Note on the Forecasts with ABA Series Dependencies

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Moody's Analytics has respecified its forecast equation for FXSLAWINQ.IUSA, FBQCRNCOLLQ.IUSA, FBCFCOFCCQ.IUSA, FXSLASINCCQ.IUSA, and FBCFDELLCCQ.IUSA. These five stochastic equations used to depend on ABA delinquency rate series that has been made obsolete by the introduction of Moody's Analytics forecasting of CreditForecast.com variables. In many cases, the structure of the equations was not changed and the new Moody's Analytics delinquency rate forecast merely replaced its ABA predecessor. Here are the notes on the individual equations:

FXSLAWINQ.IUSA: This is the increased willingness to make consumer installment loans. The PDL of the tier 1 capital ratio framework was removed from the forecast equation, as was the TED spread. The TED spread was replaced with the S&P500 volatility index. We are moving away from the TED spread in our model because as of 2021, banks will no longer be required to report LIBOR, and at that point LIBOR rates become unreliable. Lastly, we replace FABASUVOL with FCCDTO, which is the total delinquency rate forecast across all product lines.

FXSLASINCCQ.IUSA: This is the percentage of banks tightening standards for credit card loans. Again, we remove the PDL term of the tier 1 capital ratio. This is because lending standards are inputs into the tier 1 capital ratio forecast, and we did not want to create simultaneity that would challenge the model's stability. We again replace the TED spread with the S&P500 volatility index. Lastly, we replace the ABA bankcard delinquency rate forecast with its Moody's Analytics counterpart.

FBCFDELLCCQ.IUSA: This is the credit card consumer loan delinquency rate from the top 100 commercial banks. We removed the lagged dependent term and the AR(1) term. We also replaced the ABA delinquency rate on credit cards with its Moody's Analytics counterpart. Lastly, we changed the specification from a level spec to a differenced one. Given that the credit card delinquency rate for bankcards is anchored in the long term, we did not feel the need to anchor it again in the FBCFDELLCCQ specification. This allowed us to remove the AR(1) term.

FBCFCOFCCQ.IUSA: This is the charge-off rate for all commercial banks for consumer credit card loans. As with FBCFDELLCCQ, we moved from a level spec to a differenced spec, since FBCFDELLCCQ was already anchored by the Moody's Analytics bankcard delinquency rate. This allowed us to remove the lagged dependent term. Moreover, we used FBCFDELLCCQ in lieu of the ABA bank card delinquency rate forecast. We kept the differenced unemployment rate as an explanatory variable.

FBQCRNCOLLQ.IUSA: This is the net charge offs to loans and leases for FDIC commercial banks. The net distinction is important, because it means charge offs after recovery. We went from a level spec to a differenced spec to remove the possibility of jump offs. We could do this because the main regressors are anchored. Specifically, we use FBCFDELLCCQ instead of an ABA delinquency rate. We also remove the constant term and add a difference in the unemployment rate, which is statistically significant at the 99% confidence interval.

New equation specifications

Dependent Variable: FXSLAWINQ_US
Method: Least Squares
Date: 09/26/19   Time: 14:01
Sample (adjusted): 2007Q1 2019Q2
Included observations: 50 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(@MOVAV(FCCDTO_US(-2),4))	-37.07482	7.309243	-5.072321	0.0000
D(FSPVOL_US)	-5.032639	3.016913	-1.668142	0.1018

R-squared	0.211876	Mean dependent var		7.170000
Adjusted R-squared	0.195457	S.D. dependent var		14.43007
S.E. of regression	12.94325	Akaike info criterion		7.998203
Sum squared resid	8041.327	Schwarz criterion		8.074684
Log likelihood	-197.9551	Hannan-Quinn criter.		8.027328
Durbin-Watson stat	0.373767			

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.

