-trip flights per week.
allocate frequencies among its designated airlines. This paragraph is intended to apply to capacity issues and not to affect routes.

4. Upon notification by the Government of Japan that Air Micronesia may operate its services on the Saipan/Nagoya route, the Government of the United States will promptly authorize a Japanese designated airline to commence scheduled cargo services between Tokyo and Chicago at the level of two round trip flights per week.

5. For the purpose of this memorandum, frequencies will be calculated on the basis of narrow-body aircraft according to the following formula: one round-trip frequency using a wide-body aircraft is the equivalent of two round-trip frequencies using narrow-body aircraft.

6. The Government of the United States maintains, as a matter of principle, that Air Micronesia is entitled to serve Osaka, and the provisional measures recorded in this memorandum are without prejudice to that position. The Government of Japan maintains that given the current physical constraints of the Osaka Airport, and taking into account the fact that at present there are already three designated airlines of the US serving Osaka, its legal obligation under the Civil Air Transport Agreement between the two countries is being fulfilled. These provisional measures are also without prejudice to the position of either government on any other issue relating to the provision of air services between Saipan / Guam and Japan.

Takakazu Kuriyama B. Boyd Hight
For the Japanese Delegation For the United States

Toyoichiro Nakada
For the Japanese Aeronautical Authorities
Tokyo, September 20, 1980

VIII. TIAS 10434

Aviation: Transport Services

*Interim agreement relating to the agreement of August 11, 1952, as amended.*

*Effected by exchange of letters*

*Signed at Washington September 7, 1982;*

*Entered into force September 7, 1982.*

*With record of consultations*

*Signed at Washington June 4, 1982.*

*And memorandum of understanding*

*Signed at Washington September 7, 1982*

*With exchange of letters.*

TRANSLATION

Washington, September 7, 1982

Dear Mr. Trent,

With reference to the recent consultations on the Civil Air Transport Agreement between Japan and the United States of America signed at Tokyo, August 11, 1952, as amended (hereinafter referred to as the “Agreement”), and to the Record of Consultations signed at Washington, June 4, 1982, appended hereto, I have the pleasure to propose on behalf of my Government that, with respect to the matters relating to the Agreement, the Government of Japan and the Government of the United States of America shall implement the provisions of the Record of Consultations and that, with respect to routes, the Schedule to the Agreement be thereby provisionally modified accordingly.

I have further the pleasure to propose that if the foregoing proposal is acceptable to your Government, this letter constitute an Interim Agreement
between our two Governments, which will enter into force on the date of your reply and remain in effect for a period of three years or until the date when the negotiations to be reconvened by the end of 1983 in order to review the bilateral civil aviation relations comprehensively and to arrive at an overall balance of benefits under the Agreement are concluded, whichever period is longer.

Sincerely,

Yoshio Okawara

Yoshio Okawara
Ambassador Extraordinary and Plenipotentiary of Japan

The Honourable Darrell M. Trent
Deputy Secretary of Transportation
U.S. Department of Transportation
Washington, D.C.

The Deputy Secretary of Transportation, Department of Transportation, to the Japanese Ambassador
The Deputy Secretary of Transportation
Washington, D.C. 20590

September 7, 1982

His Excellency Yoshio Okawara
Ambassador Extraordinary and Plenipotentiary of Japan
Embassy of Japan
Washington, D.C.
Excellency,

I have the pleasure to acknowledge receipt of your Excellency's letter of September 7, 1982, which reads as follows:

"Dear Mr. Trent,

With reference to the recent consultations on the Civil Air Transport Agreement between Japan and the United States of America signed at Tokyo, August 11, 1952, as amended (hereinafter referred to as the "Agreement"), and to the Record of Consultations signed at Washington, June 4, 1982, appended hereto, I have the pleasure to propose on behalf of my Government that, with respect to the matters relating to the Agreement, the Government of Japan and the Government of the United States of America shall implement the provisions of the Record of Consultations and that, with respect to routes, the Schedule to the Agreement be thereby provisionally modified accordingly.

"I have further the pleasure to propose that if the foregoing proposal is acceptable to your Government, this letter constitute an Interim Agreement between our two Governments, which will enter into force on the date of your reply and remain in effect for a period of three years or until the date when the negotiations to be reconvened by the end of 1983 in order to review the bilateral civil aviation relations
comprehensively and to arrive at an overall balance of benefits under the Agreement are concluded, whichever period is longer.

"Sincerely,

"Yoshio Okawara

"Ambassador Extraordinary and Plenipotentiary of Japan"

In reply, I have the pleasure to reconfirm that the proposal set forth in your letter is acceptable to the Government of the United States of America. My Government further agrees that your letter, together with this reply, shall constitute an Interim Agreement between our two Governments, which will enter into force on the date of this reply and remain in effect for a period of three years or until the date when the negotiations to be reconvened by the end of 1983 in order to review the bilateral civil aviation relations comprehensively and to arrive at an overall balance of benefits under the Agreement are concluded, whichever period is longer.

Sincerely,

Darrell M. Trent
Deputy Secretary of Transportation

Record of Consultations

With respect to the outstanding issues between Japan and the United States of America concerning bilateral civil aviation relations, an interim agreement should be concluded comprising of the following elements:

1 The Government of Japan and the Government of the United States of America should reconvene the negotiations by the end of 1983, in order to
review the bilateral civil aviation relations comprehensively and to arrive at an overall balance of benefits under the Civil Air Transport Agreement signed at Tokyo, August 11, 1952, as amended.

