

Note on the S&P 500 Forecast

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Moody's Analytics has re-specified its equation for the S&P 500 index. The forecasting framework remains an error correction model, where the cointegrating relationship is determined by after-tax profits and the 10-year Treasury yield, which we use as a proxy for the risk-free rate. However, we set a zero floor for the risk-free rate, which enables the model to solve in the event of negative long-term interest rates. We also create a new variable for the convergence term of the error correction model called FSP500T1Q. Lastly, we replace lagged corporate profits with a lagged dependent variable. This step minimizes back-testing error. The equation remains a differenced log transformation. The end result is a more accurate forecast equation that maintains its shock properties and can tolerate negative long-term interest rates.

New equation specification

Dependent Variable: DLOG(FSP500Q_US)

Method: Least Squares

Date: 09/24/19 Time: 14:14

Sample (adjusted): 1953Q3 2019Q1

Included observations: 263 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(FZ_US)	0.242460	0.056296	4.306842	0.0000
DLOG(FSP500Q_US(-1))	0.331378	0.049195	6.736012	0.0000
FDUMSP500Q_US	-0.195063	0.024848	-7.850341	0.0000
LOG(FSP500Q_US(-1))- LOG(FSP500TQ_US(-1))	-0.024864	0.009217	-2.697548	0.0074
R-squared	0.344794	Mean dependent var		0.017911
Adjusted R-squared	0.337205	S.D. dependent var		0.060164
S.E. of regression	0.048981	Akaike info criterion		-3.179682
Sum squared resid	0.621373	Schwarz criterion		-3.125353
Log likelihood	422.1282	Hannan-Quinn criter.		-3.157849
Durbin-Watson stat	1.954951			

Mnemonics referenced in the above equation, for example FET, can be defined using the Mnemonic 411 feature on DataBuffet. Please contact Help@economy.com for assistance.

Previous equation specification

Dependent Variable: DLOG(FSP500Q_US)
Method: Least Squares
Date: 10/05/18 Time: 13:09
Sample (adjusted): 1953Q3 2018Q2
Included observations: 260 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(FZ_US)	0.281296	0.059535	4.724846	0.0000
DLOG(FZ_US(-1))	0.153995	0.059324	2.595812	0.0100
FDUMSP500Q_US	-0.206982	0.026381	-7.845990	0.0000
LOG(FSP500Q_US(-1))+2.236- LOG((FZ_US(-1)-FZTAX_US(- 1)))/((FRGT10Y_US(-1)+3)/100))	-0.029190	0.009407	-3.102881	0.0021
R-squared	0.268230	Mean dependent var		0.018090
Adjusted R-squared	0.259655	S.D. dependent var		0.060289
S.E. of regression	0.051874	Akaike info criterion		-3.064721
Sum squared resid	0.688882	Schwarz criterion		-3.009941
Log likelihood	402.4137	Hannan-Quinn criter.		-3.042699
Durbin-Watson stat	1.352845			

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