

## SETTING THE STAGE

# Recent Developments in Economic Information

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### TRANSPORTATION SATELLITE ACCOUNTS AND CAPITAL STOCKS ACCOUNTS

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#### Transportation Satellite Accounts

I will start with the transportation satellite accounts. They are a joint product between the Bureau of Transportation Statistics (BTS) and the Bureau of Economic Analysis (BEA). These accounts intend to answer the question of how important transportation is to the U.S. economy. The general framework looks at the use of "own-account" (or in-house) transportation and for-hire transportation for some 500 industries. It emphasizes business use; currently it covers neither the personal use of cars, nor the use of cars and other transportation forms by the government, nor the use of capital assets such as highways. Those can be quite significant.

The satellite account shows inputs to transportation, such as fuel, drivers, trucks, and so forth. You also can use the transportation satellite account to show the impact of some change in final demand for a product on the demand for transportation. For example, you can ask, if there is an increase in the demand for fruit, how will that ripple through the economy in terms of an increased demand for transportation generally and for an individual component of transportation more particularly?

The satellite account also helps you get at the importance of transportation in light of the rest of the economy. So how important is it? The answer is that across all industries transportation contributes about 5 percent of gross domestic product (GDP). This 5 percent has two parts. For-hire transportation accounts for 3 percent and own-account transportation accounts for approximately 2 percent of GDP. And in response to a question from the audience, it is exactly correct to interpret this to mean that if there were no transportation, GDP would fall by 5 percent.

Now, I do understand that the figure of 10.7 percent is floating out there. However, that figure is not really correct. When we focus on the supply side and seek to isolate transportation's value-added impact as an input to the economy, 5 percent is the correct figure to use. The methodology we used for deriving the 5 percent figure ensures that all inputs to GDP summed together add up to 100 percent. In contrast, if you used a gross output (as opposed to value-added) approach and thus derived the 10.7 percent figure, you would end up with a sum that equals about 200 percent of actual GDP. By focusing on value-added, we can legitimately compare transportation to all the other industries in the economy.

Now, a problem with the analysis I have just discussed is that the data feeding into it date back to 1992. The good news is that by approximately the summer of 2000, we will release a 1996 annual update of the transportation satellite accounts.

## Capital Stock Accounts

Now, let us switch gears and talk about how to calculate capital stocks for highways. I have developed two strategies: a simple one and a complicated one.

Sometimes it is really going to be worthwhile to do the more complicated strategy, but let us start with the simple strategy. It is just a formula, as follows:

$$KS_y = \text{capital outlay}_y + [(1 - 0.0202) * KS_{y-1}]$$

There is one magic number that you need to know to be able to work with the simple strategy: 0.0202. It is the crucial piece in the construction of a capital stock when you use the perpetual inventory method, which is what almost everyone uses. The preceding formula shows that the capital stock in a given year depends upon the capital outlay in that year plus how much capital stock you already have. However, the capital stock you already have must be adjusted because of retirement and a decline in efficiency, and that is the 0.0202 factor: the rate of deterioration. In plain language, this is the decline in the potential productive capacity of any asset over time. And for this number, the 0.0202 factor is pretty good, as it derives from multiple empirical analyses.

Beyond the 0.0202 deterioration factor, what else do you need? Two pieces: You need a deflator. BEA uses a deflator that is essentially the same as the construction cost index from the Federal Highway Administration, which is very easy to get. Second, you need a benchmark, which is to say a starting point. That is the one thing for which there is not a totally obvious answer. You might choose, for example, the starting point of 1950, and then estimate the efficiency of the existing

highway components. Even if you do not have a perfect benchmark, use a benchmark.

That is it for the simple strategy. Why would you want to use the more complicated strategy? Mainly because your particular region may not resemble the country as a whole. The paper I have prepared (available for download at [www.itsamac.com/~nsjfofster/TRB/99Irvine/index.nclnk](http://www.itsamac.com/~nsjfofster/TRB/99Irvine/index.nclnk)) gives you a blueprint about how you can use the more complicated approach. A series of five Excel spreadsheets will soon be available for download from that same site, so that if you want to try your hand at the more complicated strategy, you do not have to type in all the numbers. This approach includes divisions by local, state, and interstate outlays and splits by right-of-way, new construction, reconstruction, pavement grading, structures, and so forth. The fat paper considers a \$1,000 capital outlay in 1960 and provides a step-by-step example, showing exactly what you would do under the more complicated approach.

Finally, in response to a comment from the audience, I concur that capital stock measures, in and of themselves, reveal only part of the story. What is really useful is information on the services provided by those existing assets. We have very minimal information on the service provided by our capital stocks, and that is an inquiry that very much needs to take place.

Anyone who is a glutton for punishment should read the full 125-plus-page report ("Productive Capital Stock Measures," prepared by Barbara Fraumeni on behalf of the Federal Highway Administration and available for download at <http://www.fhwa.dot.gov/reports/phcsm/index.htm>). But I recommend looking at the strategy paper, which is only 11 pages. (Please see the "Resource Papers" section of these proceedings for the full text of the 11-page paper.)

## RATE OF RETURN AND PRODUCTIVITY STUDIES, COMMODITY AND PASSENGER FLOW DATA, AND AMERICAN COMMUNITY SURVEY

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I am going to talk about data on physical transportation activity, including commodity flows, passenger movement, and vehicle use. These data feed national economic accounts, can be used to translate those accounts to the state and local level, and provide key variables for use in project evaluation and revenue forecasts.

Transportation is an enabler of economic relationships, and transportation activity is a reflection of those relationships. The enabling role of transportation is obvious but not well measured. Someone asked earlier this morning whether a complete cessation of transportation services would cause the economy to decline 5 percent or disappear. The satellite account shows that transportation services contribute 5 percent to the economic activity of the nation; however, without transportation the steel produced in the Midwest would be worthless to the consumers of steel in the East, South, and West. Our economy would not disappear, but it certainly would be much smaller. Transportation allows local economies to link with one another, and the resulting flows of goods, people, and vehicles indicate how important those linkages are.