1. 沪深300情绪指数与沪深300收益率的关系

选用居民消费价格指数环比增长值(dlncpi)、工业增加值环比增长值作为控制变量(dlniv)，取自然对数。数据来源为统计局编撰的《中国经济景气月报》。

1. 月度化数据研究
2. 数据处理

沪深300情绪指数(msgbsi)为日度数据，进行月度化处理：每日指数取盘前情绪与盘中情绪的均值，然后取月内平均。

沪深300月度收益率(hs300\_return)：取沪深300指数的月内均值，然后取自然对数作差分。

1. 时序图



1. 平稳性检验

ADF检验结果：

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 变量 | 检验形式 | 滞后阶数(SIC) | t值 | P值 | 10%临界值 | 5%临界值 | 1%临界值 |
| hs300\_return | C | 3 | -4.499368 | 0.0008 | -2.605836 | -2.935001 | -3.600987 |
| dlncpi | C | 0 | -6.119031 | 0.0000 | -2.603064 | -2.929734 | -3.588509 |
| dlniv | C | 0 | -7.507253 | 0.0000 | -2.603064 | -2.929734 | -3.588509 |
| msgbsi | C | 0 | -3.773151 | 0.0061 | -2.603064 | -2.929734 | -3.588509 |

1. 一般计量模型

1）同期回归结果：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: HS300\_RETURNS | | | |  |
| Method: Least Squares | | |  |  |
| Date: 02/15/19 Time: 16:48 | | |  |  |
| Sample: 2015M01 2018M09 | | |  |  |
| Included observations: 45 | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| LNCPI | -2.299036 | 1.234686 | -1.862041 | 0.0698 |
| LNIV | 0.071731 | 0.030802 | 2.328793 | 0.0249 |
| MSGBSIS | 0.277211 | 0.037057 | 7.480633 | 0.0000 |
| C | 0.006428 | 0.023725 | 0.270923 | 0.7878 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.648543 | Mean dependent var | | 0.000396 |
| Adjusted R-squared | 0.622827 | S.D. dependent var | | 0.065292 |
| S.E. of regression | 0.040099 | Akaike info criterion | | -3.510256 |
| Sum squared resid | 0.065924 | Schwarz criterion | | -3.349664 |
| Log likelihood | 82.98076 | Hannan-Quinn criter. | | -3.450389 |
| F-statistic | 25.21911 | Durbin-Watson stat | | 1.738320 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

简单分析：从以上结果可以看出，调整R^2有0.623，说明模型拟合效果较好，DW量接近2，残差项不存在自相关，同时各解释变量系数10%水平下显著，F统计量显著，说明自变量作用显著。此外，沪深300指数的收益率与cpi增长显著负相关，与工业增加值增长显著正相关。这一结论与之前的相关研究结论基本一致，说明控制变量选择得当，模型适宜。

同期的情绪指数与收益率显著正相关。

2）滞后期回归结果：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: HS300\_RETURNS | | | |  |
| Method: Least Squares | | |  |  |
| Date: 02/18/19 Time: 16:25 | | |  |  |
| Sample (adjusted): 2015M02 2018M09 | | | |  |
| Included observations: 44 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| LNCPI | -3.814293 | 1.630652 | -2.339121 | 0.0244 |
| LNIV | 0.074345 | 0.041647 | 1.785114 | 0.0818 |
| MSGBSIS(-1) | 0.160022 | 0.049798 | 3.213386 | 0.0026 |
| C | 0.027983 | 0.032452 | 0.862298 | 0.3937 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.356076 | Mean dependent var | | -0.001578 |
| Adjusted R-squared | 0.307782 | S.D. dependent var | | 0.064674 |
| S.E. of regression | 0.053809 | Akaike info criterion | | -2.920252 |
| Sum squared resid | 0.115815 | Schwarz criterion | | -2.758053 |
| Log likelihood | 68.24554 | Hannan-Quinn criter. | | -2.860101 |
| F-statistic | 7.373041 | Durbin-Watson stat | | 2.122318 |
| Prob(F-statistic) | 0.000480 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: HS300\_RETURNS | | | |  |
| Method: Least Squares | | |  |  |
| Date: 02/18/19 Time: 16:27 | | |  |  |
| Sample (adjusted): 2015M03 2018M09 | | | |  |
| Included observations: 43 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| LNCPI | -4.019452 | 1.897575 | -2.118204 | 0.0406 |
| LNIV | 0.102878 | 0.045635 | 2.254348 | 0.0299 |
| MSGBSIS(-2) | 0.101669 | 0.056929 | 1.785886 | 0.0819 |
| C | 0.057006 | 0.033588 | 1.697215 | 0.0976 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.253369 | Mean dependent var | | -0.000932 |
| Adjusted R-squared | 0.195936 | S.D. dependent var | | 0.065296 |
| S.E. of regression | 0.058551 | Akaike info criterion | | -2.749442 |
| Sum squared resid | 0.133699 | Schwarz criterion | | -2.585610 |
| Log likelihood | 63.11301 | Hannan-Quinn criter. | | -2.689026 |
| F-statistic | 4.411549 | Durbin-Watson stat | | 1.509970 |
| Prob(F-statistic) | 0.009153 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

