

The estimated impact on state revenues through tax generated was then determined. Using the \$84,842,100 total estimated income, the relative share used for personal consumption was determined to be \$33,936,840. This was then multiplied by the 4 percent sales tax for \$1,357,473.60. The total estimated income was then multiplied by 4 percent to project the relative share generated for personal individual income tax in the amount of \$3,393,684. The sales tax on aviation fuel used in general aviation was \$306,342.63. Total estimated impact on state revenue collections in 1979 was as follows:

Sales Tax	\$1,357,473.60
Income Tax	3,393,684.00
Sales Tax on Fuel	306,342.63
Total	<u>\$5,057,500.23</u>

The budget of the South Carolina Aeronautics Commission in 1979 was \$1,400,000. The agency was responsible for administering over \$900,000 of capital improvement bonds for airport improvements. This money was then matched by over \$6,000,000 of FAA construction money. These funds, through jobs created and goods purchased, generated an estimated \$500,000 in state revenue.

FBO goods and services were surveyed to determine if an amount could be determined for the state. The amount of \$3,000,000 was estimated for the year 1979 based on the survey. This would contribute only \$120,000 in sales tax. When all of these are related to total state revenues, it is about 0.003 percent.

Indirect Impacts

An effort was made to determine indirect impacts but it was found impossible at this time to quantify them. One major impact was identified: numerous industries are moving into South Carolina and over 68 percent of these indicate that one of their prime reasons was the outstanding aviation facilities available in the state. If the impact analysis is to be complete, it is essential to determine the indirect economic impacts in the future.

SUMMARY

In the development of the economic impact of general aviation on South Carolina, several methods of determining the impact were considered. Even though the impact on state revenues seems insignificant when compared to the amount of state monies invested, the return on the state's investment is quite high.

GUIDELINES FOR FUTURE GENERAL AVIATION
ECONOMIC IMPACT STUDIES
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Introduction and Summary

There is a substantial interest currently in undertaking economic impact studies (EIS) for general aviation airports. This is due to the failure of airports to meet many of the necessary conditions of the free market system. The local communities believe that they are bearing the disbenefits (noise) while others are gaining the benefits. They are generally withdrawing their financial support due to this notion of inequity.

The justification for public support is based on the free market system under which right things are produced and consumed at right price, based on factors such as many buyers and many sellers, an

undifferentiated product, perfect knowledge, etc. Airports fail to meet many necessary conditions and there are many pricing problems due to cost structure.

These include high fixed costs for establishing an airport, but low marginal costs for providing an extra unit of service (landing), which cause the marginal cost pricing to generate inadequate revenue. The problem is further complicated due to the production of indirect cost and benefits.

Cost-benefit analysis is generally prescribed by the economist for establishing the proper balance of taxes and resource allocations. But, distinct difficulties are faced in measuring all the costs and benefits of a general aviation system in monetary terms. These difficulties lead to a judgment process, entering the political arena, and point to the need for a decision making process, which in the context of general aviation, must recognize two groups: (a) An active local group against general aviation; and (b) a dispersed group which benefits directly and indirectly. The first group is more influential due to their concentration on the local scene, and the political weakness of the second group is due to their dispersed nature.

The aim of an EIS is to correct this imbalance, but in many instances, it has not been effective due to the weak methodology. There is a need for a well conceived and uniform methodology which could be applied on a widespread basis. This would lead to a better understanding of the distribution of general aviation impact on the national level.

Economic impact studies are important and have become very popular lately. This is evidenced both by the recent proliferation of papers and meetings dealing with this subject, and also the growing interest by local aviation groups and communities around general aviation airports wanting economic impact studies (EIS) done for their areas.

Possible reasons for this interest are that for a long time the public has been bearing some of the cost of operating the general aviation system by way of direct taxes that go to support the FAA's operation. In addition, those around the airports bear an indirect cost from the noise of the aircraft going over their property. There is a growing awareness of these costs developing on the part of local communities and some are beginning to withdraw their support. This reaction by the local community is, by and large, attributed to the notion of inequity, in that insufficient compensation is being passed on to those in the community who are adversely affected by the presence of the general aviation airport. The net result of this loss of support is also the loss of general aviation airports, and an apathetic view that the general aviation system can carry on without them.

Is there any justification for general aviation getting public support? Why should the general public have to support general aviation and keep it going? If those involved directly in general aviation are not willing to pay the full cost of the system, then why should it continue to exist?

