DISCUSSION

My comments will relate chiefly to the paper "Economic Projections for Local Areas" by Graham, Garnick, and Olson. The paper is a worthwhile contribution to a growing literature covering projections of employment and income as related to projections of population. The paper falls into three main parts, the first describing the delineation of 165 economic areas of the United States for statistical purposes, the second describing a model for projecting employment, and the third presenting the results of empirical tests of personal income projections.

The 165 economic areas are combinations of complete counties grouped around an important city, with no attempt to observe State boundaries. Tt. must be admitted that the States are not ideal divisions of the U.S. for economic analysis. For the purpose of projecting employment and income, the economic areas are very suitable since the input of employment and earnings by industry is available annually by county. However, at some point it is usually desirable to consider statistics from other sources, such as the decennial census. Only through special arrangement can data for these areas be developed from the decennial census. Furthermore, estimates and projections by the Bureau of the Census and other agencies often develop figures for States before developing figures for counties. Since the 165 economic areas cannot be grouped into States any comparison between projections for States with projections for the 165 areas would have to wait until county projections had been developed, and reassembled into the 165 economic areas.

It is a central thesis of my remarks that greater integration of demographic and economic projections by various agencies is desirable. Such integration in this case between the Census Bureau and the Office of Business Economics will be difficult or impossible if the economic areas bear no correspondence to States or even Standard Metropolitan Statistical Areas. We at the Bureau are now developing projections of population for all metropolitan areas to 1975 using a fairly sophisticated cohort-component model, projecting gross out-and gross in-migration separately. In doing this, we are projecting the areas according to the 1960 geographic definition. Mr. Kupinsky's paper discusses another set of projections for SMSA's for which the National Planning Association has introduced a flexible definition of metropolitan area boundaries, implicitly assuming that the geographic boundaries of the SMSA's will expand with expanding population. Thus we have three important sets of projections for economic areas smaller than States which disagree fundamentally with each other with respect to the geographic areas used, making comparison difficult or impossible. Is it possible to agree on a set of economic areas which cross State lines only where considerations of economic integration are overriding, as in New York, Philadelphia,

Washington, D.C., and a few other places? Then some State data could be used, making special adjustments for these areas, and comparisons with data on widely varying subjects would be facilitated. Another alternative is a built-in two-stage operation, where all economic areas crossing State lines are calculated as a whole, but are automatically computed also as two parts, which are then forced into agreement with the whole. The various parts could then be reassembled into States.

The second major portion of the paper presents a model for projecting employment for the 165 economic areas. Employment is divided into two main categories, basic and residentiary. The former constitutes all of those activities "the products of which either flow in interregional trade or are otherwise determined outside of the region". These include mainly the products of agriculture, mining and manufacturing. Residentiary employment is that directed toward supplying local businesses and households with commodities and services which do not enter interregional trade. In the model basic employment is projected by a shift-share technique, while residentiary employment is developed as a function of total employment in the area.

This approach seems to be reasonable and worthy of analysis. If it is assumed that national employment totals by industry can be projected with reasonable accuracy, then the ability to predict the share which each area will enjoy of the nation's employment in a particular industry will yield an accurate projection of employment in that industry in that particular area. I would make one minor dissenting observation in that the model apparently uses one definition of basic employment for all areas. However, it is clear that industry sectors which are residentiary to one area are clearly basic to another. The examples that spring to mind occur in the field of entertainment, recreation, and education. However, this is not an overriding consideration and the model is well worthy of development and testing.

The third major portion of the paper describes the results of empirical tests of five sets of personal income projections by State. The implication is that these tests bear on the suitability of the employment model previously discussed. The tests are by State and not by economic areas, but this is by no means an insurmountable obstacle. A more important obstacle is that the model deals with employment, while all five sets of projections are of personal income, and only set No. 1 uses employment as an input. For this set the projection of employment by State, by industry, developed from the Harris shift-share model serves as an input in developing income from wages and salaries.

The projections of income from this rather com-

plex model are out-performed by a relatively simple model using ratio techniques. Two questions suggest themselves. 1) Do the authors suggest that the empirical tests do reflect on the employment model previously discussed, and 2) does the relatively poor performance of the most complex shift-share income model as compared with a simple model suggest that shift-share analysis is not promising for employment or income projections?

These are questions of detail. The paper raises by implication broader questions concerning the relationship between projections of employment and population. The authors state that population projections should be made dependent on employment projections, since "the major factor underlying migration is economic opportunity or the lack thereof". Yet they make the point that the several sets of projections they have developed, while varying a great deal in the amount of detail introduced, all rest fundamentally on a technique of extrapolating past trends. The demographic population projections we have developed at the Census Bureau, although very detailed, also extrapolate past trends of migration, fertility and mortality. A strong correlation between employment change and net migration has been established by Lowry and Blanco. In the presence of such correlation. separate projections of employment and population based on the extrapolation of past trends should be highly correlated, assuming the same historical base period is used.

It would seem therefore, that as long as the basic projection technique consists of the extrapolation of past trends, less emphasis should be placed on which projection is developed first, and more on the manner of linking the two projections. Here it is clear that age-sexspecific labor force participation rates are indicated. These participation rates vary widely by age and sex, but the age-sex specific rates show surprisingly little variation regionally. Furthermore, long term trends in these rates can be readily discerned. Therefore, it should be possible to project these rates at least as effectively as migration and employment. These projected rates would then be applied to a demographic projection by age and sex to develop a projected labor force, and provide a satisfactory link with a projection of employment.

In conclusion, I believe it would be worthwhile to consider alternatives to the basic technique of extrapolating past trends. Rapid technological change in the past 30 years has drastically altered man's power to influence his physical environment. Future technological change should even more drastically increase this power. In this event, human attitudes and intentions as to place of residence will become more and more important in determining regional location of population. These attitudes and intentions should be investigated. As a beginning, we should consider jobs and migrants not only as numbers in a table, but also as persons who will behave in a certain way for certain reasons. These persons can be asked what they expect or plan to do in the future, and thus provide an alternative to the extrapolation of past statistical trends in making projections. Evaluation of the answers to such questions will not be easy, and years will be required in evolving a satisfactory use of such data in making projections.