从以上结果可以看出，滞后期（-1和-2）的情绪指数对沪深300指数收益率依然有解释预测能力，不过解释预测能力随着滞后期变长而变弱。同期的情绪指数解释预测能力最强。且情绪指数与收益率都为正相关，说明情绪指数对股票价格有促进作用。

1. 建立向量自回归方程

初始建立时选择滞后阶数3，所有变量认为内生，AR根都在单位圆内，根据滞后阶数检验，滞后阶数为1适宜，因此重新选择滞后阶数为1建立VAR方程。随后格兰杰因果检验/外生性检验中，dlncpi和dlniv作为因变量时，自变量无法作为格兰杰原因，说明这两个变量外生于系统。

|  |  |  |  |
| --- | --- | --- | --- |
| VAR Granger Causality/Block Exogeneity Wald Tests | | | |
| Date: 02/18/19 Time: 16:47 | | |  |
| Sample: 2015M01 2018M09 | | |  |
| Included observations: 44 | | |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| Dependent variable: HS300\_RETURNS | | |  |
|  |  |  |  |
|  |  |  |  |
| Excluded | Chi-sq | df | Prob. |
|  |  |  |  |
|  |  |  |  |
| LNCPI | 0.006239 | 1 | 0.9370 |
| LNIV | 0.515684 | 1 | 0.4727 |
| MSGBSIS | 7.256900 | 1 | 0.0071 |
|  |  |  |  |
|  |  |  |  |
| All | 9.162491 | 3 | 0.0272 |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| Dependent variable: LNCPI | | |  |
|  |  |  |  |
|  |  |  |  |
| Excluded | Chi-sq | df | Prob. |
|  |  |  |  |
|  |  |  |  |
| HS300\_RETURNS | 0.003978 | 1 | 0.9497 |
| LNIV | 0.070926 | 1 | 0.7900 |
| MSGBSIS | 0.090380 | 1 | 0.7637 |
|  |  |  |  |
|  |  |  |  |
| All | 0.420062 | 3 | 0.9361 |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| Dependent variable: LNIV | | |  |
|  |  |  |  |
|  |  |  |  |
| Excluded | Chi-sq | df | Prob. |
|  |  |  |  |
|  |  |  |  |
| HS300\_RETURNS | 0.048119 | 1 | 0.8264 |
| LNCPI | 1.463872 | 1 | 0.2263 |
| MSGBSIS | 0.299849 | 1 | 0.5840 |
|  |  |  |  |
|  |  |  |  |
| All | 2.178083 | 3 | 0.5363 |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
| Dependent variable: MSGBSIS | | |  |
|  |  |  |  |
|  |  |  |  |
| Excluded | Chi-sq | df | Prob. |
|  |  |  |  |
|  |  |  |  |
| HS300\_RETURNS | 3.087834 | 1 | 0.0789 |
| LNCPI | 2.049371 | 1 | 0.1523 |
| LNIV | 0.055875 | 1 | 0.8131 |
|  |  |  |  |
|  |  |  |  |
| All | 7.487093 | 3 | 0.0579 |
|  |  |  |  |
|  |  |  |  |