The free market system is relied upon heavily in the United States to help provide the proper distribution of wealth. It is assumed that under most conditions the free market price will get the 'right' things produced and consumed at the 'right' price. But to function perfectly, there must be such things as many buyers and many sellers, an undifferentiated product, perfect knowledge, etc. Although it is rare to find a market which meets

all the necessary conditions, many are close enough that there is no serious problem.

However, in some markets the conditions are not even close to being met, and consequently the free market does not do an adequate job of matching the demand and supply of goods or services.

Airports fail to meet many of the necessary conditions for the free market to function properly. In addition, there are many pricing problems due to the cost structure. The high fixed cost associated with establishing an airport, but low marginal costs associated with providing extra units of airport services such as parking spots or landing rights once the airport is established, cause marginal cost pricing strategies to generate too little revenue. The airport may also produce many indirect costs and benefits which are difficult to evaluate. All of these factors tend to cause the free market system to produce the 'wrong' level of services or charge the wrong price.

The free market system also frequently fails when dealing with a public good. That is, a good which once produced can be used by a nearly unlimited number of users without additional cost. A VOR navigation station is a good example of this type of good. Once it is installed it can be used by any number of people with no additional cost attributable to the user. Since the marginal cost is zero, economic theory suggests the proper price to charge would also be zero. Another problem is that even if it was desirable to charge the direct users, it would be extremely costly to identify and bill those users.

If the direct users should not or cannot be charged directly for the use of aviation facilities, the next question is whether the aviation community, the general public, or some combination of the two should be taxed to support the system. It is argued that the general public should bear part of the cost of the system due to the indirect benefits they receive, such as population dispersion, emergency services, and overall business efficiencies.

If this argument is accepted, the problem then becomes one of establishing the proper balance of taxes and resources allocation: how to make sure that the direct users of general aviation do not take advantage of the indirect users and vice versa. Cost-benefit analyses have been prescribed by economists for evaluating situations such as this, in so-called welfare economics. The procedure involves measuring all the costs involved in providing a service and all the benefits derived from the service, and then valuing each of these in monetary terms discounted to a common point in time. By observing the difference in value of costs and benefits, the service is considered either good or bad. Obviously distinct difficulties present themselves in trying to make such measurements.

Sometimes benefits are fairly direct and easy to measure, such as those received by banks which use general aviation as transportation to expedite the clearing of checks. This provides the banks with an efficiency that can be measured. Other benefits are less obvious and not easily measured, such as valuing the business person's time. Even greater difficulty is experienced in trying to value the indirect benefits to the general public, such as the emergency needs met by general aviation, and the population dispersion which it makes possible. Costs are often equally difficult to measure. For example, how much does airport noise infringe on the rights of the surrounding community, and how much compensation should members of the community receive?

These difficulties lead to the employment of a judgment process where some of the costs and benefits are directly measured, but others are arbitrarily valued. It is at this point that the process leaves the economic realm and moves into the political arena where, in fact, the decisions are not made strictly on the basis of economics. Even if a cost-benefit study could be done which accurately measured the value of the general aviation system, it is doubtful whether it would realize any significant influence in the political arena where the decisions are made.

The question thus arises as to how to ensure that the decisions adequately take into account the interests of all concerned.

In the context of general aviation, two interest groups have been fairly well defined:

- 1) An activist group against general aviation which feels that it unjustly bears the cost of general aviation, often for example, those who suffer from the noise created.
- 2) The direct and indirect user group that benefits from general aviation.

There is reason to believe that the individual interests of these two groups do not weigh out proportionally in the final decision process, but that the first group probably gains considerable favor. This notion is supported by the fact that the first group consists primarily of local people who live near the airport and are geographically concentrated. Their proximity and resulting peer pressures cause the cost and difficulty in organizing such groups to be relatively low. In contrast, the groups that benefit from general aviation are not nearly as easy to organize. Indirect users who benefit are extremely hard to identify, inform, and motivate. Thus, it is reasonable to assume that the second group is less represented in the decision process, and that misallocation of resources does result.

It is believed that economic impact studies may be used to help correct some of the problems noted above and help maintain a balance of power in the political arena. But in order to achieve these objectives, the economic impact studies must be done on a widespread basis. They must identify the beneficiaries of general aviation, and there must be a way to make the beneficiaries aware of the value general aviation has for them. In other words, EIS are needed to fill in a gap in the present system. They are needed to help insure there is a proper distribution of resources which can only be achieved if people are aware of the benefits they are obtaining from general aviation.

