

AIR TRANSPORTATION POLICY FOR SMALL COMMUNITIES: LESSONS FROM THE U.S. EXPERIENCE

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Abstract

The last decades have witnessed a global trend toward airline deregulation, which has significant impacts on national policies regarding air accessibility to smaller communities. One important result of this liberalisation is that carriers are no longer constrained to serve routes, and may thus neglect service to less profitable destinations with lower traffic. Economic deregulation can therefore have detrimental effects on smaller communities. The United States has dealt with this issue through its Essential Air Service program. Its experience suggests lessons for other countries. U.S. policies have been reasonably successful in sustaining basic air service to smaller communities over the past thirty years of deregulation. Moreover, they have done so relatively effectively and efficiently. A large-scale analysis of the U.S. experience, and three case studies of the communities of Columbia and Jefferson City (Missouri), Rutland (Vermont), and Merced (California) demonstrate this phenomenon. The results show overall gains in efficiency, mostly attributable to the US policy of encouraging competition between air carriers seeking to provide service to small communities. The major flaw in the U.S. arrangements seems to be that the policies have not kept up with changing conditions since deregulation in 1978.

Key words: Aviation policy, Deregulation, Small communities, Essential Air Service.

1. INTRODUCTION

Ensuring equitable air service to remote population effectively and efficiently is a common concern to nations worldwide. In the present economy, the viability of a region is highly dependent on its accessibility, while economic development increasingly relies in air

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transportation, which sustains the movement of persons, goods, and tourism activity (Ishutkina and Hansman, 2008). This thus justifies Governmental attention to provide accessibility to all regions of their territory, to promote economic development, social equity and national cohesion.

Some of the benefits that air service brings to communities commonly mentioned in the literature include greater access to the global air transportation network, increased business investment and market development possibilities for businesses (Nolan et al., 2005), productivity gains, increased local employment, and tourism. Air transportation moves products quickly over long distances, enhancing timely delivery of goods and services, and enabling economic and social interaction among communities. Moreover, its distinctive characteristics – speed, cost, flexibility, reliability and safety, make it often the only means of access for geographically more remote regions.

In the U.S. until the late 1970s, airline regulation guaranteed that small communities were included in the national transportation network. The liberalization of the industry, through the Airline Deregulation Act of 1978 (ADA), released carriers from route obligations. Smaller communities might thus be overlooked by airlines seeking economically profitable denser markets. The concern for prospective detrimental impacts in these communities led to the creation of the Essential Air Service program (EAS) – a route subsidization system associated with a competitive bidding process, implemented in 1979.

This paper evaluates the performance of the EAS program according to the criteria of effectiveness and efficiency. Effectiveness is defined as the ability of the system to provide the quality service as indicated by frequency, schedule, and connectivity. Efficiency is commonly measured by the ratio of outputs to inputs. Efficiency here was assessed in terms of costs, given the relatively constant or slightly improved policy results. It was also assumed that costs can be estimated by levels of subsidy and airfares. Outcomes of the U.S. system are analysed in terms of overall results, as well as in the particular perspective of a multiple case-study design. The purpose of the paper is not to present an economic assessment, but to learn from experiences under deregulated conditions.

General observation of the thirty year-old experience indicates that EAS has succeeded in providing small communities with basic air service, fairly effectively and efficiently.

In the case-study featuring the communities of Columbia and Jefferson City (Missouri), we demonstrate the positive effects of competition in improving overall effectiveness – service, reliability and schedule, and efficiency – lower subsidies per passenger and lower airfares; as local participation and political interest play important roles in assuring the service sustainability. Considering Rutland, Vermont, we confirm the same effects derived from a low-cost carrier connection, and efficiency gains from a smaller aircraft-utilization. In the case of Merced (California), a community enjoying high levels of regional accessibility with good quality highway substitutes and alternative air transportation centres, we report inefficiencies – declining traffic, high levels of subsidy per passenger, that result from the failure to incorporate changing conditions in the EAS underlying statutes. This last case illustrates how the program is not targeted only to the most isolated communities and how the choice of the connection hub determines traffic sustainability.

The next section of the paper briefly describes the characteristics of the U.S. regulated and post-deregulation environments, focusing on the small communities. It then summarizes the instruments created for promoting service sustainability to these communities in the latter conditions. Next, it analyses the results of U.S. policy in general terms, and examines three case studies focusing on positive political lessons. A final section compares the U.S. provisions with the Canadian and European policy programs and offers some contributions.

2. U.S. AVIATION STRUCTURE

U.S. airline industry developed dramatically under regulation over fifty years. However, major changes were introduced by the revolutionary liberalization in the late 1970s ([Goetz and Vowles, 2009], [Borenstein and Rose, 2007], and [Reynolds-Feighan, 1995]). It is convenient to compare the two situations in how they sustain basic air service to small communities.

2.1 REGULATED STRUCTURE

2.1.1 Route obligations and network structures

General regulatory provisions consisted of control over entry into the industry and access to routes, requirements over conditions of service, regulation of airfares and airmail rates, and safety – the latter passed over to the Federal Aviation Administration (FAA) – an agency of the Department of Transportation (DOT) in 1958. Other situations, such as mergers and

acquisitions, and carriers agreements were also regulated. This control was performed by an independent regulatory agency, the Civil Aeronautics Board (CAB).

Unlike other countries, the U.S. never established a state-government owned airline. Instead, its regulatory agency certified carriers to operate in prescribed certificated routes. While medium- and long-haul routes were exclusively operated by “trunk” carriers, local carriers supplemented service to small communities. Most airline operations were performed on a point-to-point basis, implying system-wide inefficiencies: in general, routes had higher operating costs reflected in higher airfares, lower frequencies and significant lower average load factors. The regulatory route award process was largely responsible for preventing carriers from optimizing networks to reduce operation costs or improve service (Borenstein and Rose, 2007). The number of markets served by the network was limited.

2.1.2 Cross-subsidization based on reasonable profit

Carriers operating routes to small communities often received subsidies. In the earliest stages, the Congress “recognized the quasi-public character of certificated air service, and authorized the payment of direct, albeit concealed, Federal aid through air mail payments” (Lloyd, 1950). Later, the amendment of section 406 of the Federal Aviation Act of 1958, established a more formal subsidization system. Carriers were compensated both directly from the CAB, following a cost formula, and indirectly, with cross subsidies from their profitable routes. The principle behind cross-subsidization was to simultaneously keep long-haul rates above costs and thin short-haul rates below costs. The system was based purely on carriers’ financial needs. It gave airlines what the CAB considered a reasonable profit, unrelated to the cost of serving a specific community (U.S. Government Accountability Office [GAO], 1983).

2.1.3 Infrastructure planning and management and Airport Funding

The CAB was also responsible for the development of the air transportation system. Unlike other countries, where national entities were created to manage their largest airports as well as smaller facilities (the case of Spain in Europe, Canada or Australia), the U.S. chose to implement a managerial system which, almost exclusively put airport ownership and management in the hands of City and Regional Authorities defending local interests. Concurrently, federal public interest and national air policy cohesion were supported by instruments of integrated planning, as the National Airport System Plan (NASP), a 10-year

plan providing a “summary of projected improvements for each airport eligible for Federal aid” (Office of Technology Assessment, 1984).