因此，将上述变量作为外生变量，重新建立var模型。

此时滞后阶数检验为：

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| VAR Lag Order Selection Criteria | | |  |  |  |  |
| Endogenous variables: HS300\_RETURNS MSGBSIS | | | |  |  |  |
| Exogenous variables: C LNCPI LNIV | | |  |  |  |  |
| Date: 02/20/19 Time: 12:42 | | |  |  |  |  |
| Sample: 2015M01 2018M09 | | |  |  |  |  |
| Included observations: 37 | | |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Lag | LogL | LR | FPE | AIC | SC | HQ |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| 0 | 98.42295 | NA | 2.32e-05 | -4.995835 | -4.734605\* | -4.903739 |
| 1 | 104.6490 | 10.76942 | 2.06e-05 | -5.116163 | -4.680780 | -4.962670\* |
| 2 | 107.7108 | 4.965040 | 2.18e-05 | -5.065448 | -4.455912 | -4.850558 |
| 3 | 114.8616 | 10.82288\* | 1.86e-05 | -5.235764 | -4.452074 | -4.959476 |
| 4 | 119.4806 | 6.491501 | 1.83e-05\* | -5.269221\* | -4.311378 | -4.931536 |
| 5 | 121.7218 | 2.907518 | 2.07e-05 | -5.174151 | -4.042155 | -4.775069 |
| 6 | 123.3713 | 1.961569 | 2.43e-05 | -5.047097 | -3.740947 | -4.586618 |
| 7 | 125.8284 | 2.656343 | 2.78e-05 | -4.963698 | -3.483395 | -4.441822 |
| 8 | 130.4214 | 4.468848 | 2.88e-05 | -4.995751 | -3.341295 | -4.412478 |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| \* indicates lag order selected by the criterion | | | |  |  |  |
| LR: sequential modified LR test statistic (each test at 5% level) | | | | |  |  |
| FPE: Final prediction error | | |  |  |  |  |
| AIC: Akaike information criterion | | |  |  |  |  |
| SC: Schwarz information criterion | | |  |  |  |  |
| HQ: Hannan-Quinn information criterion | | | |  |  |  |
|  |  |  |  |  |  |  |