2. The Government of Japan and the Government of the United States of America have agreed on the following provisional measures:

(a) Implementation of the measures and extension of the duration of the measures recorded in the Memorandum of Consultations dated September 20, 1980, modified as follows:

For the United States of America, effective April 1, 1983: Continental/Air Micronesia will be permitted to operate seven round trip flights per week on the basis of narrow body aircraft on a route between Saipan and Nagoya.

For Japan: On a date to be agreed upon later by the two governments, a Japanese designated airline will be permitted to operate scheduled all cargo services on a route between Tokyo and Chicago at the level of two round trip flights per week on the basis of narrow body aircraft.

(b) Other elements

Effective April 1, 1983:

For the United States of America: A U.S. designated airline not currently operating between the U.S. and Japan will be permitted to operate seven round trip combination flights per week on a route between Seattle / Portland and Tokyo.

For Japan: A Japanese designated airline will be permitted to operate five round trip combination flights per week on a route between Tokyo and Seattle / Chicago.

Effective April 1, 1984:
A Japanese designated airline will be permitted to operate two round trip combination flights per week on a route between Tokyo-Los Angeles - São Paulo / Rio de Janeiro with full traffic rights. This does not affect in any way the right that Japan has with regard to the beyond sector that Japan has from Los Angeles under the present schedule to the Agreement; nor does this Record of Consultations in any way affect the right which the U.S. has with regard to the beyond sectors from Japan.

For Both Countries--Effective upon Signature of the Interim Agreement:

(c) 300 one way charter flights per year for the airlines of each country will be permitted to be operated in accordance with country of origin rules.

(d) These provisional measures mentioned in paragraphs (a), (b), and (c) should be maintained for three years after the date of entry into force of the interim agreement, or until the negotiations mentioned in paragraph 1 above are concluded, whichever is later.

Yoshio Hatano
Envoy Extraordinary and Minister Plenipotentiary
Embassy of Japan

Darrell M. Trent
Deputy Secretary
United States Department of Transportation

Washington, D.C.
June 4, 1982

Memorandum of Understanding

With respect to the Record of Consultations signed June 4, 1982, representatives of the Government of the United States of America and the Government of Japan agreed to record that the charter provision of the Record of Consultations, together with other relevant provisions of the
Record of Consultations, shall be implemented effective September 7, 1982. Such charter operations will be permitted to commence on October 1, 1982.

For the Government of the United States of America:

Darrell M. Trent
Deputy Secretary of Transportation

For the Government of Japan

Yoshio Okawara
Ambassador Extraordinary and Plenipotentiary of Japan
Washington, D.C.
September 7, 1982

September 7, 1982

His Excellency Yoshio Okawara
Ambassador Extraordinary and Plenipotentiary of Japan
Embassy of Japan
Washington, D.C.
Excellency:

It is the understanding of the Government of the United States of America that, with respect to the Memorandum of Understanding dated September 7, 1982, its aeronautical authorities retain the sole discretion to allocate among United States airlines 300 one-way charter flights per year to be operated by such airlines.

I should be grateful for your confirmation that this is also the understanding of the Government of Japan.

Sincerely
Darrell M. Trent
Deputy Secretary of Transportation
Washington, September 7, 1982

Dear Mr. Trent:

This is to confirm that it is the understanding of the Government of Japan, that with respect to the Memorandum of Understanding dated September 7, 1982, the aeronautical authorities of the United States of America retain the sole discretion to allocate among United States airlines 300 one-way charter flights per year to be operated by such airlines.

Sincerely,

Yoshio Okawara
Ambassador Extraordinary and Plenipotentiary of Japan

The Honorable Darrell M. Trent
Deputy Secretary of Transportation
U.S. Department of Transportation
Washington, D.C.

IX.
Bonn, May 1, 1985
His Excellency Shintaro Abe
Minister for Foreign Affairs of Japan
Excellency,

I have the honor to acknowledge receipt of Your Excellency's note of today's date, which reads as follows:
"Excellency,

I have the honor to refer to the consultations on the Civil Air Transport Agreement between Japan and the United States of America signed at Tokyo, August 11, 1952 as amended (hereinafter referred to as the "Agreement", and to the Memorandum of Understanding signed at Tokyo, April 30, 1985, appended hereto.

I have further the honor to confirm agreement, on behalf of the Government of Japan, to the provisions on matters relating to the agreement contained in the said Memorandum of Understanding.

I shall be grateful if Your Excellency would provide the same confirmation on behalf of the Government of the United States of America.

I avail myself of this opportunity to renew to Your Excellency the assurance of my highest consideration."

I have further the honor to confirm agreement, on behalf of the Government of the United States of America, to the provisions on matters relating to the Agreement contained in the Memorandum of Understanding referred to in Your Excellency's note.

I avail myself to this opportunity to renew to Your Excellency the assurance of my highest consideration.

George P. Shultz

DEPARTMENT OF STATE
DIVISION OF LANGUAGE SERVICES

Honorable George P. Shultz
Secretary of State of the United States of America
I have the honor of referring to the consultations regarding the Civil Air Transport Agreement (i.e. amended, hereinafter called the "Agreement") between the United States of America and Japan, signed in Tokyo on August 11th, 1951, and to the Memorandum of Understanding signed in Tokyo on April 30th, 1985, attached to this letter.