In regard to airport investment, the U.S. system secured funding for larger and smaller facilities with cross-subsidization and local participation. Infrastructure was initially funded by the collection of user charges, redistributed through the Federal-aid Airport Program (FAAP), which replaced the former Airport Development Aid Program (ADAP). Eligibility criteria for projects required airports to be part of the NASP. Shortly before deregulation, in 1970, the Airport and Airway Trust Fund (AATF) was created as a deposit of revenues from several aviation-user taxes on items as airfares, air freight, and aviation fuel. The fund supported both the Planning Grant Program (PGP) and the Airport Development Aid Program (ADAP). Grants were awarded by FAA and required some local matching of funds (Kirk, 2007).

2.2 THE PARADIGM SHIFT OF DEREGULATION

2.2.1 FAA and the end of CAB

The U.S. pioneered the passenger market liberalization. The Congress approved the Airline Deregulation Act (ADA) in 1978 and the national regulatory agency was phased out until it expired officially on 1984. FAA now oversees civil aviation, but on passengers’ domestic market, only safety is maintained under strict regulation (GAO, 1983).³

2.2.2 Hub-and-spoke and segmentation: Regional commuters on smaller markets
As route obligations were dropped, “trunk” carriers chose to abandon less profitable lower density links. From the point of view of the structure of carrier networks, the consequences were revolutionary. Albeit the transfer hubs existed under regulation, it was the removal of market restrictions that led to consolidated nationwide hub-and-spoke networks, which concentrated operations at strategically located cities (Goetz and Vowles, 2009). Later, carriers like Southwest Airlines and others complemented these networks with more distributed structures that, not being purely point-to-point, employ more secondary hubs. These changes caused airlines to rationalize the efficiency of their services (Brown, 1992). With the reconfiguration changes they restructured their fleets - both by change in allocation and acquisition of aircraft, daily utilization and load factors increased and operational costs decreased (Heppenheimer, 1995).

³ Regulations on mergers and acquisitions are still on effect, though rules were loosened. The proposals can be submitted for review by the Antitrust Division.

Deregulation allowed the entrance of new carriers; however, they still faced great opposition from the established major airlines on the main routes (Goetz and Vowles, 2009). On the marginal markets competition was lower. Regional commuters and air taxi services progressively increased their market shares, using regional jets or turboprops, since these markets did not require larger or faster aircraft (FAA, 2003).

2.2.3 Implications for Passengers

On average, passengers benefited from more destinations when connecting, and lower airfares. Although these consequences were also felt by small communities' shorter-haul passengers, their yields remain higher, and profitability of airlines serving them is uncertain. Carriers' subsidization was the instrument used by the U.S. policy, in order to sustain traffic levels on these markets.

2.2.4 Essential Air Service: The New Route Specific Subsidy

Immediately before deregulation, the Congress made provisions for assuring that small communities retained service under the new conditions. Anticipating the detrimental impacts that the abandonment of less profitable routes could have, it established the Essential Air Service (EAS) program, which it integrated into the Airline Deregulation Act (ADA) of 1978, (with special provisions for Alaska). Carriers started receiving subsidies allocated to specific routes where they competed for service.

In the 10 years following liberalization, the percentage of flights supported by EAS operated by small commuters increased from 10 to approximately 50 percent (NRC/TRB, 1991). In the beginning of the 1990s, this value was already over 80 percent, and in 2009, small commuters, like Great Lakes, Cape Air or Mesaba, were serving all the small and the majority of the communities were served by aircraft Beechcraft 1900, a 19-passenger turboprop (Office of Aviation Analysis [OAA], U.S. DOT, 2009). The EAS established basic air service requirements, defined which communities were eligible for receiving this service, and which of those would have subsidized carriers providing it. Its funding is assured by the AATF.

2.2.5 Infrastructure Planning, Management and Funding: the Airport Improvement Program (AIP)

Management of the air transportation infrastructure remained basically unaltered: national interest is defended by the FAA, while ownership and management is kept by City and Regional Authorities. However, at an operational management level, most U.S. airports are

associated with some form of privatization through service contracts (Carney and Mew, 2003). With regard to planning, the National Plan of Integrated Airport Systems (NPIAS) replaced the NASP in the early 1980s. Developed by the FAA, the plan is meant to identify all the significant components of the air transportation infrastructure, evaluate their current state and plan their future development, and provide the Congress with estimates of the funds needed to meet these goals (FAA, 2009).

Infrastructure investment did not significantly change under deregulated conditions, as the Airport Improvement Program (AIP), established by the Airport and Airway Improvement Act and funded by the AATF, replaced the former PGP and ADAP in 1982. Its purpose is to aid the planning and development of public-use airports included in the NPIAS, and its funding structure favours smaller airports, with grants covering a larger percentage of the cost of eligible projects in these cases than for larger facilities.

3. POST-DEREGULATION INSTRUMENTS

U.S. approach to addressing the issue of air accessibility to small communities differs significantly from those of other nations, specifically in respect to the attribution of subsidies and in regard to the participation of the communities, concerning both the administrative and the financing aspects (Reynolds-Feighan, 1995). The EAS program is the most important instrument U.S. air transportation policy for support of small communities. More recently, the Congress also implemented the Small Communities Air Service Development program (SCASD).

3.1 EAS PROGRAMME

3.1.1 The mechanism

EAS subsidizes carriers to provide service on specific routes, for which airlines compete through a bidding system. Airlines submit proposals that are packages including schedule, frequency and hub to which the community is connected, and fare schedules. The proposals must meet the minimum requirements defined by EAS, which refer to number of daily flights, weekend frequency, size of the hub, and aircraft equipment. EAS funding comes directly from FAA's appropriations from user fees.

