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UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D C 20548

PROGRAM ANALYSIS
DIVISION

B-205470

SEPTEMBER 30, 1983

The Honorable Larry Pressler
Chairman, Subcommittee on Business,
Trade and Tourism
Committee on Commerce, Science
and Transportation
United States Senate

Dear Mr. Chairman:

Subject: Estimates of Job Generation in the Travel
and Tourism Industry (GAO/PAD-83-54)

You asked us to compare and contrast the estimated effects of different categories of spending on employment. As agreed with your office, we used the estimates made by the travel and tourism industry and estimates others have made of the job creation effects of expenditures on defense, exports, and public works construction projects. We did not make estimates of our own, nor did we evaluate the statistical validity of existing employment estimates.

After conducting our study, we found that the employment estimates vary widely both within and among the expenditure categories (see enclosure). Furthermore, the estimates are not directly comparable because they (1) are derived from different types of models; (2) are not estimates of the identical effects, i.e., jobs are defined differently; (3) are based on spending in different years; and (4) are based on different data sources.

SCOPE AND METHODOLOGY

To obtain estimates of the effects of travel industry spending on U.S. employment, we interviewed travel and tourism industry representatives. These representatives included the director of the Travel Data Center and a policy analyst on the staff of the Travel and Tourism Government Affairs Council. We also talked to the director of research of the U.S. Travel and Tourism Administration of the Commerce Department (DOC). The U.S. Travel Data Center was the only organization we were able to identify that estimated the amount of employment generated per billion dollars of travel and tourism expenditures.

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To obtain employment estimates on the other categories, we received information from the Department of Defense (DOD) and DOC. The Director of the Economic Analysis Division, Program Analysis and Evaluation, Office of the Secretary of Defense, provided information about the types of models the DOD uses to make its employment estimates. The Department of Commerce's International Trade Administration provided estimates of domestic employment generated by U.S. exports. We obtained several employment estimates for expenditures on public works construction projects from published sources. We searched the literature for additional estimates and found a range of estimates for defense expenditures, but no other employment estimates for export and travel and tourism expenditures.

The estimated effects of spending on employment presented in the enclosure are estimates of gross employment rather than net employment (footnote a/ of the enclosure notes one exception). Unlike net employment estimates, gross estimates do not take into consideration the jobs that would have been created through alternative uses of the resources. For example, Federal expenditures for one particular function, say public works, are financed by tax dollars and/or Federal borrowing. If the Federal Government had not used these resources for public works, they presumably would have been available to be spent in other ways in the public or private sector. This alternative spending also would create jobs. The number of net jobs created would be the difference between public works employment and the employment that would have been created with alternative uses of the resources.

COMPARISON OF ESTIMATES

The comparative analysis of the employment estimates was difficult to perform for many reasons. First, different methodologies are used. Estimates of the employment effects of defense, public works, and export expenditures are derived from input-output models while direct employment estimates for the travel and tourism industry are based on an approach that officials at the U.S. Travel Data Center refer to as a ratio model. An input-output model shows the flow of production by interrelating physical material inputs, intermediate goods, and final outputs. A ratio model, while similar to input-output analysis in some respects, is less general and not as sophisticated as an input-output model. The ratio model only quantifies relationships for a particular sector and does not identify the exact relationship between that sector and the rest of the economy. Also, the ratio model does not require the massive amount of detailed data that input-output models require. When asked if they had considered using an input-output model, researchers in the travel and tourism industry told us

they recognize the differences in analytical approaches. However, given data limitations (both in quality and in coverage) and the range in estimates from various approaches, they decided that the expense of an input-output model to estimate the direct effects of travel and tourism spending was not warranted. Thus, they used the ratio model to estimate direct effects and then linked up their model to an input-output model to obtain estimates of the indirect effects.