Furthermore, on behalf of the Government of Japan I have the honor of confirming our acceptance of the provisions regarding the Agreement as contained in the Memorandum of Understanding.

I would be happy if your Excellency would confirm your acceptance on behalf of the Government of the United States.

I have the honor of expressing to your Excellency the Assurance of my highest consideration.

Foreign Minister of Japan

May, th, 1985 in Bonn.

MEMORANDUM OF UNDERSTANDING

Delegations representing the Governments of the United States of America and Japan met in Tokyo on April 29 and 30, 1985, and agreed to record the following provisions, which constitute either understandings relating to implementation of the bilateral Civil Air Transport Agreement signed at Tokyo on August 11, 1952, as amended, or amendments of the Schedule attached to the Agreement. These provisions constitute an interim arrangement, pending conclusion of the comprehensive revision talks.

I. Cargo Services
1. With regard to the commencement of operations to the United States by Nippon Cargo Airlines (NCA), effective until September 6, 1985, or the conclusion of the comprehensive revision talks, whichever is later:

NCA will be permitted to operate six (6) wide-body round trip all-cargo flights per week on a route between Tokyo-San Francisco/New York as of May 1, 1985.

NCA may increase its frequencies from April 1, 1986 by a percentage equal to the percentage increase in the total air cargo traffic between Japan and the United States for the period January 1, 1985 to December 31, 1985 over the total air cargo traffic for the period January 1, 1984 to December 31, 1984, and similarly for each succeeding year. Any increased frequencies that become available and are not used may be banked.

Note: The capacity increase will be calculated on the basis of statistics exchanged in accordance with the Agreed Minute dated January 14, 1959. Statistics of a particular month will be submitted within 60 days from the end of the month. At the request of either side, the aeronautical authorities of both countries will hold consultations in the first quarter of the year to study them.

2. (a) Subject to the provisions of Notes 2 and 6 of paragraph III of this Memorandum of Understanding, either side may designate an airline not operating scheduled services in the U.S.-Japan market at the time of such designation to operate exclusively a small package service between any point in Japan and any point in the United States commencing no sooner than April 1, 1987, subject to the following:
(i) For the United States, the air transportation portion of this service may be operated between Tokyo and any point in the United States, except that Chicago shall not be the last point of departure or the first point of arrival in the United States.

(ii) For Japan, the air transportation portion of this service may be operated between any point in Japan and a point in the United States available to the designated airlines of Japan for combination service under the Agreement or this Memorandum of Understanding other than Chicago.

(iii) Individual packages shall not exceed a gross weight of 70 pounds each.

(iv) There shall be a separate airwaybill, issued under the name of the airline operating such service, for each package.

(v) There shall be no restriction as to aircraft type.

(vi) The airline shall be permitted to charge shippers a single through price for the air and surface portions of the service. This does not preclude any requirement that airlines file separate tariffs for the air and surface portions of the service with the appropriate authorities.

(vii) Nothing herein may be deemed to prejudice the rights of any other designated airline to provide expedited small package service or to operate the air transportation portion of this service between any points which the airline is otherwise permitted to serve.

(b) In order to facilitate the expeditious movement from shipper to consignee, which represents the principal characteristic of this
service, the two sides agree to exert their best efforts to provide the most expeditious treatment of small package shipments.

II. Japan-Micronesia Routes.

Each side will permit the following number of designated airlines of the other side to operate on the routes specified below as of May 1, 1985. Subject to Note 1 concerning the future negotiations of "beyonds," as far as the routes between Japan and Micronesia and the number of airlines permitted to serve them are concerned, it is the intention of both sides that this table will be incorporated without change into the revised Civil Air Transport Agreement between the two countries.

<table>
<thead>
<tr>
<th>Route</th>
<th>JAPAN</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOKYO-GUAM/SAIPAN</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>OSAKA-GUAM/SAIPAN</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>NAGOYA-GUAM/SAIPAN</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>FUKUOKA-GUAM/SAIPAN</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>NAHA-GUAM/SAIPAN</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

For a three-year experimental period commencing May 1, 19485, the capacity on the above routes (excluding Naha-Guam/Saipan and Fukuoka-Guam/Saipan) will be governed according to the provisions in Attachment A. It is understood by both sides that with respect to the Naha-Guam/Saipan and Fukuoka-Guam/Saipan routes, capacity is subject to the Agreed Minute on capacity dated January 14, 1959.

This Memorandum of Understanding supersedes provisions relating to Guam, Saipan, and Micronesia operations in the Agreed Minutes,

Note 1: The "beyond" issue is to be negotiated in the comprehensive revision talks.

Note 2: The U.S. side will withdraw the designation of TWA on route (B) (2) of the Schedule.

Note 3: Notwithstanding the May 1, 1985 start-up date, the Fukuoka-Guam/Saipan route will not be available to the airlines of either side until April 1, 1987, and the Tokyo-Saipan route segment will not be available until April 1, 1988 to the second airline designated by either side for the Tokyo-Guam/Saipan route.

III. New Combination Service

The two sides have agreed to take the following interim measures pending the conclusion of a new Civil Air Transport Agreement between the two countries.