Economic impact studies have been done in a few locations, but they have not been done in many places where they are needed due to the difficulties of developing the methodology for conducting the study. Where they have been done, some have used weak methodologies and have had limited effectiveness. These factors point to the need for a well conceived and uniform methodology which could be applied on a widespread basis. This would increase the number of useful studies that are done, and would produce results which are comparable between areas. This in turn would facilitate an analysis of the distribution of general aviation's impact and, on a national level, would allow patterns in general aviation's economic impact to be discerned.

SUMMARY

- 1) Problems exist with market failure in general aviation.
- 2) Cost-benefit analyses are weak, and are not a good way to get the answers, partly because they are difficult to do, and partly because the decision makers in the political arena do not necessarily use them in the decision making process.
- 3) General aviation at the local level is weak politically, and EIS must help out here. The beneficiaries of general aviation must be sought out and kept informed in terms they can understand and identify with.

ASSESSMENT OF THE ROLE OF GENERAL AVIATION
IN THE NATION'S ECONOMY

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Introduction and Summary

Two aspects were addressed, based on a recent study undertaken by Gellman Research Associates, Inc. for the Federal Aviation Administration, namely:

- 1) Identification of direct contributions of general aviation (GA) to both gross national product (GNP) and gross national income (GNI) sectors of the national economy.
- 2) The effects upon the national economy should GA cease to exist, and in particular, productivity and consumption effects.

The results of the study were:

GNP + GNI contributions of
the order \$3.7 billion

Consumer benefits \$1.0 billion

General Aviation Contribution to GNP and GNI

Inherent to the study were the following three characteristics:

- a) The study was designed to be consistent with the national accounts kept by the Department of Commerce to facilitate comparison of general aviation's contribution to the entire GNP of the country.
- b) Only direct contributions, and no multiplier effects were to be considered in the analysis. Argument in support of this notion is given later.
- c) The objective of the study was to develop a consistent method of allocating general aviation's contribution to GNP and GNI.

The distinction between GNP and GNI was highlighted by citing the example of the fixed base operator (FBO) who buys one gallon of fuel for say \$1.40 and then sells it for general aviation use for \$1.50.

From a GNP perspective:

- a) If he sells the one gallon to a family who uses the fuel for say recreational purposes, then in essence, that family constitutes a final demand sector, rendering the full \$1.50 contribution to GNP allocated to the general aviation sector.
- b) Alternatively, if he sells the one gallon to a farmer for his production of rice say, the final demand sector, i.e., consumer, gets the final product from the supermarket, and thus the contribution to GNP is allocated to the supermarket instead of the farmer of the FBO.

From a GNI perspective:

- a) Regardless of whom the one gallon was sold to, GNI merely identifies the value added to the commodity each time it changes hands. In this instance the GNI contribution of 10 cents/gallon (\$1.50-\$1.40) is allocated to the FBO, and is the basis for his income tax liabilities.

Clearly then, GNI is the better estimate to reveal what is going on within the general aviation sector.

Given this allocation, GNP and GNI contribution do not match up. For FBO's, contributions to GNP are greater than to GNI. This is because FBO's, who are in essence retailers, generally buy 'finished products,' which they then mark-up in price and sell. Such mark-ups are usually small when compared to the current value of the product and hence do not add much to this value.

Extending this notion to encompass general aviation at large, our report shows that in 1977 total sales of general aviation amounted to about \$9.0 billion. Comparing, for the same period, the GNI contributions by general aviation and the average manufacturing industry, it is evident that while the latter on average added approximately 35 percent to the value of the goods it sold, general aviation added approximately 42 percent to the value. Such measures could serve as useful indicators to help buttress discussions regarding the self-sufficiency of general aviation, or whether there are unique production enterprises involved in general aviation which cannot be purchased elsewhere.

The notion of considering direct contributions only in the study, as opposed to a multiplier analysis, is motivated by the fact that the latter is based upon marginal analysis, and hence is appropriate only to small perturbations in the general aviation industry. Small perturbations here would imply the impact resulting from small changes in the industry. The point in the second question though, is not about small changes in the general aviation industry, but indeed what if this entire industry ceased to exist. This would certainly not be a marginal impact. To further exemplify, if general aviation did not exist there would be at least some, all be it imperfect, substitute, and thus the overall impact on GNP would not be 2 or 3 times general aviation sales, but would be somewhat smaller than this. Thus, instead of using multiplier analysis, appropriate substitutes to general aviation are identified and considered in determining the effects on the national economy that would accompany the loss of general aviation.