综合考虑各项准则，选择滞后阶数为4，得到如下VAR模型：

|  |  |  |
| --- | --- | --- |
| Vector Autoregression Estimates | | |
| Date: 02/20/19 Time: 12:14 | | |
| Sample (adjusted): 2015M05 2018M09 | | |
| Included observations: 41 after adjustments | | |
| Standard errors in ( ) & t-statistics in [ ] | | |
|  |  |  |
|  |  |  |
|  | HS300\_RETURNS | MSGBSIS |
|  |  |  |
|  |  |  |
| HS300\_RETURNS(-1) | -0.070344 | -0.571285 |
|  | (0.19298) | (0.53332) |
|  | [-0.36452] | [-1.07118] |
|  |  |  |
| HS300\_RETURNS(-2) | 0.012630 | -0.103643 |
|  | (0.19339) | (0.53446) |
|  | [ 0.06531] | [-0.19392] |
|  |  |  |
| HS300\_RETURNS(-3) | -0.567874 | -0.369683 |
|  | (0.19390) | (0.53589) |
|  | [-2.92864] | [-0.68985] |
|  |  |  |
| HS300\_RETURNS(-4) | 0.182171 | 0.974535 |
|  | (0.20156) | (0.55706) |
|  | [ 0.90379] | [ 1.74943] |
|  |  |  |
| MSGBSIS(-1) | 0.101035 | 0.532164 |
|  | (0.07946) | (0.21959) |
|  | [ 1.27156] | [ 2.42340] |
|  |  |  |
| MSGBSIS(-2) | 0.063343 | 0.177071 |
|  | (0.08508) | (0.23513) |
|  | [ 0.74453] | [ 0.75308] |
|  |  |  |
| MSGBSIS(-3) | 0.075713 | 0.221148 |
|  | (0.08604) | (0.23777) |
|  | [ 0.88002] | [ 0.93008] |
|  |  |  |
| MSGBSIS(-4) | -0.077969 | -0.510474 |
|  | (0.08976) | (0.24806) |
|  | [-0.86865] | [-2.05783] |
|  |  |  |
| C | 0.053052 | 0.202979 |
|  | (0.04329) | (0.11964) |
|  | [ 1.22553] | [ 1.69662] |
|  |  |  |
| LNCPI | -0.879400 | -2.714563 |
|  | (1.67816) | (4.63788) |
|  | [-0.52403] | [-0.58530] |
|  |  |  |
| LNIV | 0.125076 | 0.169997 |
|  | (0.03953) | (0.10925) |
|  | [ 3.16405] | [ 1.55605] |
|  |  |  |
|  |  |  |
| R-squared | 0.602307 | 0.464830 |
| Adj. R-squared | 0.469742 | 0.286440 |
| Sum sq. resids | 0.054318 | 0.414873 |
| S.E. equation | 0.042551 | 0.117597 |
| F-statistic | 4.543499 | 2.605693 |
| Log likelihood | 77.66626 | 35.98728 |
| Akaike AIC | -3.252013 | -1.218892 |
| Schwarz SC | -2.792274 | -0.759153 |
| Mean dependent | -0.007479 | 0.143281 |
| S.D. dependent | 0.058434 | 0.139214 |
|  |  |  |
|  |  |  |
| Determinant resid covariance (dof adj.) | | 1.60E-05 |
| Determinant resid covariance | | 8.57E-06 |
| Log likelihood | | 122.8301 |
| Akaike information criterion | | -4.918543 |
| Schwarz criterion | | -3.999065 |
|  |  |  |
|  |  |  |

此时AR根检验如下：

|  |  |
| --- | --- |
| Roots of Characteristic Polynomial | |
| Endogenous variables: HS300\_RETURNS MSGBSIS | |
| Exogenous variables: C LNCPI LNIV | |
| Lag specification: 1 4 | |
| Date: 02/20/19 Time: 12:43 | |
|  |  |
|  |  |
| Root | Modulus |
|  |  |
|  |  |
| -0.861982 | 0.861982 |
| 0.417096 - 0.709964i | 0.823419 |
| 0.417096 + 0.709964i | 0.823419 |
| 0.695456 - 0.367028i | 0.786364 |
| 0.695456 + 0.367028i | 0.786364 |
| -0.490028 - 0.597955i | 0.773096 |
| -0.490028 + 0.597955i | 0.773096 |
| 0.078752 | 0.078752 |
|  |  |
|  |  |
| No root lies outside the unit circle. | |
| VAR satisfies the stability condition. | |



AR根都在单位圆内，说明VAR模型稳定，可以进一步分析。

1. 格兰杰因果检验

滞后阶数选为4.

F统计量：

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/20/19 Time: 12:44 | | | |
| Sample: 2015M01 2018M09 | | | |
| Lags: 4 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| MSGBSIS does not Granger Cause HS300\_RETURNS | 41 | 2.09560 | 0.1045 |
| HS300\_RETURNS does not Granger Cause MSGBSIS | | 2.50362 | 0.0617 |
|  |  |  |  |
|  |  |  |  |

从以上的结果可以看出，情绪指数和沪深300收益率的互为格兰杰因果（10%水平）。这说明情绪指数能够引起沪深300收益率的变化，并且其滞后期（根据VAR的系数看尤其是滞后1期）对沪深300收益率有预测作用，其解释预测能比收益率的滞后期要弱。同时，沪深300收益率的滞后期对情绪指数也有显著的预测能力，且其能力比情绪指数的滞后期强。

1. SVAR模型的建立

根据残差相关系数矩阵，可以看出，残差具有很强的同期相关性。

|  |  |  |
| --- | --- | --- |
|  | HS300\_Return | MsgBSI |
| HS300\_Return | 1 | 0.6259333242841931 |
| MsgBSI | 0.6259333242841931 | 1 |