The travel and tourism industry's employment estimates are derived from their National Travel Expenditure Model (NTEM). NTEM is based on data from the Census Bureau's 1977 National Travel Survey and the U.S. Travel Data Center's Annual National Travel Survey. Through NTEM, travel-related activity levels (e.g., number of train trips, airplane trips, etc.) to places within the United States are combined with the appropriate average costs of each unit of travel activity (e.g., cost per mile by mode of transportation, etc.) to produce estimates of total traveler-generated expenditures on 15 categories of travel-related goods and services. In most cases, the model assumes that total spending, both traveler-generated and other, in each industry category equals business receipts (as defined by the Bureau of Census) for that category. The ratio of traveler-generated expenditures to total business receipts (for each category) is multiplied by the number of workers in each category to obtain an estimate of traveler-generated employment. Finally, employment generated by foreign travel spending in the United States is added to the domestic employment figures to obtain an average employment estimate.

The travel and tourism ratio model estimates the average number of jobs, i.e., the current number of employees divided by current expenditures. Comparing this estimate with the defense and public works estimates presented is difficult because the input-output models for defense and public works estimated marginal jobs, i.e., the additional number of jobs created from an additional billion dollars, given the current spending level. The estimate of the marginal number of jobs created by an increase of a billion dollars in spending may be higher, equal to, or lower than the average number of jobs per billion dollars. More information would be needed to make such a determination.

Another factor that limits comparisons among the employment estimates is the difference between direct, indirect, and induced jobs. Direct jobs reflect employment in the specific industry; indirect jobs reflect employment in the supplying industries; and induced jobs reflect employment created as the directly and indirectly employed workers spend their salaries on food, clothes, etc. For example, the travel and tourism industry estimated that

24,084 direct jobs were generated for every billion dollars of travel and tourism spending in 1981, the number of indirect jobs was estimated to be 11,518 per billion dollars of travel and tourism spending. The indirect estimate was obtained by linking the NTEM with a specialized version of an input-output model. The specialized version, however, is based on data generated for a much earlier time period. When the indirect component is included, the travel and tourism industry's employment estimate increases to 35,602 jobs per billion dollars. The Defense Department's employment estimate is 35,000 jobs for an additional billion dollars of defense spending and includes direct and indirect jobs (25,000) as well as induced jobs (10,000).

Even though the travel and tourism estimate (35,602) is roughly the same as the Defense Department's employment estimate (35,000), the two cannot be compared because the former does not include induced jobs. However, even if induced employment were added to the travel and tourism estimate, these two employment estimates could not be directly compared because the models and the types of jobs (average versus marginal) are different.

The use of different base years further complicates comparisons among the employment estimates, particularly when comparing the public works direct and indirect marginal job estimate of 44,112, based on 1974 data, with the equivalent 1982 defense spending job estimate of 25,000. These two numbers are not directly comparable because of changes in productivity and the inflation rate. Inflation since 1974 has greatly reduced the purchasing power of money. Accordingly, employment generated per billion 1982 dollars may be significantly less than the number of jobs created by an equivalent level of spending in 1974.

The importance of the base year can be further illustrated by contrasting estimates for different years in the export sector. Direct and indirect employment per billion dollars of total U.S. exports declined from 30,300 to 25,200 jobs between 1980 and 1982. The same model was used to calculate these two estimates, but the 1982 estimate is 16.8 percent lower than the 1980 estimate. This decline was mainly due to inflation and changes in productivity.

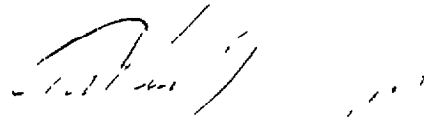
In summary, the differences in models, differences in what the estimates measure, differences in base years, and differences in data sources make the employment estimates among the four expenditure categories not directly comparable.

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Officials at the U.S. Travel and Tourism Administration, the International Trade Administration, the Economic Development Administration, the Department of Defense, the U.S. Travel Data Center, and the Travel and Tourism Government Affairs Council reviewed a draft of this report. Their comments have been incorporated.

As arranged with your office, we will send copies of this report to interested parties and make copies available to others on request. If you have any questions about this letter or if we can be of further assistance, please call us.

Sincerely,



Arthur J. Corazzini
Acting Director

Enclosure