pea työajan lyhentäminen ei siten olisi sopuoinnussa kansalaisten nykyisten vapa-aikojen ja kulutustta koskevien tavoitteiden kanssa. Joustavuuden lisääminen työaista sovittaisessa saattaisi sen sijasta olla paikallan.


Loppujen lopuksi ei hullumpi pien kirja — hyviä ajatuksia siellä täällä normaalilain selostavan tekstin seassa. Mutta miten työstää tästä käytännöpoikaiseen muotoon ja tiedä asioita eteenpäin — olisiko seminaarin tai teemailtapäivän aihetta?

Henri J. Vartiainen


The topic of this thesis is twofold:

First, K. Jusélius reviews and contributes to the theory and methodology of modelling seasonal variation in economic time series as unobserved components in dynamic regression models. Second and more importantly, she applies the methodology to monthly aggregate data on retail demand for beverages, soft drinks and mineral water, in Finland, where she skillfully combines the modelling of short-run seasonal effects with that of long-run price and income effects.

With this subject, she has chosen to do research in an area of applied economic analysis which is important and which has received a lot of attention in recent years. There is in the field of empirical economics
a need for statistical procedures which take account of the nature of the data (usually highly aggregated series with seasonal components etc.) and economic theory and other relevant considerations that are explicit on the direction of the causality between economic variables and possibly on the form of these relationships. In recently developed approaches to dynamic specification analysis, the dynamics of the model are at least in part derived from the information in the data, whereas economic theory is used to formulate restrictions on the long-run properties of the model.

The work reported in Jusélius’ thesis is done in the framework of these approaches. K. Jusélius has demonstrated that this can be done and how it can be done for monthly series for retailers’ demand of soft drinks and mineral water in Finland. Moreover she models the seasonal effects as unobserved components rather than first adjusting the series for seasonality and then modelling the long-run effects. Joint modelling of these effects is usually more appropriate as these short- and long-run effects can be highly interrelated.

Before applying her methodology and testing the model, the author tests her tools in a simulation study, so that the reader first gets a good feeling for the properties of the methods in a controlled environment before seeing them applied to actual data. Chapter 4 contains new results on the small sample properties of commonly used estimation methods when the data generation process is slightly different from what the investigator assumes. Checking the properties of the methods to be used is good practice. Moreover, the simulation results should be of interest to many applied workers.

The empirical analysis in the dissertation is carefully done. Attention is paid to the interpretation of the coefficients, the effect of introducing growth trends, the effect of restricting some coefficients. The author reports results on the outside-sample forecasting performance of the model as well as on the serial correlation of the residuals. Short- and long-run aspects are carefully analyzed. The stability of the estimation results over the sample period is also investigated. Most of the findings are in agreement with what one would expect a priori. The empirical study is well documented. The data, their plots and more importantly the fitted series and residuals are given in the appendices.

The fact however, that the author and I agree on important issues does not mean that there are no topics for discussion. Here, I would like to comment on two problems.

The first one concerns the presentation of the dynamic regression models in chapter 3 when the explanatory variable $X_t$ is contaminated by seasonal noise. Assuming an additive seasonal structure for $Y_t$ and $X_t$, where the seasonal and the non-seasonal components of $Y_t$ are explained by the corresponding components of $X_t$, respectively, the author shows that the regression estimates will be biased due to the correlation between the explanatory variables and the disturbance. (Expressions (3.24) and (3.34a) are incomplete; the final result is correct). This conclusion is of course not surprising. A similar result is obtained in errors-in-variables models, when an explanatory variable is subject to measurement errors.

The solution proposed by the author (on p. 56) to specify the process for the seasonal component of $X_t$ is a step in the right direction. It may be needed for consistent estimation of the parameters in the model.
An alternative approach consists of finding a proxy variable for the seasonal component of $X_t$, and a set of instrumental variables which are orthogonal to the disturbance of equation (3.25) after substitution of the proxy variable. This procedure would again yield consistent parameter estimates.

However, it may be preferable to specify the processes for the seasonal and nonseasonal components of $X_t$ to get a complete specification of the joint process for $\gamma_t$ and $X_t$. The parameters can then be consistently and efficiently estimated — provided of course they are identified.

Second, I would like to comment on the model for the retail demand for beverages in Finland.

Retail demand per capita consists of consumer demand and the change in inventories. The change in the nonseasonal component of consumer demand is assumed to depend on the change in income and prices and the deviation of last period nonseasonal consumer demand from its long-term path. This trend term is again explained by the price and income level and a variable which accounts for variations in the demand elasticity over income classes due to saturation. For the seasonal component of consumer demand, the author includes fixed dummy variables, the temperature and an error term with seasonal autoregression and a moving average part. The seasonal variations of inventories are modelled as a seasonal autoregressive model with moving average disturbances.

A number of comments are in order:

1) It would be more reasonable to assume that inventories are adjusted according to expected consumption. Therefore, it would be appropriate to assume that the seasonals in stock variations are identical to those in (expected) consumer demand. Besides being meaningful, this would lead to a reduction in the number of parameters.

2) Substitution effects are ignored in the model. One way to take account of substitution effects (which may be important) would be to include the prices of mineral waters and soft drinks in both demand equations.

3) For a period of growing demand, that is a period with a nonstationary target variable, an error correction term such as included in the model may lead to systematic underadjustment of the demand with respect to its long-run path. Again, this feature of the model may not be entirely appropriate.

4) With respect to the saturation level, it is reasonable to assume that the nonseasonal component of per capita demand by higher income classes is approximately constant, except for some substitution effects caused by changes in relative prices. This aspect of the model could be further refined.

5) Finally, the reader is probably interested in the outcome of a joint test of the restrictions imposed on the model. Computing the likelihood ratio may be somewhat cumbersome due to the nonlinear restrictions on the parameters. An approximate test will be sufficient in many occasions and can be carried out as follows. As an alternative hypothesis one can use a bivariate autoregressive model for the demand for the two types of beverages, including all explanatory variables in each equation. Sufficiently long lags should be included to make the disturbances (approximately) white noise. When each variable has the same lags in both equations, the model can be efficiently estimated equation by equation using OLS. The determinant of the residual
covariance matrix can be used to obtain the maximum of the likelihood function for the unrestricted model. For the restricted model, one can use the residual covariance matrix based on consistent but not necessarily efficient parameter estimates. The resulting «likelihood ratio» statistic is then biased towards rejection of the restricted model (as the exact maximum likelihood value for the restricted model has not been used). If such a test does not lead to rejection of the restricted model, the likelihood ratio test will certainly not lead to this conclusion.

Although the model put forward and used by K. Jusélius can be refined in many directions, her dissertation is, in my opinion, an interesting piece of work, which contains several new results, which is up to date and very carefully done. It is well documented and thoughtfully written up. It should be of interest to many applied workers.

F. C. Palm