1. Each side will permit presently operating or newly designated airlines of the other side to operate new combination services under either subparagraph (a) or (b), but not both, as of April 1, 1986:

(a) On three out of the five routes specified below:

(i) NAGOYA-HONOLULU
(ii) TOKYO-HONOLULU
(iii) TOKYO-PORTLAND
(iv) TOKYO-one point in the United States not served as a non-stop gateway point by the airlines of either side as of April 1, 1985.
(v) TOKYO-another point in the United States not served as a non-stop
gateway point by the airlines of either side as of April 1, 1985.
(b) on three out of the four routes specified below:
(i) NAGOYA-HONOLULU
(ii) TOKYO-LOS ANGELES
(iii) Tokyo-one point in the United States not served as a nonstop
gateway point by the airlines of either side as of April 1, 1985.
(iv) TOKYO-another point in the United States not served as a nonstop
gateway point by the airlines of either side as of April 1, 1985.
2. Total frequencies for the airlines on each side on the new combination
services specified above may not exceed ten (10) frequencies a week beginning
April 1, 1986, eighteen (18) a week beginning April 1, 1987, twenty (20) a week
beginning April 1, 1988 and twenty-one (21) a week beginning April 1, 1989,
respectively.

Frequencies to be provided by an airline for these new combination
services on any route will not exceed seven (7) per week.

Note 1: Each side may authorize the same or a different airline to
operate on each of the routes. Not more than one additional airline for
each side will be permitted to operate a new service on each of these
routes.

Note 2: If either side designates an airline to operate a small package
service as provided by subparagraph 2, paragraph I of this
Memorandum of Understanding, it may select only two combination
services under subparagraph 1 above. It may, nevertheless, thereafter
designate a third airline for either combination service or exclusively
small package service under this section in substitution for the airline
designated for the small package service.
Note 3: Each side may select its routes and, upon six month’s notice to the other side, may change its selection.

Note 4: These points may be used as coterminals, and in that case, the airline serving them is deemed to operate each of the routes.

Note 5: Each side may select the new point in the United States to be served by its designated airline, and upon six month’s notice to the other side, may change the point.

Note 6: If either side designates an airline to operate a small package service as provided by subparagraph 2, paragraph I of this Memorandum of Understanding, the number of frequencies available to that airline for small package service will be drawn from the total number of frequencies provided by this section but will not exceed seven (7) per week.

IV. Doing-Business Issues

The two sides discussed a number of doing-business issues including the questions of whether the number of flights of an airline must be balanced east-bound and west-bound and the use of dry-leased aircraft. They shared the view that regulations applicable to such subjects would be governed by the following understanding: In order to ensure that each designated airline of either side will enjoy an opportunity to exercise maximum management discretion in operating the agreed services, free as much as possible from government regulation, the aeronautical authorities of both sides will make their utmost efforts, within the framework of their domestic laws, to minimize doing-business restrictions on the airlines of both countries arising from economic regulations. This understanding will not apply, however, to
exclusively environmental or safety regulations applied in a non-discriminatory manner.

The aeronautical authorities of both countries will consult closely and frequently in order to solve the issues which may arise in the process of applying such economic regulations. With this in mind, the two sides shared the view that an eastbound-westbound balance rule, and any regulation which significantly restricts the use of dry-leased aircraft such as repainting, will not be applied absent the agreement of both sides.

V. General Provisions

1. The opportunities granted by this Memorandum of Understanding will not derogate in any way from the rights available under the authorizations granted by the designating sides as of April 1, 1985 to the designated airlines currently operating under the U.S.-Japan Civil Air Transport Agreement of 1952, as amended. Notwithstanding the previous sentence, combination services on the routes specified in paragraph II of this Memorandum of Understanding will be governed exclusively by that paragraph.

2. The two sides agree that, at the request of either side, the aeronautical authorities of both countries will hold consultations in order to ensure flexible implementation of this Memorandum of Understanding.

3. The two sides reaffirm their obligation to provide all designated airlines a fair and equal opportunity to operate the agreed services. This requires that a fair and equal competitive opportunity be available to all designated airlines. These principles are applicable to passenger and cargo services under the 1952 bilateral Agreement, and should be applied to commercial activities necessary to market such services.
4. The United States indicated that it is currently engaged in intensive study of the question of competitive conditions in cargo transportation between Japan and the United States. While some study has been completed, further study is continuing. If, as a consequence of the completion of this work, the United States is of the view that any part of this Memorandum of Understanding is inconsistent with conclusions reached in the course of the intensive study, the United States may request consultations with Japan. Such request for consultations would be made no later than July 31, 1985, for the purpose of holding such consultations within 30 days of the request. Through these consultations the two sides may modify this Memorandum of Understanding in light of the conclusions resulting from the study. If the two sides are unable to agree to such a modification, either side may, prior to September 30, 1985, suspend its implementation of this Memorandum of Understanding, pending agreement on modifications, in which event the other side may do likewise.

5. Nothing herein prejudices each side’s interpretation of the rights and obligations under the 1952 bilateral Agreement.

This Memorandum of Understanding is effective upon signature.