3.1.2 Eligibility

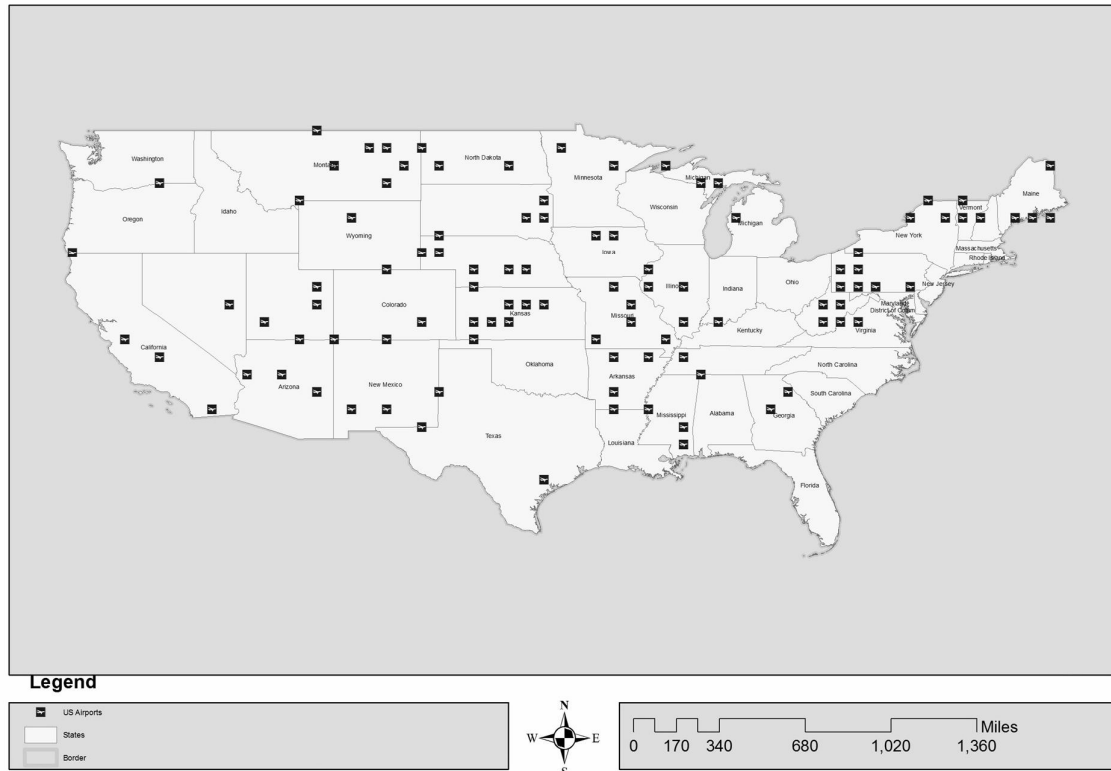
EAS criteria for eligibility and compensation changed little since its implementation. In order to qualify for EAS, a community is currently required to have been receiving scheduled service from the time of the ADA (1978) or the Airport and Airway Safety and Capacity Expansion Act (AASCEA) (1987), and to be located at least 70 miles from the nearest hub. Other communities may also be eligible if the local or state government or other party offers to pay 50 per cent of the compensation cost. Communities not served in 1991 are not eligible for EAS payments, unless they are located more than 200 miles from a hub, in which situation state or local governments need to match the DOT funds. In addition, a community needs to meet the subsidy cap of \$200 per passenger, except if they are located 210 or more highway miles from the nearest alternative transportation centre (OAA, 2009).

3.1.3 Overview and Geographic Coverage

In 2009, thirty-five states, including Alaska, received funds from the EAS Program. Excluding Alaska, funding was of \$152 million for one hundred and seven communities, served by one carrier. From the total of 107 EAS aviation airports, less than two percent were not receiving subsidy from the EAS Program as of its first year of implementation, 1979 (GAO, 1983).

Figure 1 locates the EAS subsidized communities for 2009 (excluding Alaska). Though the most of the communities are located in the interior of Continental U.S., the EAS serves several on both coasts, relatively close to major airport hubs. While there does not appear to be a concentration in a specific region, five agglomerations of communities are in the centre and Northeast of continental U.S. Important heterogeneities are registered across the communities, in terms of both isolation – measured by the distance to U.S. larger hubs, and size of the community). In 2009, approximately one fourth of EAS subsidized communities were in the category “a” - relatively non-isolated (approximately one hour or less driving to the alternative transportation centre). Disparities in accessibility to land transportation modes and access to low-cost served airports are also significant (GAO, 2009).

Figure 1: Communities subsidized by the EAS Program in 2009, within the Continental U.S.



3.1.4 Background

Table 1 summarizes the history of the EAS program. It was meant to be an element of transition after deregulation. However, it was renewed and made permanent. In its early years, it was supplemented by subsidies allocated under Section 406.

3.2 SMALL COMMUNITIES AIR SERVICE DEVELOPMENT (SCASD) PROGRAMME

3.2.1 The Mechanism

SCASD awards grants to communities, or sets of communities, through competitive selection. It gives priority to communities that “among other factors, provide a portion of the cost of the activity to be assisted, and establish a public-private partnership to facilitate the service” (OAA, 2009). SCASD is funded through annual FAA appropriations (AATF) and is very flexible in the use of its grants: funds may be used to pay for traffic studies, provide financial incentives for carriers (in the form of subsidy or revenue guarantees or with Air Travel Banks – ATB, taking the form of a trust account (Nolan et al., 2005 and GAO, 2005), cover the expenses of marketing costs of the airport or carrier, etc. Financial incentives cannot be extended over a period of 3-years.

Table 1: EAS Programme History

1978	EAS is established under Section 419 of the ADA.
1982-84	Section 406 subsidies end: The DOT reports inefficiencies in this section. CAB recognizes EAS Program is a significantly more efficient instrument, and ceases 406 funding in 1984.
1987	Expansion and extension of EAS: AASCEA extends the program through 1998. It specifies "basic EAS" and announces "enhanced EAS" (for communities willing to share cost or risk). DOT is allowed to incur obligations from the AATF for the payment of the EAS subsidies, effective fiscal year 1992.
1990-92	Insufficient funding for "basic EAS" and "enhanced EAS": Funding proved to be insufficient to establish the upgrades. Omnibus Budget Reconciliation Act of 1990 authorizes for annual funding exclusively for basic EAS eligible communities, and upgrades are finally implemented in 1992.
1994-96	Major cuts and exclusion of communities: Annual budget for EAS is reduced, causing discontinuity in subsidy support for several communities. Most significant budget reduction for FY 1996.
1997	Second extension: New extension approved by Congress. Rural Air Service Survival Act increases funding. Proposal for EAS to be funded from fees assessed on international flying over but not landing in the United States is successfully legally challenged by foreign carriers. Thereafter, EAS funding comes directly from FAA's appropriations from user fees.
2000	Changes in eligibility criteria: EAS excludes non-Alaskan communities closer than 70 highway miles to the nearest large or medium hub or requiring a subsidy per passenger in excess of \$200 (unless that the community is more than 210 surface miles from the nearest large or medium hub).
2009	Budget enhanced provisions: Reform Act for the 21 st Century authorizes an appropriation in addition to the already authorized funding. It limits adjustments to levels of essential air service to not less than the basic service level, and reviews for consistency all orders issued after September 30, 1999.

Sources: FAA and OAA, U.S. DOT.

The SCASD is small compared to EAS; it is limited to 40 grants per year. In 2008,⁴ it awarded grants to only 15 communities, for a total funding of \$6.5 Million. The list included communities like Merced (California) and Springfield (Illinois).

3.2.2 Background

The program was implemented in fiscal year 2002 by the Wendell H. Ford Aviation Investment and Reform Act for the 21st Century (AIR-21)⁵ (Committee on Transportation and Infrastructure, 2009). Congress reauthorized SCASD 2008 and made it permanent by the Vision 100-Century of Aviation Reauthorization Act. SCASD has awarded over 220 grants since its establishment, and these have averaged about \$500,000 each (OAA, 2009).

⁴ Data for grant in FY 2009 was not available at the OAA, U.S. DOT as of February 2010.

⁵ The same act also authorized the Regional Jet Service for Small Communities that provides federal credit instruments for purchase of regional jet aircraft by carriers serving small communities.

4. RESULTS

This section starts by examining the overall performance of the EAS in minimizing the latent detrimental impacts of deregulation on small communities. The evaluation criteria are effectiveness and efficiency, as defined in the introduction. We compare air accessibility conditions of small communities under regulation to the post-deregulation situation.

Following the general observations, three case-studies demonstrate the effects of EAS on four communities. SCASD results are part of the reflection, though not included on the general outcomes analysis. Both references ([Nolan et al., 2005] and [GAO, 2005]) sustain that the SCASD program has achieved mixed results. According to Nolan et al. (2005) in almost all cases the relevant service has been discontinued at the end of the short duration travel bank contract. Eugene (Oregon) represents the only exception: the community obtained additional service from two carriers after receiving guarantee of travel funds by numerous local businesses. The key factor for success in sustainability appears to have been local action, since other communities that did not receive this support had the service discontinued. Eugene airport and community officials corroborate this fact by stating that broad-based community support for the air service was more significant than the total funds collected for the travel bank (GAO, 2003).

