Economic Forecasting
Exercise Sheet 2

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1. (a) Open the *EViews* file **nyse.wf1**, which contains monthly data from 1947m1 to 1990m2 on the volume of transactions on the New York Stock Exchange.

   (b) Estimate a quadratic trend model for NYSE. Save the predicted values as a variable QUAD.

   Hint: To estimate an equation in *EViews*, click on the *Quick* item on the main *EViews* menu (at the top of the main window), then select the option *Estimate Equation*. An *Equation Estimation* window opens in which you can type in the name of the variable to be explained (NYSE), followed by the explanatory variables to be used, separated by spaces. *EViews* provides some automatic variables to be used such as **C** for an intercept (constant) and **@TREND** for a time-trend (set to zero for the first observation). A quadratic trend term $TIME_t^2$ can be specified by including as explanatory variable **@TREND*@TREND**.

   Once the equation estimates have been obtained, the predicted values can be saved by switching to the forecast view by clicking on the *Forecast* tab in the *Equation* window and then typing a name to give the predicted values in the *Forecast name* box. A new variable will be created in the workfile.

   (c) Add a cubic term (**@TREND*@TREND*@TREND**) to the equation and compare the results. Save the predicted values as a variable CUBE. Graph NYSE, QUAD and CUBE together and comment on the results.

   (d) Estimate an exponential trend model for NYSE and save the predicted values as a variable EXPT. Compare the results with the quadratic and cubic models. Which is your preferred model?

   Hint: The simplest way of estimating an exponential trend model is to use **LOG(NYSE)** as the dependent variable and **C** and **@TREND** as the explanatory variables. **LOG()** is an *EViews* function for the natural

logarithm of a variable. When you save the predicted values, make use that you save the forecast for **NYSE** and not **LOG(NYSE)**.

(e) Estimate a log random walk model with drift for NYSE. Save the predicted values of NYSE as variable RWD. How does this stochastic trend forecast compare with the deterministic models?

Hint: The simplest way to do this is to use **DLOG(NYSE)** as the dependent variable and **C** as the explanatory variable. **DLOG()** is an *EViews* function for $\Delta \log$ of a variable. When you save the predicted values, make use that you save the forecast for **NYSE** and not **DLOG(NYSE)**. Also, make sure that you select **static** forecast rather than **dynamic** to get one-step ahead forecasts rather than multi-step forecasts.

(f) Perform an *Augmented Dickey-Fuller* (*ADF*) test of the null hypothesis that NYSE is

(i) *integrated of order 2* (*I(2)*)

(ii) *integrated of order 1* (*I(1)*)

Hint: The *ADF* test is an option