The R^2s are quite high, ranging from .73 to .93, and are highest for the production workers and the production man-hours equations. The Durbin-Watson statistic appears to indicate some degree of positive serial correlation of the residuals, although the published tables do not contain entries for the number of independent variables used in these regressions.

Several other sets of regressions were tried with lack of success. The first used outstanding obligation, lagged up to 6 months, as independent variables. They were not statistically significant and yielded low R^2s. Another set of regressions used the data for the shipbuilding industry to estimate models similar to those reported above. The results were quite disappointing, with statistically insignificant coefficients and low R^2s. Much of the trouble is no doubt due to the large and changing civilian component in employment.[6]

The importance of considering the effects of announcement and obligations variables on employment is illustrated in table 4. Three different models are used to generate the employment effects of the following postulated series of events: $1 billion are added to the budget and included in an appropriations bill passed in August, a contract for that amount is let in September, and delivery takes place the following September. Model I utilizes the coefficients recorded in table 1. It includes both announcement effects and obligations. Model II is based on a similar regression with the announcement variables omitted. Model III assumes that the entire employment effect takes place at the time of delivery as assumed in several of the econometric models discussed above.

Model I accounts for a greater total of employment than model II and displays a rather different time pattern.[7] By September, when the obligation is assumed to occur, the announcement variables have already generated 17 percent of the total employment. The percentage of employment accounted for by model I remains above that accounted for by model II for the whole period. Both models I and II, of course, predict a time rather different from that suggested by model III.

V. Conclusions

It will be convenient to consider the main conclusions of this study in four parts: an empirical description of the military procurement process, the implications for econometric models, data needs and availability, and directions for further research.

A. EMPIRICAL DESCRIPTION OF THE MILITARY PROCUREMENT PROCESS

Based on the description of the government spending process and the regressions for the aerospace industry, it is clear that an important role is played by the obligations variables. Beginning with a 1-month lag they exert an important influence for a year. In addition, evidence has been presented to indicate that two proxies for announcement

[6] According to (18, p. 23), the 1958 portion of military output (according to value of output) for the shipbuilding and repairing industry was 61 percent. Further, Survey of Manufactures data reveal that the proportion of military shipbuilding has fluctuated from about 30 percent to over 50 percent.

[7] A referee notes that employment drops following the new appropriation and the new obligation in model I. The former occurs because the coefficient for unobligated appropriations (.0071) is smaller than the coefficient for the budget variable (.0081). Perhaps this is because much of the preliminary planning and development is done in response to the announcement of the budget in January and is virtually completed by the time of the enactment of the appropriations in August. The drop in employment at the time of the hypothetical obligation in September is due to the negative, but insignificant, coefficient of current obligations (—.0037). I did not think it necessary to recompute the equation without this variable.