4.1 GENERAL OUTCOMES

4.1.1 Effectiveness

Overall, U.S. policy and the EAS program appear to be relatively effective in their goal of providing basic air service to small communities: service exists and meets minimum standards. The program is found free of major flaws that would limit its effectiveness. Additionally, independent evaluations conducted by the GAO, both on a regular basis and as needed, concluded that, on balance, the program is meeting its goals and its statutory objective – to ensure continued air service to small communities (GAO, 2003a, 2003b, 2002 and 2000b).

The innovation introduced by competition, leading to the dominance of commuter carriers with smaller aircraft on the small communities routes (an effect of the EAS program), has proved to have significant impacts in quality of service ([Goetz and Vowles, 2009], [GAO, 1999 and 2000], and [Reynolds-Feighan, 1995]). It can be observed that flight frequencies in most small communities increased rapidly when commuter carriers started providing service, as the schedules improved to meet EAS requirements.

The existence of service is a general conclusion; since the EAS was not able to keep basic air service to every community that had it before deregulation. However, we observed that the abandonment of certain very thin routes may have been inevitable. This is demonstrated by the loss and reduction of service in some communities occurring prior to deregulation. Between 1960 and 1975, and despite the existence of Section 406, the intervention of CAB and its authority to prohibit service abandonments considered inconsistent with public interest, 173 communities had lost airline service (U.S. DOT, 1987).

During the deregulated period served by the EAS, some communities lost service, either temporarily or permanently. Examples of the first case are communities such as Athens (Georgia), Columbia and Jefferson City (Missouri), and Ely (Nevada) that lost service when Air Midwest shutdown in 2008. One case of permanent loss of scheduled commercial service is Paris (Texas), after it was excluded from the list of EAS subsidized communities in 1993.

The EAS includes a mechanism for preventing these situations and their negative impacts. Its statutes require that if a carrier single-serving an EAS-eligible community wishes to exit the market, it must file a 90-day service termination notice. During this time, DOT may require the carrier to continue flying in the market indefinitely. However, this mechanism does not appear to work effectively, as it did not prevent the sudden abandonment of scheduled service at airports such as the one serving Columbia and Jefferson City.

On the other hand, the EAS mechanism for ensuring a minimum quality of service is performing well for the eligible EAS airports. Comparing EAS requirements and current service conditions, it can be concluded that communities are being served according to the frequencies required, non-stop connections to hubs and schedule.⁶ Situations of unreliability of service caused by delays and/or cancellations, such as the one experienced in COU before the termination of service by Air Midwest, appear to be reasonably under control of the DOT, and communities eventually benefit from better service with carriers' substitution, as shown in the first case-study. Regarding the investment in infrastructure, Federal mechanisms appear to be supporting airports effectively. In general, communities are reasonably well served in terms of facilities, as service limitations derive, from difficulties in sustaining carriers.

⁶ Moreover, the hub-and-spoke network system on average gives passengers more destinations at connecting hubs, more scheduled frequency and average lower fares (Lee, 2003). Even though these benefits remain unproved on the particular case of the average smaller community passenger, the case study of Rutland (Vermont) provides an example of decreases in fares (round-trip is now at the same level as a previous one-way).

4.1.2 Efficiency

Efficiency of the EAS and the U.S. air transportation policy under deregulation is measured in terms of costs. We examine the accomplishments of the EAS program in maintaining the costs of providing small communities with basic air service at reasonable levels. We also analyse the results of the EAS on fares and comment on the impacts of deregulation on the cost for the passenger.

The analysis of the global amount of subsidies in the airline industry for the period between the years 1978 and 2009 leads to the conclusion that the EAS is more efficient than earlier forms of subsidy, in the sense that its cost is lower. Despite the fact that EAS allocations have been increasing in the first decade of 2000, their value remains significantly smaller than total subsidy under regulation. It is clear there the EAS significantly reduced the Government's cost of providing small communities with basic air service.

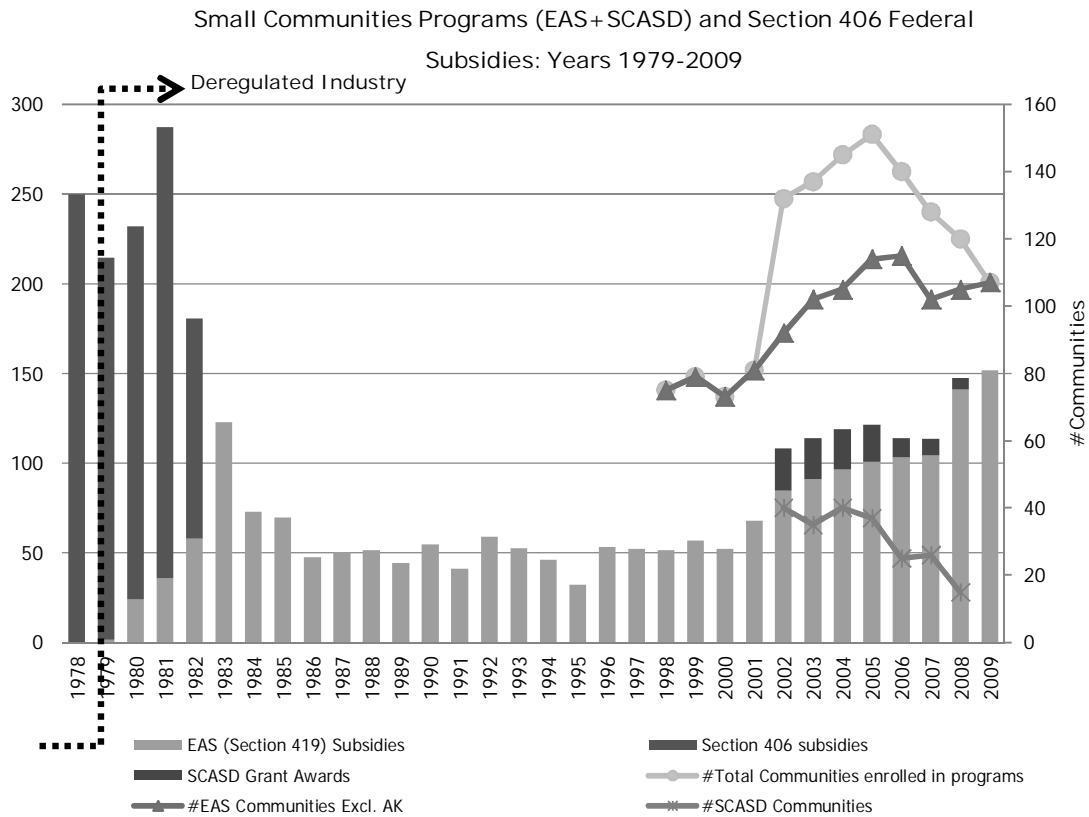
Figure 2 presents the information in 2009 million dollars. The first year shown, 1978, is the last year of passenger regulation. For this year, only Section 406⁷ provided funding for carriers. Then, and for the earlier years of deregulated conditions until 1982, subsidies were allocated under both Section 406 and EAS (Section 419). From then until 2001, small communities were funded exclusively by EAS. Starting in 2002, the SCASD program complements EAS funding awarding grants to a much smaller number of communities than EAS. Although the graph shows the cumulative value of federal subsidies, we distinguish between the different allocation mechanisms that range from protected route packages to specifically direct subsidies, and include the guaranteed revenues form. Different subsidy approaches differ in social welfare implications, as well as in underlying agency costs (Nolan et al., 2005).

