



New Visions

Insights on Air Mobility and Economic Growth

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Economic Impact of SATS on Indiana

By Morton J. Marcus

Improvements in transportation technology bring about dramatic reductions in the costs of doing business. History and pre-history are full of examples from the wheel and axle to the jet airplane. Improvements in the means of transport: steam boats, locomotives, and gasoline or diesel powered vehicles produce infrastructure changes. We need to only think of the canals, the rail lines, and the interstate highways to see marked effects on every continent. These effects were transformations in the fortunes of communities, businesses, and livelihoods.

Tomorrow, we will see a Small Aircraft Transportation System (SATS) that will again change the relationships between places, lower transport costs, and restructure markets. SATS may revolutionize land use as other transportation innovations have made some cities into new boom towns and turned others into shells of their past glories. SATS will also create new jobs, destroy old ones, build new industries and send others into a tailspin.

None of these changes will occur tomorrow. Naysayers will doubt that they will ever occur. Skeptics will say that nothing meaningful will happen for decades. Optimists will see consequences within the next ten years. Fanatics will shorten that time horizon.

Let's try to look at the economic changes that SATS can create in an organized fashion:

1. Conversion effects
2. Transport effects
3. Location effects

Conversion Effects

Production of SATS vehicles and the modification of airports for the use of such vehicles will be the first effect that needs to be considered. Where will such planes be made? Currently there are a few manufacturers engaged in SATS production. As the popularity of SATS expands following an increased knowledge of its characteristics, SATS production will also increase.

There are four distinct possible paths for this development:

- New firms dedicated to SATS production.
- Expansion of existing lines of production by Indiana firms in the aeronautics and electronics industries.
- Conversion to SATS production by Indiana firms in other industries.
- Attraction to Indiana of firms entering SATS production.

Indiana can take an aggressive role to attract such firms. But history shows that new firms tend to locate close to where the initiators grew up. (Microsoft is an exception. Dell, Ford, and GM are good examples of the rule.) The state would have to offer specialized resources and assistance to attract such firms. The location of Cirrus in Duluth is such an example. (See *Free Flight* by James Fallows for details.)

Existing firms in the aeronautics industry are few in Indiana, but Rolls Royce and Allison have a history of producing for the industry. Also, there are many electronics firms that might be interested in expanding their product line to serve as suppliers to SATS manufacturers.

Similarly, many of the abundant automotive-related firms in Indiana may be well situated to become suppliers to or even producers of SATS vehicles. It requires that they become familiar with the opportunities and requirements of SATS-oriented production and that they have the intellectual flexibility to allocate capital to new lines of production.

The recent announcement by GE and Honda that they are jointly entering the market for small jet engines raises the enticing question: where will this product be built? If there were ever a time for Indiana to develop a new industrial cluster, based on existing strengths, the dawn of the SATS Age seems to be it.

Transport Effects

The availability of SATS will lower the total time-cost distance between cities. A trip from Logansport to Joplin will require less time, less hassle, and fewer opportunities for something to go wrong.

The economic well-being of a community can be measured by its per capita personal income (PCPI) and its performance over time can be described by the relative change in its PCPI compared to that of other communities. One of the factors leading a community to have a higher level of PCPI or a higher change in its growth than other places is the time-cost of travel. The lower the time-cost of travel between Logansport and its trading partners (say all cities within a 500 mile radius), the higher the level of PCPI. If the time-cost for Logansport is reduced compared to the time-cost for Lafayette, then we would expect, holding all other factors constant, Logansport to out-perform Lafayette in the growth of PCPI.

Isn't this what we saw when the railroads were introduced? Didn't we see the same thing happen when the interstate highways made southern cities more accessible locations? Hasn't air travel made Phoenix and Las Vegas growth centers? Certainly there were added factors to be considered. Without doubt there are exceptions (Austin may be one).

There are several ways to investigate this idea or hypothesis. A cross-section study at a given point in time would look at the average time-cost distance from each

community in the study, along with the composition of its economy (based on industry location quotients) as predictors of PCPI. We would expect to find that communities with lower time-cost factors would have higher PCPI, holding constant industrial structure. From this, we could estimate the improvements in PCPI specific places would achieve if their time-cost factors were reduced.

A more historical approach would be to examine the effects of the interstate highway system. What was the relative PCPI for Cambridge (OH), Angola (IN) and other towns that are now at the intersections of major interstates before and after the interstates were open? What is the difference in the change of PCPI for Shelbyville (IN) which enjoys Interstate 74 and Rushville (IN) which is near, but off two interstates?

Changes in PCPI can be considered in terms of changes in employment by industry and changes in wages per job. These data are available for every county in the nation for an extended period of time.

Location Effects

Places that have lower time-costs of travel are expected to be preferred for residential and business purposes. Hence, we should expect to see growth in the number of persons, households, and business establishments when the time-costs of travel decline. Just as PCPI could be examined for the effects of lower-time costs, these elements could be considered via data from the Bureau of Census in its population and business patterns reports. But the effects we are discussing may not be symmetrical. Interstate-70 has encouraged population and household growth further east and west of Indianapolis than it has encouraged business development.

SATS will change how business is done and how people live. The magnitude of those impacts will vary primarily according to how much the time-cost of travel is changed. In places that currently have wonderful access to other places, the effects may be small. In places that are at a disadvantage today, the impacts could be strong. The ideas offered above are a beginning toward understanding how SATS will impact the economy.

About the Author:

Morton J. Marcus is Director Emeritus of the Indiana Business Research Center, Kelley School of Business, Indiana University. He is also Economic Advisor to the Indiana SATS Consortium.

Dr. Marcus was a faculty member for 33 years at Kelley School of Business, Indiana University. He is an internationally recognized expert on regional economies; has been a columnist since 1990, published in more than 30 newspapers each week; and was Governor's liaison to the U.S. Bureau of Census from 1979 to 2003. He describes himself as an economist with wit and a consistent point-of-view. With a relaxed and humorous style, Dr. Marcus brings difficult economic concepts into focus, makes sense

of government policies and provides new insights into complex trends.

Dr. Marcus received a Bachelor of Arts in Economics from Roosevelt University, a Masters in Economics from Washington University and a Doctorate in Economics from the University of California, Los Angeles.

Indiana SATS Consortium to Host Meeting in September

The Indiana SATS Consortium will be holding its next meeting in September at Notre Dame. The keynote speaker will be Dr. Albert-László Barabási, the esteemed Emil T. Hofman Professor of Physics at the University of Notre Dame and noted author of *LINKED: The New Science of Networks*. In *LINKED*, Dr. Barabási states that “the rapidly unfolding science of networks is uncovering phenomena that are far more exciting and revealing than the casual use of the word *network* could ever convey.” The air transportation system is essentially a network.

Join us in September to learn more about how the Small Aircraft Transportation System (SATS) will result in a more distributed air transportation network that relieves the congested hub and spoke transportation network and ushers in an era of unconstrained air mobility and increased productivity.

Further details about the September meeting will be published in the July newsletter.

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