Makoto Watanabe
for the Delegation of Japan

Franklin K. Willis
for the Delegation of the
United States of America

Sumio Shioda
for the Aeronautical Authorities of
Japan

Tokyo, April 30, 1985

ATTACHMENT A

EXPERIMENTAL CAPACITY ARRANGEMENT FOR
TOKYO/OSAKA/NAGOYA TO GUAM/SAIPAN
1. Each side will permit the airlines of the other side to operate the following number of seats or flights, at the discretion of that other side, in the markets indicated, according to the following table:

<table>
<thead>
<tr>
<th>Markets</th>
<th>Total Base Weekly Flights or Seats</th>
<th>Seats in Each Direction</th>
<th>Round Trip Flights</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOKYO-GUAM/SAIPAN</td>
<td></td>
<td>4,500</td>
<td>or</td>
</tr>
<tr>
<td>OSAKA / NAGOYA-GUAM/SAIPAN</td>
<td></td>
<td>2,000</td>
<td>34</td>
</tr>
</tbody>
</table>

2. In the first quarter of 1986, and each year thereafter for the duration of this Experimental Capacity Arrangement, the aeronautical authorities of both countries will meet to determine appropriate capacity increases for specific markets, commencing the following April 1. Among the factors which may be considered as guidelines is, inter alia, whether the average aggregate load factor of all the airlines of the side seeking the increase is greater than 65% during the previous January-December period. Capacity increases permitted for each side on April 1, 1986, and again on April 1, 1987, will not be less than three (3) flights or 500 seats per week. The designated airlines of one side may match the capacity increase authorized for the airlines of the other side under this paragraph without regard to specific markets.

3. As an aid to these determinations, the two sides will exchange statistics for these markets in accordance with the Agreed Minute dated January 14, 1959. Statistics of a particular month, in accordance with the bi-monthly reporting under the 1959 Agreed Minute, will be submitted within 60 days from the end of the month.
4. This Arrangement will apply for an experimental three-year period from May 1, 1985 through March 31, 1988.

Note 1: The following equivalencies will apply for the purpose of counting flights:

- B-727, B-707, DC-8 or equivalent sized aircraft: 1
- DC-10, L-1011 or equivalent sized aircraft: 1.5
- B-747: 2

Note 2: Extra sections will not be included.

Embassy of the United States of America
April 30, 1985

Mr. Makoto Watanabe
Deputy Director General
North American Affairs Bureau
Ministry of Foreign Affairs
Tokyo, Japan

Dear Mr. Watanabe:

By this letter I am confirming our understanding that nothing in the Memorandum of Understanding signed in Tokyo on April 30, 1985 may be deemed to affect the existing beyond rights currently exercised by the designated airlines of the United States between Japan and Guam/Saipan under the Civil Air Transport Agreement of 1952, as amended.

Sincerely your,

Franklin K. Willis
Deputy Assistant Secretary for
Transportation and Telecommunication Affairs
Department of State
Embassy of the United States of America
April 30, 1985

Mr. Makoto Watanabe
Deputy Director General
North American Affairs Bureau
Ministry of Foreign Affairs
Tokyo, Japan

Dear Mr. Watanabe:

As you know, our two governments have devoted substantial attention to the question of all-cargo air service between our two countries. One critical element in the all-cargo picture relates to ground-handling, terminal space, and other facilitation issues. We have, in the past, addressed such issues on a case-by-case basis and, through mutual cooperation and understanding, worked out satisfactory accommodations when necessary.

It is essential that we address such issues in a systematic way, and that, as our comprehensive revision talks proceed, we accord them the very high priority that they deserve. A mutually satisfactory resolution of such issues will be an essential element of any final agreement.

In order to address these issues more systematically in the future and to ensure that they receive high priority treatment, I propose that the two sides discuss the establishment of a special working group comprised of appropriate government officials and industry representatives. As we continue the comprehensive revision talks, the special working group will examine the various ground handling questions which arise in our basis to both delegations. The special working group would enhance the prospects of
resolving these important issues within the framework of the comprehensive revision talks in a prompt and effective manner.

Sincerely your,
Franklin K. Willis
Deputy Assistant Secretary for
Transportation and Telecommunication Affairs

Ministry of Foreign Affairs
Tokyo, Japan

April 30, 1985

Mr. Franklin K. Willis
Deputy Assistant Secretary
for Transportation and Telecommunication Affairs
Department of State
Washington, D.C. 20520

Dear Mr. Willis:

This is to acknowledge the receipt of your letter of this date regarding the importance of ground handling issues to our overall air transportation relationship, in which you propose that we discuss the establishment of a special working group for the purpose of helping to achieve a mutually satisfactory resolution of such issues.

I share your view that such issues deserve high priority attention during the comprehensive revision talks and that the discussion of the establishment of a special working group is warranted as one possible means of facilitating a mutually satisfactory resolution.

Sincerely,
His Excellency Shintaro Abe
Minister of Foreign Affairs of Japan

Excellency,

I have the honor to acknowledge receipt of Your Excellency's note of today's date, which reads as follows:

"Excellency,

I have the honor to refer to the consultations on the Civil Air Transport Agreement between Japan and the United States of America signed at Tokyo, August 11, 1952 as amended (hereinafter referred to as the "Agreement"), and to the Memorandum of Understanding signed at Tokyo, April 30, 1985, appended hereto.

I have further the honor to confirm agreement, on behalf of the Government of Japan, to the provisions on matters relating to the Agreement contained in the said Memorandum of Understanding.

I shall be grateful if you would provide the same confirmation on behalf of the Government of the United States of America.

I avail myself of this opportunity to renew to you the assurances of my highest consideration."

I have further the honor to confirm agreement, on behalf of the Government of the United States of America, to the provisions on matters
relating to the Agreement contained in the Memorandum of Understanding referred to in Your Excellency’s note.

I avail myself of this opportunity to renew to Your Excellency the assurances of my highest consideration.

George P. Shultz

X.