Dependent Variable: FXSLASINCCQ_US
Method: Least Squares
Date: 09/26/19   Time: 10:59
Sample (adjusted): 2007Q1 2019Q2
Included observations: 50 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(@MOVAV(FCCDBC_US(-2),4))	54.98236	9.121170	6.027994	0.0000
FSPVOL_US	8.469343	1.584103	5.346459	0.0000

R-squared	0.552863	Mean dependent var		3.938000
Adjusted R-squared	0.543547	S.D. dependent var		19.98683
S.E. of regression	13.50336	Akaike info criterion		8.082932
Sum squared resid	8752.357	Schwarz criterion		8.159413
Log likelihood	-200.0733	Hannan-Quinn criter.		8.112057
Durbin-Watson stat	0.719309			

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Dependent Variable: D(FBCFDELLCCQ_US)
Method: Least Squares
Date: 09/25/19   Time: 19:10
Sample (adjusted): 2005Q4 2019Q2
Included observations: 55 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(FCCDBC_US)	0.968012	0.084879	11.40468	0.0000

R-squared	0.703900	Mean dependent var	-0.026182
Adjusted R-squared	0.703900	S.D. dependent var	0.274000
S.E. of regression	0.149097	Akaike info criterion	-0.950421
Sum squared resid	1.200420	Schwarz criterion	-0.913924
Log likelihood	27.13658	Hannan-Quinn criter.	-0.936308
Durbin-Watson stat	1.796511		

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Dependent Variable: D(FBCFCOFCCQ_US)
Method: Least Squares
Date: 09/26/19   Time: 11:08
Sample (adjusted): 1991Q4 2019Q2
Included observations: 111 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(@MOVAV(FBCFDELLCCQ_US(-1),2))	1.133752	0.255625	4.435220	0.0000
D(FLBR_US)	0.532958	0.188004	2.834821	0.0055

R-squared	0.336360	Mean dependent var	-0.009820
Adjusted R-squared	0.330271	S.D. dependent var	0.582357
S.E. of regression	0.476583	Akaike info criterion	1.373506
Sum squared resid	24.75736	Schwarz criterion	1.422326
Log likelihood	-74.22957	Hannan-Quinn criter.	1.393311
Durbin-Watson stat	2.619000		

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Dependent Variable: D(FBQCRNCOLLQ_US)
Method: Least Squares
Date: 09/26/19   Time: 11:25
Sample (adjusted): 1992Q1 2019Q1
Included observations: 109 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(@MOVAV(FBCFDELLCCQ_US,4))	0.310472	0.080547	3.854528	0.0002
D(FLBR_US)	0.189777	0.051222	3.704963	0.0003

R-squared	0.389963	Mean dependent var	-0.010183
Adjusted R-squared	0.384262	S.D. dependent var	0.155295
S.E. of regression	0.121859	Akaike info criterion	-1.353731
Sum squared resid	1.588901	Schwarz criterion	-1.304349
Log likelihood	75.77835	Hannan-Quinn criter.	-1.333705
Durbin-Watson stat	2.109554		

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Previous equation specifications

Dependent Variable: FXSLAWINQ_US
Method: Least Squares
Date: 06/26/15   Time: 13:17
Sample (adjusted): 2001Q1 2014Q1
Included observations: 53 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(@MOVAV(FABASUVOL_US,3))	-30.17264	11.24061	-2.684252	0.0099
FRILIBOR3M_US-FRTB3M_US	-18.31533	3.493238	-5.243081	0.0000
PDL01	1.516275	0.807879	1.876860	0.0665
PDL02	1.325484	0.907839	1.460042	0.1507

R-squared	0.714707	Mean dependent var	6.384906
Adjusted R-squared	0.697240	S.D. dependent var	14.65433
S.E. of regression	8.063340	Akaike info criterion	7.085005
Sum squared resid	3185.855	Schwarz criterion	7.233706
Log likelihood	-183.7526	Hannan-Quinn criter.	7.142188
Durbin-Watson stat	0.899928		

Lag Distribution of FBQCRT1RCRQ_US	i	Coefficient	Std. Error	t-Statistic
* . |	0	-3.57590	2.57807	-1.38705
*. |	1	-0.41951	0.49487	-0.84772
. * |	2	1.51627	0.80788	1.87686
. *|	3	2.23146	1.32287	1.68683
. * |	4	1.72603	1.05368	1.63810
Sum of Lags		1.47834	0.20181	7.32539