这说明内生变量间有较强的同期相关性（与前述一般计量模型分析结果一致），此时这一同期相关性被隐藏在了VAR的残差项中，此时若进行脉冲响应的分析，一个变量的冲击会同期引起另一个变量的变化，很难观测到“纯粹”的一个内生变量的冲击对其他内生变量的影响。因此，更好的分析模型是SVAR（结构向量自回归），即在VAR模型中加入同期项。通过构建SVAR模型，可以分析结构冲击对各内生变量的影响。

参考相关文献（《计量经济分析方法与建模Eviews应用与实例》（第3版）和《金融计量学》张思成），SVAR模型（结构式）和VAR模型（简化式）可以互相转换。

对于k元VAR，从简化式和结构式的无穷阶的VMA(∞)形式出发，可以得到如下方程：

且有：

其中，为简化式中各内生变量的残差（扰动项），为结构式中各方程的残差（扰动项）。以上方程称为AB形式的SVAR模型。利用极大似然法能够估计方程的参数（也即AB矩阵的参数），得到AB矩阵之后可以在简化式中左乘转化为SVAR。

A和B矩阵共有个参数，也就需要个约束条件。同时，以上方程组一旦成立，可以推导出以下关系：

以上表达式，两侧都是对称矩阵，因此AB模型一旦成立，就对AB中的系数施加了个约束条件，因此还需要添加个约束条件。

参考相关教材和文献（Does investor sentiment and stock return affect each

other: (S)VAR model approach、基于SVAR模型的政府投资

挤出效应研究、基于SVAR模型的居民消费\_固定资产投资与经济增长研究\_王云），B矩阵设定为对角矩阵，对角元素为待估计值，即：

A矩阵对角元素为1，即：

根据推导，A矩阵中的为沪深300收益率方程中，同期情绪指数的系数。为情绪指数方程中，同期收益率的系数。以上矩阵设定中，仍缺少一个约束条件。

参考（基于SVAR模型的居民消费\_固定资产投资与经济增长研究\_王云和《计量经济分析方法与建模Eviews应用与实例》以及税收和政府支出政策对产出动态冲击效应的计量分析\_李晓芳），对沪深300收益率和情绪指数直接回归可以得到平均弹性系数为0.141906（加入AR(1)和AR(3)消除序列相关，并用ARMA Generalized Least Squares (Gauss-Newton)方法进行估计），因此假设在SVAR中其同期系数也相同，即。

然后可以估计得到以下结果：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Structural VAR Estimates | | |  |  |
| Date: 02/20/19 Time: 12:14 | | |  |  |
| Sample (adjusted): 2015M05 2018M09 | | | |  |
| Included observations: 41 after adjustments | | | |  |
| Estimation method: method of scoring (analytic derivatives) | | | | |
| Convergence achieved after 5 iterations | | | |  |
| Structural VAR is just-identified | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Model: Ae = Bu where E[uu']=I | | |  |  |
| Restriction Type: short-run text form | | | |  |
| @e1 = 0.141906\*@e2 + C(1)\*@u1 | | |  |  |
| @e2 = C(2)\*@e1 + C(3)\*@u2 | | |  |  |
| where | |  |  |  |
| @e1 represents HS300\_RETURNS residuals | | | |  |
| @e2 represents MSGBSIS residuals | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C(2) | 0.753958 | 0.403108 | 1.870362 | 0.0614 |
| C(1) | 0.035156 | 0.003882 | 9.055385 | 0.0000 |
| C(3) | 0.101615 | 0.012973 | 7.832985 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| Log likelihood | 110.0228 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Estimated A matrix: | | |  |  |
| 1.000000 | -0.141906 |  |  |  |
| -0.753958 | 1.000000 |  |  |  |
| Estimated B matrix: | | |  |  |
| 0.035156 | 0.000000 |  |  |  |
| 0.000000 | 0.101615 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

可以看出，估计的参数显著，因此假设的约束基本合理。

1. 脉冲响应

建立完SVAR方程后可以得到以下脉冲响应图：



由以上结果可以看出，收益率的冲击短期内会给其自身和情绪指数带来正向的冲击，随后会使收益率和情绪指数上下波动并逐渐趋于0。而情绪指数的结构冲击会给沪深300收益率和情绪指数带来短期持续的正向影响。这说明网络舆论中的看涨情绪的增加会带来股指的上升，从而带来收益率的上升。