Department of State, Washington

December 27, 1989

Excellency:

I have the honor to acknowledge the receipt of Your Excellency’s Note of today’s date, which reads as follows:

"Excellency:

I have the honor to refer to the recent consultations on the Civil Air Transport Agreement between Japan and the United States of America signed at Tokyo, August 11, 1952, as amended (hereinafter referred to as the "Agreement"), and to the Memorandum of Understanding signed at Tokyo, November 6, 1989, appended hereto.

I have further the honor to propose, on behalf of the Government of Japan, that the provisions on matters relating to the Agreement contained in the said Memorandum of Understanding shall be implemented and that, with respect to routes, the Schedule to the Agreement be provisionally modified accordingly.

If the above proposal is acceptable to the Government of the United States of America, it is suggested that this Note and Your Excellency’s reply to that effect shall constitute an Interim Agreement
between the Government of Japan and the Government of the United States of America on this matter, which will enter into force on the date of your Excellency’s reply, and that the said Memorandum of Understanding will enter into force on the date of Your Excellency’s reply to this Note.

I avail myself of this opportunity to extend to Your Excellency the assurance of my highest consideration.”

I have the honor to inform Your Excellency that the Government of the United States of America accepts the above proposal of the Government of Japan and to confirm that Your Excellency’s Note and this reply shall constitute an Interim Agreement between the two Governments on this matter, which will enter into force on the date of this reply.

I have further the honor to confirm that the Memorandum of Understanding referred to in Your Excellency’s Note will enter into force on the date of this Note.

Accept, Excellency, the assurances of my highest consideration.

For the Secretary of State:

His Excellency

Ryohei Murata

Ambassador of Japan.

MEMORANDUM OF UNDERSTANDING

Delegations representing the Government of Japan and the Government of the United States of America met in Tokyo from October 30, through November 6, 1989, and agreed to record the following provisions, which constitute either understanding relating to implementation of the
bilateral Civil Air Transport Agreement signed at Tokyo on August 11, 1952 (hereinafter referred to as the "Agreement"), as amended, or amendments of the Schedule attached to the Agreement. These provisions constitute an interim arrangement, pending conclusion of the comprehensive revision talks.

This Memorandum of Understanding (hereinafter referred to as the "1989 MOU") shall become effective by the exchange of diplomatic notes between the Government of Japan and the Government of the United States of America.

I. COMBINATION SERVICES

A. U.S.-Japan Combination Services

Each side may designate an airline or airlines to operate on three (3) U.S.-Japan city pair routes. The United States may designate only one (1) airline per city pair route. Japan may designate two (2) airlines per city pair route, in which case the number of city pair routes available to Japanese airlines under this paragraph shall be reduced by one (1). The frequencies to be provided on any city pair route by an airline shall not exceed seven (7) flights per week. The frequencies to be provided pursuant to this paragraph shall count toward the total frequencies referred to in section III below. Each side may select the city pairs for its airlines designated pursuant to this paragraph and, upon six months' notice to the other side, may change the selection.

B. Tokyo-Seattle/Chicago Services

A Japanese airline designated pursuant to the Record of Consultations signed on June 4, 1982 (hereinafter referred to as the "1982 ROC"), may increase the number of its weekly flights on the Tokyo-Seattle/Chicago route
from five (5) to seven (7). The increase in frequencies to be provided pursuant to this paragraph shall count toward the total frequencies referred to in section III below.

C. Services to Points other than Tokyo and Osaka

Each side may designate an airline or airlines to operate nonstop combination services on three (3) city pair routes between any point in the United States and any point in Japan other than Tokyo and Osaka. Each side may designate only one (1) airline on any city-pair route. The frequencies to be provided on any city pair route by an airline under this paragraph shall not exceed seven (7) flights per week. Each side may select the city pairs for its airlines designated pursuant to this paragraph and, upon six month’s notice to the other side, may change the selection.

D. Services to Points in the United States not receiving Single Plane Service to Japan

Designated airlines of Japan shall be permitted to serve a total of three (3) points in the United States on a one-stop basis via any point in the United States that the airline is authorized to serve, provided that the new point to be served is not receiving services of a U.S. airline by a single airplane between the United States and Japan. The frequencies to be provided to each of the three points shall not exceed seven (7) flights per week. The Japanese side may select the new points in the United States for its designated airlines and, upon six months’ notice to the U.S. side, may change the selection.

E. Services to Guam/Commonwealth of the Northern Mariana Islands

The following shall govern services between points in Japan on the one hand and, on the other hand, Saipan in the Commonwealth of the Northern Mariana Islands and Guam.
1. In addition to the provisions of the Memorandum of Understanding signed on April 30, 1985 (hereinafter referred to as the "1985 MOU") that permit each side to designate two (2) airlines on the Guam/Saipan-Tokyo and the Guam/Saipan-Osaka routes and one (1) airline on the Guam/Saipan-Nagoya, the Guam/Saipan-Fukuoka, and the Guam/Saipan-Naha routes, each side may designate a second airline to operate services on the following routes:

   Guam/Saipan-Nagoya
   Guam/Saipan-Fukuoka
   Guam/Saipan-Naha

2. Each side may designate an airline or airlines to operate services between Guam/Saipan and any two points in Japan other than Tokyo, Osaka, Nagoya, Fukuoka, and Naha. Each side may designate one (1) airline to serve each of these two points. Each side may select the new points in Japan for its airlines designated pursuant to this subparagraph and, upon six months' notice to the other side, may change the selection.