Comparing the values of federal subsidy prior to and after deregulation, the overall costs were significantly reduced. In 1978, the year immediately before the EAS implementation, Section 406 subsidies amounted to \$76 million (GAO, 1983), which represents over \$250 Million in 2009 dollars. The first year of exclusive EAS funding represented a 50 percent reduction in costs. Most recently, in 2009, the total costs still represent a 39 percent reduction from before deregulation. Moreover, subsidies raise remains significantly below the

⁷ Section 406 funding is not specific for small communities, though it paid carriers compensation for operating in not profitable markets.

growth of operating costs for the airline industry in this period, caused by sharp increase in fuel prices.

Figure 2: U.S. Federal Subsidies and SCASD Grants in Million dollars⁸



Source: GAO and OAA, U.S. DOT reports

Gains in efficiency appear to result be primarily from the competition that the EAS developed for small communities markets and, over the national network, from the deregulated environment. Competition is commonly accepted as a positive force in most industries for its positive impact on efficiency and innovation. In respect to the provision of basic air service to small communities in the U.S., there is clear evidence of improvements resulting from competition between carriers that compete for the small communities routes in the two aspects.

⁸ Information regarding the number of communities receiving EAS (Section 419) subsidies was not available until 1999 from the OAA, U.S. DOT. For consistency purposes it was decided not to include data from other sources for the remaining years. Number of small communities receiving Section 406 subsidies is not available, since this Section was not specifically targeted to them. As of February 2010 the, number of communities and SCASD grants were not available for FY 2009.

EAS introduced competition in the small communities market through an allocation process of subsidies that uses a carrier bidding system. This system simultaneously encourages carriers' efficiency and maintains the level of required subsidies at lower levels. Additionally, small community travellers are likely to benefit from lower fares (GAO, 1999) resulting from the same traffic efficiencies created by hub-and-spoke systems, with yields that have fallen sharply since deregulation. Regarding operational efficiency, the shift towards commuter carriage, with smaller aircraft and consequently lower capacity allows for more efficient flying on a frequent and timely basis, when comparing to the local-service jet carriers that used to serve many small communities.

Local participation may also act as another source of efficiency gains. In the EAS, where the communities do not match the subsidy funds as in the SCASD program, it still plays an important role in ensuring the sustainability of the service. This is shown in the case-study of the two Missourian communities. It is also the community that recommends the carrier that will be approved by the DOT for providing the service. This is important, since, in most situations, the community is more aware of the competing environment and the needs of its passengers, and knows better which hub and aircraft will be more efficient.

Despite these efficiency gains, the current needs of the EAS may raise some concerns. In 2008 and 2009, both the amount of subsidies paid to carriers, and the obligations incurred by the EAS program in funding these services increased significantly. The Administration has faced this fact by requesting much higher funding for 2010 (an increase of \$50 Million over \$125 Million) (GAO, 2009). One interesting trend illustrated in Figure 2 is that the EAS subsidies will be shared among fewer communities. Average subsidy per community has been sharply increasing since 2005, as subsidies raise and the number of communities benefiting from those decreases.

Another trend is that the average EAS community became smaller. Gains of efficiency can be demonstrated by the more rational way of serving small communities introduced by the EAS program, which moved subsidy payments from all small communities to those smaller communities that had real need for them. Evidence of this fact is the evolution on population size of the community served by basic air service, which decreased in average (Reynolds-Feighan, 1995).

We observe that the EAS mechanisms are not effectively targeted, as communities well served by other modes are receiving support from the program (GAO, 2003b, 2002, and 2000a). In the list of subsidized communities for the year 2009, there are several examples of communities with good highway access to alternative air transportation centres. One of these is Merced (California), within one driving hour to the reasonably well served airports of both Stockton and Fresno. Subsidy allocation to these communities is a consequence of the inability of EAS to update its underlying statutes to changing transportation environments. Regional integrated multimodality planning appears to be inexistent. The EAS also appears to be lacking mechanisms that could improve its efficiency: It does not currently use annual and long term performance measures in its management – a conclusion supported by the program assessment conducted by the U.S. Office of Management and Budget and Federal agencies.

4.2 MULTIPLE CASE-STUDIES

Three case-studies illustrate some of the above results.

4.2.1 Columbia and Jefferson City (Missouri)

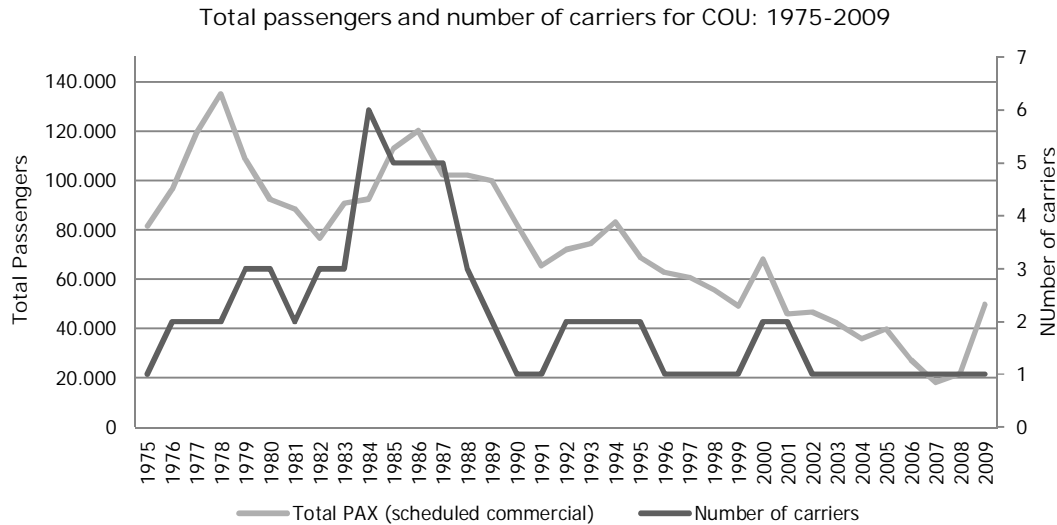
This case shows that competition has positive impacts on overall effectiveness and efficiency, and that political interest play important roles in assuring the service sustainability.

Columbia and Jefferson City are served by Columbia Regional airport (COU), a non-hub primary service airport. Another small airport in the area, Jefferson City Memorial, is about 35 miles from Columbia and does not offer commercial airline carrier flights.

COU faces competition from both St. Louis International (STL), and Kansas City International (MCI), which offer significantly higher schedule frequencies, lower fares, and more nonstop destinations. These airports are approximately 125 miles and 165 miles from COU, respectively. The difference between fares at Columbia and the two other competing airports decreased in the first decade of 2000, and the attractiveness of STL decreased when its hub carrier TWA merged out of existence. Columbia and Jefferson City were included in the list of EAS subsidized airports in 2006, after consistently losing traffic since the 1980s as Figure 3 shows. The same figure also shows that, since its first year of operation, Columbia has experienced instability in service caused by the entry and exit of several carriers.