1. 方差分解

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
|  |  |  |  |
| Variance Decomposition of HS300\_RETURNS: |  |  |  |
| Period | S.E. | Shock1 | Shock2 |
|  |  |  |  |
|  |  |  |  |
| 1 | 0.042551 | 85.59921 | 14.40079 |
| 2 | 0.043795 | 80.80871 | 19.19129 |
| 3 | 0.045406 | 75.31352 | 24.68648 |
| 4 | 0.050348 | 78.49140 | 21.50860 |
| 5 | 0.050560 | 78.58742 | 21.41258 |
| 6 | 0.050729 | 78.09056 | 21.90944 |
| 7 | 0.052865 | 79.59027 | 20.40973 |
| 8 | 0.052983 | 79.31616 | 20.68384 |
| 9 | 0.052984 | 79.31624 | 20.68376 |
| 10 | 0.053734 | 79.85542 | 20.14458 |
|  |  |  |  |
|  |  |  |  |
| Variance Decomposition of MSGBSIS: |  |  |  |
| Period | S.E. | Shock1 | Shock2 |
|  |  |  |  |
|  |  |  |  |
| 1 | 0.117597 | 6.370750 | 93.62925 |
| 2 | 0.128486 | 5.608182 | 94.39182 |
| 3 | 0.134554 | 5.148790 | 94.85121 |
| 4 | 0.141321 | 5.329873 | 94.67013 |
| 5 | 0.144216 | 8.584031 | 91.41597 |
| 6 | 0.145244 | 9.441849 | 90.55815 |
| 7 | 0.146692 | 11.03908 | 88.96092 |
| 8 | 0.148191 | 10.96340 | 89.03660 |
| 9 | 0.148492 | 11.12674 | 88.87326 |
| 10 | 0.149123 | 11.70500 | 88.29500 |
|  |  |  |  |
|  |  |  |  |
| Factorization: Structural |  |  |  |
|  |  |  |  |
|  |  |  |  |

从以上结果可以看出，情绪指数的结构冲击刚开始对沪深300收益率的影响较小，随后逐渐增加到24%左右，但仍比其自身的结构冲击的影响要小。

1. 日度化数据研究
2. 数据处理

宏观变量选择了M1(狭义货币发行量)、cpi（居民消费价格指数）、iv（居民消费价格指数）。为了得到日度化的数据，将宏观变量的月度数据认为是每月的最后一天的值，然后用二阶的样条插值得到每日的数据。

收益率以对数差分的形式进行计算。除了由收盘收益率之外，还有开盘收益率（今日开盘价-昨日收盘价）和日内收益率（今日收盘-今日开盘）。

情绪指数按照收集的帖子时间分为premsgbsi（盘前情绪）、intmsgbsi(盘中情绪)、aftmsgbsi(盘后情绪)、preallmsgbsi(盘前+前一交易日日盘中情绪)、aftallmsgbsi（盘中情绪+盘后情绪）。盘前时间为今日9:30-前一交易日15:00。

