This is not the case for large amounts of military procurement, however. Many of these items are made to order, and a long lag occurs between orders and purchases. If military procurement were a small or unchanging portion of government purchases, inaccurate equations would perhaps not be crucial. But some of the important uses of these models have to do with the time path of the economy as changes in these procurement actions occur. An accurate description of the process is thus especially necessary if econometric models are to be helpful in evaluating alternative courses of action which would tend to offset major changes in procurement.

The discussion also showed that when obligations were explicitly included they emerged as an important explanatory variable. The empirical work discussed in the following sections bears this out for the aerospace industry expenditures and presents some new evidence on the importance of the "announcement" effect.

IV. Statistical Results

The previous sections have argued that models designed to analyze the effects on employment of military procurement should incorporate announcement variables and new orders to obtain more accurate predictions of the time path of employment. It has also been pointed out that many of the existing large-scale econometric models of the economy have not done so, and that the small amount of empirical work which has recognized the role of new orders has discovered it to be an important variable. In this section empirical work for two groups of budget categories will be discussed. Specifically, expenditures and obligations for the aircraft-missiles-astronautics budget categories (hereafter aerospace group), will be related to employment in SIC categories 372 and 19, aircraft and parts, and ordnance and accessories, respectively, and budget category "ships" will be associated with SIC category 3731, shipbuilding and repairing. A more detailed description of the data may be found in the appendix.

Tables 1, 2, and 3 contain the results for the aerospace industry of multiple regression analyses for three dependent variables: total employment, production worker employment, and number of production workers times average weekly hours worked. Employment figures are in thousands of employees, man-hours are in thousands, and all dollar amounts are in millions. The results are broadly similar and are discussed in the following paragraphs.

(1) Seasonal and time variables: Generally, the seasonal variables are not significant individually, which lends support to the hypothesis that observed seasonality in the employment series is better explained by the seasonality in the obligations series than a constant seasonal pattern. An F test performed on the group of seasonal dummy variables for the total worker regression proved to be insignificant at the 5 percent level. Both time and time squared are highly significant. The coefficient of time is negative and that of time squared, positive. Over the range of t in this study, however, the negative effect predominates and the net effect of time is negative, although at a decreasing rate. In view of the earlier discussion of the likely effects of price changes and subcontracting patterns, this negative effect was expected.