The decision to support service with EAS subsidies is justified by political interest: Jefferson City is the capital of the state of Missouri and it was probably not considered acceptable that the State capital did not have air service of its own.

Figure 3: Total Scheduled commercial passengers for COU



Source: Columbia Regional Airport

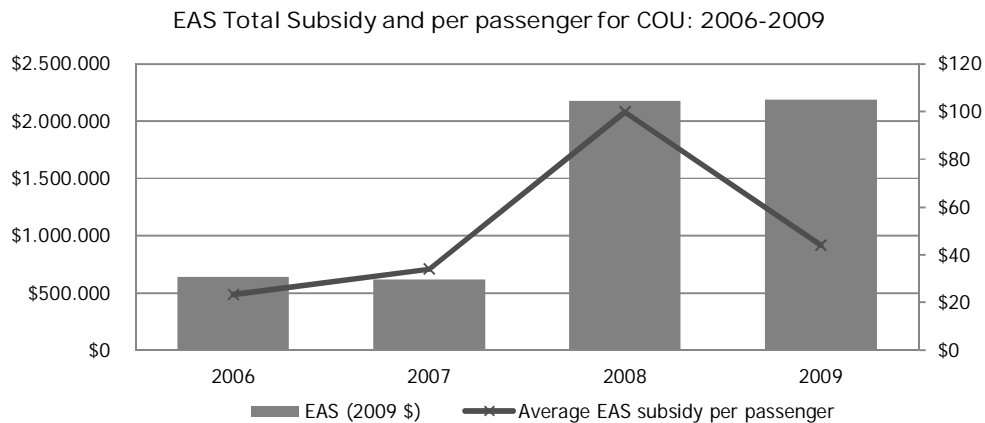
The first EAS subsidized service was not successful in reversing the declining trend. Air Midwest began operation between COU and Kansas City International (MCI) in 2006 and abandoned the market in less than two years.⁹ Until the DOT approved another carrier in the summer of 2008, the airport suffered a 7-week gap in passenger service, which justifies the lower traffic level for 2008. Mesaba Airlines won the competition to serve COU, by providing a connection to Memphis International airport (MEM).¹⁰ The grant, of nominal \$2,186,590, contracted service through July 2010 (OAA, 2009). Several proposals, submitted by two other carriers (Great Lakes Aviation and Hawaii Island Air) testify to the competition. These carriers proposed less frequent flights and would have continued the connection to MCI.

⁹ Air Midwest was a subsidiary of Mesa Air Group. It operated 24 round-trips a week, initially serving both STL and MCI, and in its last year only MCI. Alleging that the EAS subsidy of \$598,751 (2009 dollars) (OAA,2009) was insufficient to make the route profitable as fuel costs rose abruptly, the carrier terminated the service. This situation was not specific to COU: in 2008, 17 EAS communities in 10 states lost service after Mesa Air Group shutdown Air Midwest.

¹⁰ Mesaba is a regional carrier, wholly-owned subsidiary of Delta AirLines.

In the process of selecting the new EAS carrier, local council – including the airport Advisory Board, and local authorities (especially elected officials), recommended Mesaba to the DOT. Despite the fact that the carrier initiated service only in 2008, results in 2009 show that COU may be reversing the trend for declining traffic, with a significant growth of 128% in total passengers. For the years of 2008 and 2009, the EAS subsidy was significantly larger than that of the Air Midwest period. In 2008, the subsidy per passenger was considerably higher (\$100) than in the previous year (\$34) – both values in 2009 dollars (Figure 4). However, the peak value of \$100 is likely due to the airport's complete loss service for 49 days during summer, with the consequent loss of many enplanements. Additionally, the economic recession of 2008 lowered demand. In 2009, the EAS subsidy per passenger had gone down to \$44. If enplanements continue to increase in 2010, as a result of a recovering economy, the subsidy per passenger may drop further.

Figure 4: EAS Subsidy for COU, total and per passenger: 2006-2009



Source: OAA, U.S. DOT, 2009

The arrangement with Mesaba appears to have lessened the relative attractiveness of the STL and MCI airports. It also seems to be effective and efficient: Mesaba offers 20 round-trips per week (3 daily round-trips on weekdays and 2 on weekends) to a good connecting hub, MEM, on a 34-seat Saab 340 aircraft. Passengers benefit from a wider range of destinations (including international points), higher scheduled frequency, and reasonable airfares, since Mesaba's proposal included keeping an average one-way of \$95. In respect with costs, federal subsidies are kept at a reasonable level.

Scheduled frequencies, and the choice of provider for the EAS, and its associated connecting hub, appear to play a significant role in the growth and sustainability of the route. In this particular case, the contracted provider of service was recommended to the DOT by the local authorities. These civic officials were able to count on the effects of competition between bidding carriers, and provided valuable insight knowledge of the market, when recommending a non-stop connection to an important hub like MEM. The comparison of results obtained by the first EAS carrier and the current one indicate that hub connectivity is a key factor for air service development.

4.2.2 Rutland (Vermont)

This case illustrates the efficiency gains -- reflected in higher passenger traffic, lower subsidies per passenger and airfares -- that result from the adoption of a low-cost carrier connection and the use of smaller aircraft, better suited to demand. It also demonstrates that effectiveness has been improved – better schedule frequency and connectivity.

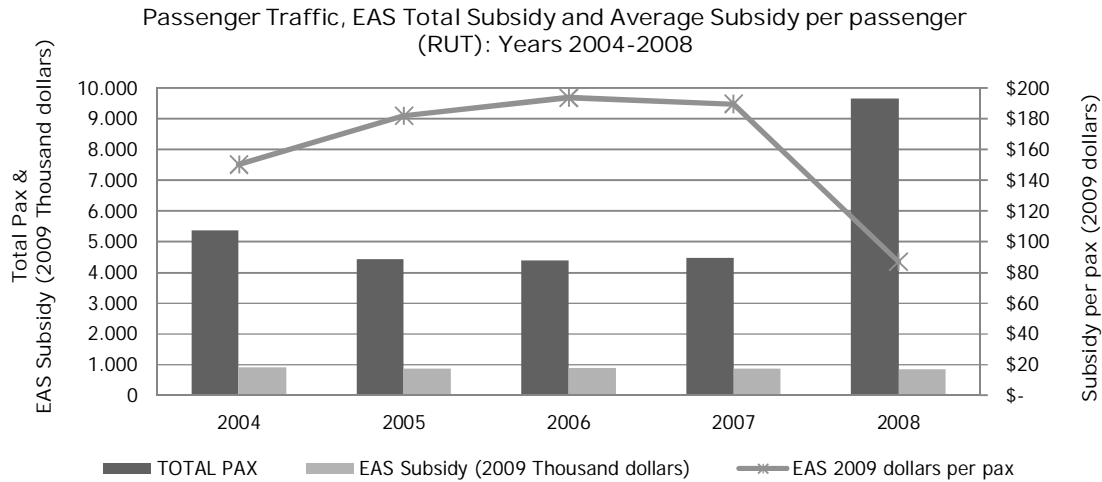
Rutland (Vermont) is served by the Rutland Southern Vermont Regional airport (RUT). It is state-owned, managed by the local agency Vermont Agency of Transportation, and is classified by FAA as a commercial service airport (over 2,500 enplanements per year). According to GAO, Rutland is relatively non-isolated - approximately one hour or less driving alternative transportation centres, the closest being Lebanon (within approximately 50 miles), Burlington International (70 miles), and Manchester International (120 miles).