1. 时序图

频率太高画的很难看，待定

1. 平稳性检验

ADF检验结果：

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 变量 | 检验形式 | 滞后阶数(SIC) | t值 | P值 | 10%临界值 | 5%临界值 | 1%临界值 |
| Cpi | C | 5 | -1.257948 | 0.6507 | -2.568403 | -2.864507 | -3.437322 |
| Iv | C | 10 | 1.942992 | 0.9999 | -2.568403 | -2.864507 | -3.437322 |
| M1 | C | 7 | -0.955414 | 0.7704 | -2.568403 | -2.864507 | -3.437322 |
| dlncpi | C | 4 | -4.732046 | 0.0001 | -2.568403 | -2.864507 | -3.437322 |
| dlniv | C | 9 | -6.049323 | 0.0000 | -2.568403 | -2.864507 | -3.437322 |
| dlnm1 | C | 6 | -5.484019 | 0.0000 | -2.568403 | -2.864507 | -3.437322 |
| Close\_return | C | 0 | -28.54463 | 0.0000 | -2.568403 | -2.864507 | -3.437322 |
| Open\_return | C | 1 | -23.13656 | 0.0000 | -2.568403 | -2.864507 | -3.437322 |
| Today\_return | C | 0 | -30.03006 | 0.0000 | -2.568403 | -2.864507 | -3.437322 |
| premsgbsi | C | 3 | -8.153178 | 0.0000 | -2.568399 | -2.864500 | -3.437306 |
| Intmsgbsi | C | 2 | -9.849962 | 0.0000 | -2.568397 | -2.864496 | -3.437298 |
| Aftmsgbsi | C | 3 | -8.606793 | 0.0000 | -2.568399 | -2.864500 | -3.437306 |
| Preallmsgbsi | C | 4 | -6.921956 | 0.0000 | -2.568401 | -2.864503 | -3.437314 |
| Aftallmsgbsi | C | 4 | -7.391836 | 0.0000 | -2.568401 | -2.864503 | -3.437314 |
| preargs | C | 15 | -2.833413 | 0.0540 | -2.568422 | -2.864542 | -3.437401 |
| Intargs | C | 6 | -2.909240 | 0.0447 | -2.568405 | -2.864510 | -3.437330 |
| Aftargs | C | 4 | -3.761146 | 0.0035 | -2.568401 | -2.864503 | -3.437314 |
| Preallargs | C | 4 | -4.071052 | 0.0011 | -2.568401 | -2.864503 | -3.437314 |
| aftallargs | C | 4 | -4.220975 | 0.0006 | -2.568401 | -2.864503 | -3.437314 |

1. 一般计量模型
2. 开盘收益率-盘前情绪、前日盘中情绪

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: Least Squares | | |  |  |
| Date: 02/21/19 Time: 21:45 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| DLNCPI | -3.036065 | 1.049237 | -2.893592 | 0.0039 |
| DLNIV | 3.585613 | 1.452279 | 2.468957 | 0.0137 |
| DLNM1 | -0.496112 | 0.232592 | -2.132969 | 0.0332 |
| T\_PREBSI | 0.005386 | 0.000528 | 10.19260 | 0.0000 |
| C | -0.003337 | 0.000418 | -7.977017 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.126390 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.122546 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007274 | Akaike info criterion | | -7.003595 |
| Sum squared resid | 0.048095 | Schwarz criterion | | -6.977239 |
| Log likelihood | 3205.643 | Hannan-Quinn criter. | | -6.993534 |
| F-statistic | 32.87751 | Durbin-Watson stat | | 2.006878 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

简单分析：以上结果说明盘前情绪与开盘收益率显著正相关，但与前日盘中情绪关系不太显著。

1. 日内收益率-盘中情绪、盘前情绪和前日盘中情绪

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: Least Squares | | |  |  |
| Date: 02/20/19 Time: 22:45 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| DLNCPI | -0.050038 | 1.544284 | -0.032402 | 0.9742 |
| DLNIV | -2.060482 | 2.128293 | -0.968138 | 0.3332 |
| DLNM1 | -0.006131 | 0.345975 | -0.017722 | 0.9859 |
| T\_PREBSI | -0.006106 | 0.001106 | -5.522404 | 0.0000 |
| T\_INTBSI | 0.032193 | 0.001195 | 26.93963 | 0.0000 |
| T\_INTBSI(-1) | -0.010388 | 0.001545 | -6.724666 | 0.0000 |
| C | 0.016273 | 0.001290 | 12.61578 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.451457 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | 0.447828 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.010614 | Akaike info criterion | | -6.245710 |
| Sum squared resid | 0.102174 | Schwarz criterion | | -6.208812 |
| Log likelihood | 2861.290 | Hannan-Quinn criter. | | -6.231625 |
| F-statistic | 124.4119 | Durbin-Watson stat | | 1.727781 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