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Dependent Variable: FXSLASINCCQ_US
Method: Least Squares
Date: 06/11/15   Time: 17:04
Sample (adjusted): 2001Q1 2014Q1
Included observations: 53 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(@MOVAV(FABABCVOL_US,4))	47.81800	9.774682	4.892026	0.0000
FRILIBOR3M_US- FRTB3M_US	16.02296	4.217940	3.798764	0.0004
PDL01	-3.429335	1.155155	-2.968722	0.0046
PDL02	-3.903800	1.300377	-3.002054	0.0042

R-squared	0.687979	Mean dependent var	6.216981
Adjusted R-squared	0.668876	S.D. dependent var	19.39049
S.E. of regression	11.15794	Akaike info criterion	7.734652
Sum squared resid	6100.485	Schwarz criterion	7.883353
Log likelihood	-200.9683	Hannan-Quinn criter.	7.791836
Durbin-Watson stat	0.871433		

Lag Distribution of FBQCRT1RCRQ_US	i	Coefficient	Std. Error	t-Statistic
. *|	0	11.1075	3.69372	3.00713
. * |	1	2.15677	0.70998	3.03779
* . |	2	-3.42933	1.15516	-2.96872
* . |	3	-5.65083	1.89317	-2.98485
* . |	4	-4.50772	1.50824	-2.98873
	Sum of Lags	-0.32363	0.26563	-1.21838

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Dependent Variable: FBCFDELLCCQ_US
Method: ARMA Generalized Least Squares (Gauss-Newton)
Date: 10/26/18   Time: 12:51
Sample: 1991Q2 2018Q2
Included observations: 109
Convergence achieved after 6 iterations
Coefficient covariance computed using outer product of gradients
d.f. adjustment for standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FABABC_US	0.127361	0.047264	2.694653	0.0082
FBCFDELLCCQ_US(-1)	0.887233	0.039325	22.56173	0.0000
AR(1)	0.561637	0.091123	6.163492	0.0000

R-squared	0.973630	Mean dependent var		4.047064
Adjusted R-squared	0.973132	S.D. dependent var		1.175774
S.E. of regression	0.192725	Akaike info criterion		-0.424490
Sum squared resid	3.937156	Schwarz criterion		-0.350416
Log likelihood	26.13468	Hannan-Quinn criter.		-0.394450
Durbin-Watson stat	2.072632			

Inverted AR Roots	.56	

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Dependent Variable: FBCFCOFCCQ_US
Method: Least Squares
Date: 09/17/18   Time: 11:24
Sample: 1985Q2 2018Q2
Included observations: 133

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FBCFCOFCCQ_US(-1)	0.779927	0.039037	19.97920	0.0000
@MOVAV(FABABCVOL_US(-1),2)	0.247623	0.043952	5.633986	0.0000
D(FLBR_US)	1.087347	0.141409	7.689370	0.0000

R-squared	0.931589	Mean dependent var		4.473083
Adjusted R-squared	0.930536	S.D. dependent var		1.639753
S.E. of regression	0.432173	Akaike info criterion		1.182316
Sum squared resid	24.28053	Schwarz criterion		1.247511
Log likelihood	-75.62398	Hannan-Quinn criter.		1.208809
Durbin-Watson stat	2.363649			

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Dependent Variable: FBQCRNCOLLQ_US
Method: Least Squares
Date: 06/16/14   Time: 12:42
Sample (adjusted): 1987Q1 2013Q4
Included observations: 108 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.600949	0.108367	-5.545505	0.0000
(@MOVAV(FABASUVOL_US,4)*FBBABLLC CBQ_US+@MOVAV(FMBAD_US,4)*FBBABL LRCBQ_US)/(FBBABLLCCBQ_US+FBBABLL RCBQ_US)	0.351703	0.023116	15.21457	0.0000

R-squared	0.685910	Mean dependent var	0.979074
Adjusted R-squared	0.682947	S.D. dependent var	0.571457
S.E. of regression	0.321773	Akaike info criterion	0.588405
Sum squared resid	10.97502	Schwarz criterion	0.638074
Log likelihood	-29.77388	Hannan-Quinn criter.	0.608544
F-statistic	231.4830	Durbin-Watson stat	0.185558
Prob(F-statistic)	0.000000		

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