Both Lebanon and Rutland have been receiving EAS support.¹¹ Cape Air started service in 2008 using 9-seat aircraft to connect the community to Boston Logan International with three daily flights. Previously, Commut Air provided service with 19-seat aircraft and a frequency of two daily flights (OAA, 2009). Commut Air operated as a Continental Airlines connection and, as Boston is not a hub for Continental, passengers did greatly benefit from this relationship.

Figure 5 presents the total number of scheduled commercial passengers at RUT (both enplanements and deplanements), for the 5-year period 2004-2008. It also shows EAS total subsidy, and the average subsidy per passenger, in 2009 dollars.

¹¹ In addition to the EAS funding, in 2004, Rutland received a SCASDP grant in the value of \$240,000, completed by 2007 (GAO, 2009).

Figure 5: Total Scheduled commercial passengers, EAS total subsidy and per passenger for RUT: 2004-2008



Source: Bureau of Transportation Statistics and OAA, U.S. DOT reports

Competition on the bidding process induced efficiency. The value of total EAS subsidy did not decrease significantly over the 2007-2008 period; there was only a 5 per cent reduction, from \$879 to \$837 thousand (in 2009 dollars). However, the average per passenger cost declined 54 per cent, from \$189 to \$87, as a result of a 115 per cent increase in traffic. Regarding the cost for the passenger, airfares dropped 50 per cent, since Cape Air offers round-trips for the price the previous carrier charged for a one way ticket.

The 5 per cent reduction in total value of EAS subsidy, despite the 50 per cent increase in frequency, is likely result of Cape Air strategy of using a 9-seat aircraft, which also impacted fares: lower operating costs allowed the carrier to cut prices. In 2008, there were two carriers competing for the service: Cape Air and Big Sky Airlines. Big Sky proposed to use maintain the 19-seat aircraft on the route, while Cape Air estimated it would be financially more advantageous to have a smaller aircraft. This was supported by the local committee, headed by the Rutland Region Chamber of Commerce, who made the recommendation to the DOT.

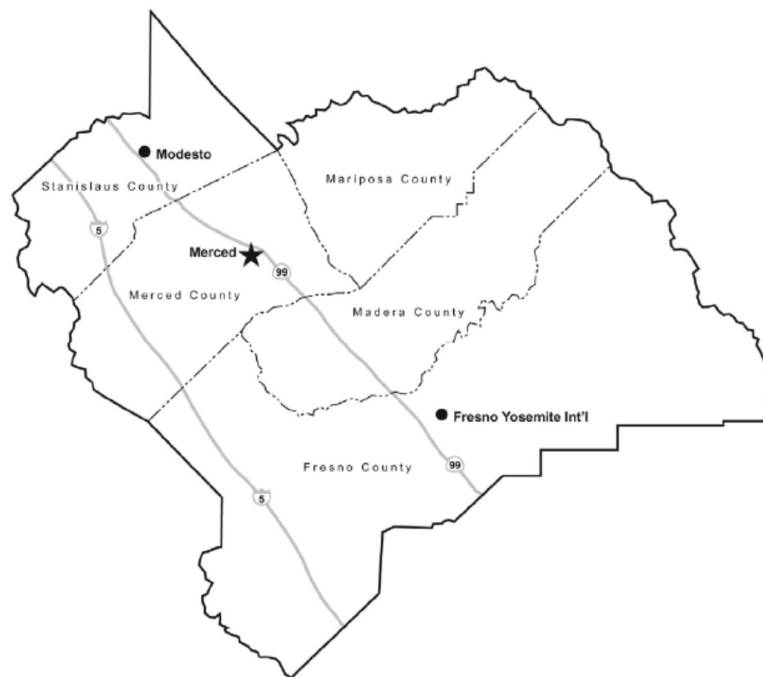
The 115 per cent increase in passenger traffic appears to be a result of effectiveness gains: higher frequency, better connections and airfares. Rutland is benefiting from better quality of service than the basic required by EAS. While essential determination established that Rutland would be connected to either New York City (NYC) or Boston, with one stop allowed,

and with a frequency of 2 on weekdays and 2 on weekends, Rutland is now being served by 3 daily non-stop flights to Boston. Moreover, Cape Air operates on code share with Jet Blue, a low-cost carrier who offers many low-airfare destinations from Boston.

4.2.3 Merced (California)

The case of Merced illustrates how EAS is inefficient in providing service to communities enjoying high levels of regional accessibility with good quality highway substitutes and alternative air transportation centres. It also demonstrates how the choice of the connecting hub is crucial for demand sustainability. Merced (California) has two airports: Merced Regional (MCE) and Merced Municipal (MEC). Scheduled commercial is only offered at MCE, currently connected to Ontario International Airport (ONT) by Great Lakes Airlines. However, other alternative air transportation centres may appeal to Merced's local passengers.

Figure 6: Merced Municipal Airport Passenger Enplanement Competitive Market Area



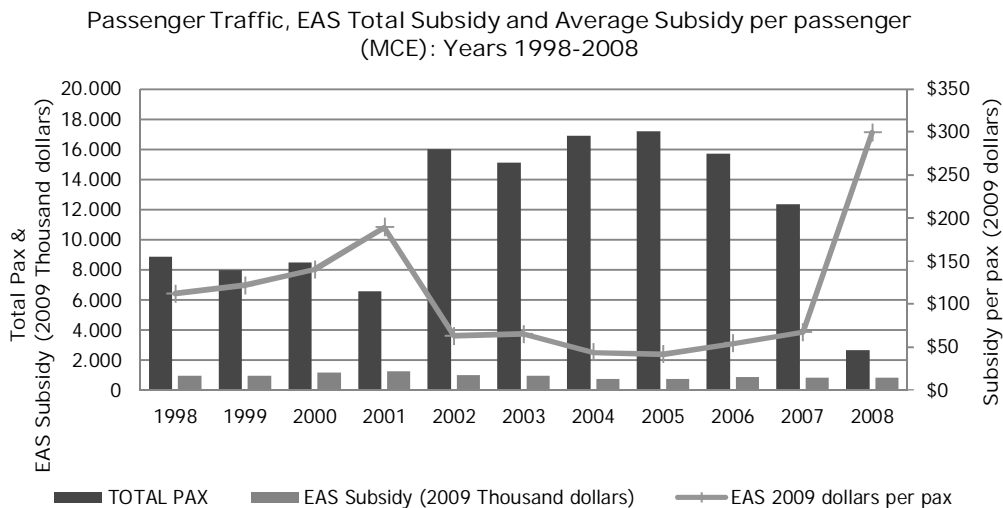
Source: Airport Master Plan, Chapter 4, 2007

Within approximately 1 hour driving, there are two more airports with commercial service: Fresno Yosemite International and Modesto City County. Merced Airport Master Plan of 2007 estimated that Fresno was capturing 94 per cent of the enplanements, Modesto 4 per cent,

and Merced was only serving the remaining 1 per cent. Figure 6 shows the location of the three airports, and the highway accessibility.