F. Services to Alaska

1. **Stopped with Traffic Rights.** Any airline designated to operate combination services between the United States and Japan shall be permitted to make a stop with traffic rights at any point(s) in Alaska on any or all flights.

2. **Routes.** Each side may designate an airline to operate combination services on a turnaround basis between a point in Alaska and a point in Japan other than Tokyo and Osaka. The frequencies to be provided under this subparagraph shall not exceed seven (7) flights per week. Each side may select the points for its airline and, upon six months' notice to the other side, may change the selection.
This provision for Japan-Alaska services does not preclude either side from designating an airline or airlines to operate on a Japan-Alaska route under the provisions of paragraphs IA and IC above.

II. ALL-CARGO SERVICES
A. U.S. All-Cargo Services
1. New Services. The U.S. side may designate an additional airline not operating scheduled all-cargo services to Japan as of November 6, 1989, to operate all cargo services on one (1) U.S.-Japan city pair route. The frequencies to be provided under this subparagraph shall not exceed seven (7) flights per week. The frequencies to be provided pursuant to this subparagraph shall count toward the total frequencies referred to in section III below. The U.S. side may select the city-pair for its airline designated pursuant to this subparagraph and, upon six month's notice to the Japanese side, may change the selection.

2. Services to a Point in Japan by a Designated Airline Under the Agreement. One (1) U.S. airline designated under the agreement may operate all-cargo services up to seven (7) frequencies per week to (1) additional point in Japan to be selected from Sapporo, Nagoya, and Fukuoka as a coterminous with Tokyo, Osaka, or Naha, provided that services to this additional point, if coterminized with Tokyo or Osaka, shall not result in a net increase in the use of slots at Tokyo or Osaka. The U.S. side may select the point and, upon six month's notice to the Japanese side, may change the selection. Services shall not be operated beyond Sapporo, Nagoya, or Fukuoka. However, if Sapporo, Nagoya or Fukuoka is served as an intermediate point on a flight between the United States and Tokyo, Osaka, or Naha, the airline may operate
beyond Tokyo, Osaka, or Naha to other points, but without traffic rights between Sapporo, Nagoya, or Fukuoka and any points served beyond Japan.

B. Japanese All-Cargo Services

1. Routes. Japan Airlines (hereinafter referred to as "JAL") may operate all-cargo services to Chicago, which may be coterminous with the points in the United States that it is authorized to serve. Nippon Cargo Airlines (hereinafter referred to as "NCA") may operate all-cargo services to Chicago and Los Angeles, which may be coterminous with New York and San Francisco, respectively. The frequencies to Chicago by JAL and to Chicago and Los Angeles by NCA to be provided pursuant to this subparagraph shall count toward the total frequencies referred to in section III below.

2. Frequency Limitations. The following frequency limitations shall apply to services under subparagraph 1 above:

(a) The two airlines shall not serve Chicago on more that eight (8) all-cargo flights per week in total;

(b) The frequencies of services by NCA to points in the United States, in addition to those available under the 1985 MOU, shall not exceed six (6) flights per week;

(c) The frequencies by NCA under subparagraph (b) above shall not be included in the calculations of the level of frequencies for NCA under paragraph II of the 1985 MOU; and

(d) Any flight by NCA to New York or to San Francisco, whether or not such flight also serves Chicago or Los Angeles, shall count toward the frequency limitation to which NCA is subject under the 1985 MOU.

III. FREQUENCY LIMITATIONS
The total weekly frequencies for operation of the services permitted under paragraphs IA, IB, and IIB, and subparagraphs IIA1 above shall be twenty-four (24) flights for the United States and twenty-three (23) flights for Japan.

IV. CHARTER SERVICES

In addition to the number of U.S. charter flights authorized under the 1982 ROC, U.S. airlines will be permitted to operate by using unused Japanese charter authorizations under the said ROC, beginning with the 1989/1990 charter year (October 1 through September 30). In each charter year, an annual authorization of one hundred (100) additional one-way flights, which may be operated between points in the United States and points in Japan other than Tokyo and Osaka, will be permitted for U.S. airlines.

In addition, if at the end of a charter year, Japanese airlines have not operated more than two hundred (200) of the three hundred (300) charters, U.S. airlines will be permitted to operate in the following charter year a number of charter flights equal to the difference between the number of charter flights actually operated by Japanese airlines and two hundred (200), up to a maximum of fifty (50) flights, between points in the United States and points in Japan other than Tokyo and Osaka. The aeronautical authorities of Japan will provide to the aeronautical authorities of the United States an estimate of the number of additional unused charter authorizations to be given to U.S. airlines prior to commencement of the U.S. Department of Transportation’s annual allocation proceeding. Discrepancies between the Japanese aeronautical authorities’ estimate and actual experience will be adjusted in the following charter year.
For charter year 1989/1990, application of the provisions of this section will result in U.S. entitlement to a total of four hundred and fifty (450) charters, one hundred and fifty (150) of which may be operated to points in Japan other than Tokyo and Osaka.

V. AIRPORTS NOT RECEIVING U.S.-JAPAN SCHEDULED SERVICES

The two sides will meet during calendar year 1990 to discuss the promotion of development of regional airports not currently receiving scheduled U.S.-Japan services.

VI. GENERAL PROVISIONS

A. Effective Dates

Services to be provided under paragraph IE above will be made available on the date of the entry into force of the 1989 MOU.

