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%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

% Example 4.1 %

% Creditworthiness index fitting %

%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%

% File upload

mac=xlsread('Chap4PD.xlsx');

DR=mac(:,1); GDP=mac(:,2); CPI=mac(:,3);

EQ=mac(:,4); ER= mac(:,5); RS =mac(:,6);

RL=mac(:,7);

% 1. Macroeconomic variables included in the model

XX=[GDP(1:end-4,:) CPI(5:end,:) RS(5:end,:)];

% 2. Fitting

PD=fitlm(XX(1:end,:),DR(5:end,:));

FitPD=transpose(PD.Coefficients.Estimate)\*...

transpose([ones(size(XX,1),1) XX]);

% Output

% Linear regression model:

% y ~ 1 + x1 + x2 + x3

%

% Estimated Coefficients:

% Estimate SE tStat pValue

% \_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_

%

% (Intercept) 0.049166 0.0043062 11.417 6.9688e-15

% x1 -0.94798 0.25597 -3.7035 0.00057881

% x2 1.2506 0.4215 2.967 0.0048016

% x3 -3.2992 0.38101 -8.6592 3.8626e-11

%

%

% Number of observations: 49, Error degrees of freedom: 45

% Root Mean Squared Error: 0.0101

% R-squared: 0.837, Adjusted R-Squared 0.826

% F-statistic vs. constant model: 77.2, p-value = 9.03e-18

% Graph

FDates=datenum({'31?Mar?2001' '30?Jun?2001' '30?Sep?2001' '31?Dec?2001' '31?Mar?2002' '30?Jun?2002' '30?Sep?2002' '31?Dec?2002' '31?Mar?2003' '30?Jun?2003' '30?Sep?2003' '31?Dec?2003' '31?Mar?2004' '30?Jun?2004' '30?Sep?2004' '31?Dec?2004' '31?Mar?2005' '30?Jun?2005' '30?Sep?2005' '31?Dec?2005' '31?Mar?2006' '30?Jun?2006' '30?Sep?2006' '31?Dec?2006' '31?Mar?2007' '30?Jun?2007' '30?Sep?2007' '31?Dec?2007' '31?Mar?2008' '30?Jun?2008' '30?Sep?2008' '31?Dec?2008' '31?Mar?2009' '30?Jun?2009' '30?Sep?2009' '31?Dec?2009' '31?Mar?2010' '30?Jun?2010' '30?Sep?2010' '31?Dec?2010' '31?Mar?2011' '30?Jun?2011' '30?Sep?2011' '31?Dec?2011' '31?Mar?2012' '30?Jun?2012' '30?Sep?2012' '31?Dec?2012' '31?Mar?2013' });

FT=numel(FDates);

figure; hold('on');

subplot(1,2,1)

plot(FDates,DR(5:end,:), '-', FDates,GDP(5:end,:), 'k-\*',FDates,CPI(5:end,:), 'c--', FDates,RS(5:end,:), 'v--','LineWidth', 2.5);

title('Time Series','Fontsize',15);

legend('\Psi\_{s,t}', 'y\_t', '\Delta p\_t', 'r\_{t}^{ST}', 'Location', 'NW')

datetick('x')

subplot(1,2,2)

plot(FDates,DR(5:end,:), '-', FDates,FitPD, 'k--+','LineWidth', 2.5);

title('Fitting','Fontsize',15);

legend('\Psi\_{s,t} Actual', '\Psi\_{s,t} Fitted', 'Location', 'NW')

datetick('x')

set(gcf, 'PaperPositionMode', 'manual');

set(gcf, 'PaperUnits', 'centimeters');

set(gcf, 'PaperPosition', [0.5 0.5 28 20]); %left bottom width heigh

set(gcf, 'PaperOrientation', 'landscape');