There are obvious reasons for passengers' preference for Fresno and Modesto. Their attractiveness results from their connectivity. Fresno is served by several airlines, offering a much higher scheduled frequency and number of destinations. Modesto is connected to San Francisco, which is more appealing than Ontario both as final destination and hub. Farther, yet easily reachable by highway in less than 2 and a half hours, the airports of Sacramento and San Jose provide attractive air service alternatives, with a large number of carriers, including low-costs such as Southwest and Jet Blue, schedule and frequency. Additionally, Los Angeles is another option for Merced's demand, within less than 5 hours. The consequences of this competition are that it is difficult to obtain low levels of subsidy for Merced. Figure 7 presents the total number of scheduled commercial passengers at MCE (including enplanements and deplanements), for the 11-year period 1998-2008. It also includes the EAS total subsidy and the average subsidy per passenger, in 2009 dollars. Though there were no important changes in EAS level of subsidy, passenger instability has significantly increased the average subsidy per passenger in several years. In 2008, passenger traffic dropped by 78 per cent, which caused the subsidy per passenger to rise to \$299, an increase of nearly 350 per cent over the previous year. The average subsidy per passenger for the entire period was of \$109.

Figure 7: Total Scheduled commercial passengers, EAS total subsidy and per passenger for MCE: 1998-2008



Source: Airport Data, Bureau of Transportation Statistics, and OAA, U.S. DOT reports

Traffic levels for 2008 can be justified by the particular circumstances of the abandonment of service by Air Midwest, which shut down and, as in the case of COU, left the airport without service on short-notice, and the economic recession. However, data from the Bureau of Transportation Statistics for the first months of 2009, show even lower levels of traffic. The latter can be the result of the choice of Ontario as the connecting hub.

While 2008 represents significant deterioration of service, that is the result of a singularity in the traffic pattern, the difficulty of sustaining traffic at Merced is not new. The history of carriers serving Merced indicates that the service may not be sustainable, even when supported by EAS. This appears to result from Merced's particularly good regional highway accessibility. As soon as deregulation occurred, United Airlines – who had been serving Merced – abandoned the market. The period between 1979 and 1987 was a clear period of unstable conditions of service, with one airline entering and exiting the market per year. Following this, West Air, code-sharing as United Express was able to stay in the market for 12 years, until it was replaced in the same code-share by Skywest. During these years, and until 2001, the connection was made to either San Francisco or Los Angeles, which are attractive destinations and hubs and could justify the sustainability of demand. After this period, EAS supported the connection to Las Vegas, served by Scenic, and later by Air Midwest (Merced Regional Airport Mc Ready Field, 2007). The Las Vegas connection corresponds to the highest passenger levels, resulting in reduced subsidies per passenger, and provides evidence that the choice of the hub clearly affects the performance of the EAS subsidy.

5. CONTRIBUTIONS

U.S. Federal Policy for sustaining basic air service at small communities, and in particular the EAS program, appears to be relatively effective and efficient under deregulation. The thirty year-old experience demonstrates good overall results in providing the communities with air accessibility – service, schedule and frequency, within reasonable costs levels for the federal government. The design of EAS mechanisms have succeeded in establishing competition in the process of subsidization. We have shown the positive effects of competition in improving effectiveness, and efficiency.

Scheduled frequencies, the choice of the EAS carrier, and its associated connecting hub, appear to be key-factors in guaranteeing the growth and sustainability of the service to small

communities. Additionally, local participation and political interest play relevant roles in assuring the service sustainability. Some inefficiency – declining traffic, high levels of subsidy per passenger, was detected and is the result of the failure to incorporate changing conditions in the EAS underlying statutes. The program does not target only the most isolated communities. It also appears to lack mechanisms that could improve its efficiency: EAS does not currently use annual and long term performance measures in its management.

Despite the variations in the U.S., Canadian and European approaches to aviation deregulation and the variations among European countries, and its effects on air service provision to small communities, some aspects are common to the processes:

1. All policies recognize the need and support the provision of air service to small remote communities and this need is sustained in their Government policies and administrative and financial provisions;
2. U.S., Canadian and European Governments support both the transportation infrastructure and the air service.
3. Provisions for infrastructure investment are also similar: in most cases, smaller airports are cross-subsidized by the fee collection at larger facilities.
4. Inefficiencies are present in all systems and derive from the complexity of the “isolation” criteria and classification, failure to include changing conditions, and lack of coordination between transportation modes.
5. Moreover, Governments’ provisions have been unsuccessful in incorporating evaluation measures into policies thus hindering their implementation.

The most relevant disparities between the policies of nations are observed in market structures and competition. In the U.S. and Canada, trunk or flag carriers and local carriers have withdrawn from service to small remote communities. Competition has been introduced to some extent on thinner markets with positive impacts on service. Small communities are currently being provided by small commuter carriers that by using smaller aircraft equipment fit for demand guarantee efficiency gains. In Europe, this is, to some extent, true; however, there is significant disparity between the levels of competition in the two continents. Some countries in Europe opted to maintain flag carriers serving small communities, such as Iberia in mainland Spain; moreover, established carriers maintain undisputed advantage over new entrants and local bureaucracy is a relevant impediment to competition in tendering

processes. Peripheral and small destinations are still mostly served by regional carriers and there is a significant number of restricted access routes (Williams, 2010).

Other differences between air transportation policies in Europe, Canada and the U.S. are observed in the support to air service. Unlike the U.S. that opted for full deregulation and establishes a minimum level of service and subsidizes carriers with a competitive bidding system on specific routes through the Essential Air Service Program, Canada chose to originally maintain light regulation in its more remote communities and later replace it with subsidies for travellers with concrete travel needs (medical care, shopping, etc.) (Metrass-Mendes, de Neufville and Costa, 2011). European nations, on the other hand, defined a system of Public Service Obligations (PSOs). While U.S. carriers are compensated with lump sums per annual service operations, Canadian carriers receive additional financial support through contribution agreements with Inuit and First Nations organizations that are matched to specific shipment and medical requirements (Metrass-Mendes, de Neufville and Costa, 2011). In Europe, carriers are awarded financial compensation and there is in place a system of direct operational support to airlines for service on domestic peripheral regions (Reynolds-Feighan, 1995 and Williams, 2010). Additionally, and as in Canada, specific provisions were made for ensuring shipment and essential Health Care accessibility.

Although European and Canada's implementation show some efficiency flaws by failing to introduce or improve market competition, they appear to be more efficient than the U.S. policy when targeting both the more remote regions and the population's accessibility needs. Other policy differences are related to the decentralization level. European and Canadian air transportation policy are formally more decentralized regarding infrastructure ownership, management, and operation, than the U.S., though with little or no evidence of benefits for the communities¹² (Metrass-Mendes, de Neufville and Costa, 2011).

Acknowledgments

Financial support from Fundação para a Ciência e Tecnologia (FCT), Portugal, is gratefully acknowledged. A. Metrass-Mendes thanks FCT for a Ph.D. grant (SFRH/BD/35149/2007) within the MIT-Portugal Program. We are also very grateful to Dennis DeVany of the U.S. Department of Transportation for his invaluable assistance. Comments by an anonymous referee were also helpful.

¹² Since the 1970s, Canada's government policies have been advocating more direct control by First Nations and Inuit communities of their own matters. The divestiture process can be seen as an element of these policies that call for mechanisms to enable First Nations and Inuit communities to sustain the delivery of services to their members and it is thus effective in its goal.

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