The use by U.S. airlines of unused Japanese charter authorizations as provided in section IV above will be made available beginning January 1, 1990.

All the other services will be made available beginning October 1, 1990.

In the event that entry into force of the 1989 MOU occurs after any of the above-mentioned dates, the applicable services will be made available on the date of entry into force of the said MOU.

B. Rights of Airlines

The opportunities granted by the 1989 MOU will not derogate in any way from the rights available under the authorizations granted by the designating sides as of November 6, 1989, to the designated airlines currently operating under the Agreement, as amended.

C. Interim Nature of the Agreement
The two sides recognize the interim nature of the arrangement set forth in the 1989 MOU pending conclusion of the comprehensive revision talks. The two sides intend to resume talks at an appropriate time.

D. Interpretations of Rights and Obligations

Nothing herein prejudices each side's interpretation of the rights and obligations under the Agreement, as amended.

E. Further Consultations

The two sides will hold consultations on additional opportunities by March 31, 1991.

Charles Angevine
For the Delegation of the United States of America

Atsushi Tokinoya
For the Delegation of Japan

Mizuho Ogane
For the Aeronautical Authorities of Japan

Tokyo, November 6, 1989
TABLES

Table 1. Number of Passengers (thousands) on scheduled and charter service between the United States and Japan, 1984.

<table>
<thead>
<tr>
<th>Between and Japan and</th>
<th>Total</th>
<th>U.S. citizens</th>
<th>Foreign nationals</th>
<th>U.S. Carriers</th>
<th>Foreign Carriers</th>
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<td>Total</td>
<td>4404</td>
<td>1357</td>
<td>3047</td>
<td>2122</td>
<td>2282</td>
</tr>
<tr>
<td>(Percent)</td>
<td>(31)</td>
<td>(69)</td>
<td>(48)</td>
<td>(52)</td>
<td></td>
</tr>
<tr>
<td>Guam</td>
<td>521</td>
<td>43</td>
<td>478</td>
<td>215</td>
<td>306</td>
</tr>
<tr>
<td>(Percent)</td>
<td>(9)</td>
<td>(91)</td>
<td>(41)</td>
<td>(59)</td>
<td></td>
</tr>
<tr>
<td>Honolulu</td>
<td>1631</td>
<td>228</td>
<td>1403</td>
<td>611</td>
<td>1020</td>
</tr>
<tr>
<td>(Percent)</td>
<td>(14)</td>
<td>(86)</td>
<td>(37)</td>
<td>(63)</td>
<td></td>
</tr>
<tr>
<td>Mainland</td>
<td>2252</td>
<td>1086</td>
<td>1166</td>
<td>1296</td>
<td>956</td>
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<tr>
<td>(percent)</td>
<td>(48)</td>
<td>(52)</td>
<td>(58)</td>
<td>(42)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Fisher 58. Source: Northwest Airlines (from DOT US International Air Travel Statistics.)

Table 2. Number of Passengers (Thousands) on Scheduled Service between the United States and the Far East, 1984

<table>
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<tr>
<th>Between/And</th>
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<th>Guam</th>
<th>Mainland</th>
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<td>2128</td>
<td>551</td>
<td>3693</td>
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<td>1516</td>
<td>498</td>
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<td>557</td>
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<td>Korea</td>
<td>526</td>
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<td>1</td>
<td>423</td>
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<td>Taiwan</td>
<td>352</td>
<td>91</td>
<td>15</td>
<td>246</td>
</tr>
<tr>
<td>Philippines</td>
<td>330</td>
<td>182</td>
<td>33</td>
<td>115</td>
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<tr>
<td>India</td>
<td>140</td>
<td>-</td>
<td>-</td>
<td>140</td>
</tr>
<tr>
<td>Singapore</td>
<td>99</td>
<td>55</td>
<td>-</td>
<td>44</td>
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<td>PRC</td>
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<td>-</td>
<td>-</td>
<td>70</td>
</tr>
<tr>
<td>Thailand</td>
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<td>Malaysia</td>
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<td>-</td>
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</table>

Source: Fisher 58. Source: Northwest Airlines (from Immigration and Naturalization Service Form 92.)

Table 3. 1984 Market Shares (Percent ) in Transpacific Travel

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<thead>
<tr>
<th>Carrier</th>
<th>Share: Mainland-Far East</th>
<th>Share: Mainland-Japan</th>
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<tr>
<td>Northwest Airlines</td>
<td>27.5</td>
<td>31.3</td>
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<tr>
<td>Japan Airlines</td>
<td>21.9</td>
<td>33.5</td>
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<tr>
<td>Pan American</td>
<td>18.5</td>
<td>19.3</td>
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<tr>
<td>Korean Air</td>
<td>9.3</td>
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<tr>
<td>United Airlines</td>
<td>7.3</td>
<td>7.0</td>
</tr>
<tr>
<td>China Airlines</td>
<td>6.8</td>
<td>1.4</td>
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Singapore Airlines 2.9 3.1
Thai Airways International 2.2 1.9
CAAC 1.6 -
Philippine Airlines 1.3 1.4
VARIG 0.6 1.0
Herfindal-Hirschman Index 1782 2548

Source: Fisher 60. Source: Immigration and Naturalization Services.

### Table 4. Japan Airlines: Fleet and Personnel.

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<td>93</td>
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<td>7950</td>
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### Table 5. Northwest Airlines: Fleet and Personnel.

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
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