以上结果说明，日内收益率与当日盘中情绪显著正相关，与昨日盘中情绪和盘前情绪显著负相关。这说明情绪短期内能使沪深300指数上升，但是过热的情绪会使资产偏离真正的价值，一段时间后资产价格回落，收益率便会下降。

1. 收盘收益率-盘前情绪、盘中情绪和前日盘中情绪

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: Least Squares | | |  |  |
| Date: 02/20/19 Time: 22:45 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| DLNCPI | -3.252312 | 1.826478 | -1.780646 | 0.0753 |
| DLNIV | 1.220887 | 2.517206 | 0.485017 | 0.6278 |
| DLNM1 | -0.594423 | 0.409197 | -1.452658 | 0.1467 |
| T\_PREBSI | 0.000842 | 0.001308 | 0.643644 | 0.5200 |
| T\_INTBSI | 0.033624 | 0.001413 | 23.78992 | 0.0000 |
| T\_INTBSI(-1) | -0.014096 | 0.001827 | -7.715397 | 0.0000 |
| C | 0.011222 | 0.001526 | 7.355564 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.401981 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.398025 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.012553 | Akaike info criterion | | -5.910052 |
| Sum squared resid | 0.142928 | Schwarz criterion | | -5.873154 |
| Log likelihood | 2707.894 | Hannan-Quinn criter. | | -5.895967 |
| F-statistic | 101.6125 | Durbin-Watson stat | | 1.859613 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

1. 格兰杰因果检验
2. 开盘收益率

建立VAR模型，滞后阶数选择基于各项准则，综合考虑。

与盘前情绪

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/21/19 Time: 16:18 | | | |
| Sample: 1 915 | | |  |
| Lags: 10 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREBSI does not Granger Cause OPEN\_RETURN | 904 | 4.08098 | 2.E-05 |
| OPEN\_RETURN does not Granger Cause T\_PREBSI | | 2.60676 | 0.0040 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/21/19 Time: 16:21 | | | |
| Sample: 1 915 | | |  |
| Lags: 10 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREBSI(1) does not Granger Cause OPEN\_RETURN | 903 | 18.7919 | 2.E-31 |
| OPEN\_RETURN does not Granger Cause T\_PREBSI(1) | | 0.57898 | 0.8320 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/21/19 Time: 16:23 | | | |
| Sample: 1 915 | | |  |
| Lags: 9 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_INTBSI does not Granger Cause OPEN\_RETURN | 905 | 5.08029 | 1.E-06 |
| OPEN\_RETURN does not Granger Cause T\_INTBSI | | 2.37971 | 0.0116 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/21/19 Time: 16:48 | | | |
| Sample: 1 915 | | |  |
| Lags: 11 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREALLBSI(1) does not Granger Cause OPEN\_RETURN | 902 | 12.9433 | 5.E-23 |
| OPEN\_RETURN does not Granger Cause T\_PREALLBSI(1) | | 1.52791 | 0.1160 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/21/19 Time: 16:49 | | | |
| Sample: 1 915 | | |  |
| Lags: 10 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREALLBSI does not Granger Cause OPEN\_RETURN | 904 | 2.54475 | 0.0050 |
| OPEN\_RETURN does not Granger Cause T\_PREALLBSI | | 2.21532 | 0.0152 |
|  |  |  |  |
|  |  |  |  |

1. 日内收益率

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/21/19 Time: 16:57 | | | |
| Sample: 1 915 | | |  |
| Lags: 15 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREBSI does not Granger Cause TODAY\_RETURN | 900 | 0.73375 | 0.7513 |
| TODAY\_RETURN does not Granger Cause T\_PREBSI | | 53.1935 | 8E-112 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/21/19 Time: 16:58 | | | |
| Sample: 1 915 | | |  |
| Lags: 14 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREBSI(1) does not Granger Cause TODAY\_RETURN | 900 | 0.60701 | 0.8608 |
| TODAY\_RETURN does not Granger Cause T\_PREBSI(1) | | 1.88219 | 0.0249 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/21/19 Time: 16:36 | | | |
| Sample: 1 915 | | |  |
| Lags: 7 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_INTBSI does not Granger Cause TODAY\_RETURN | 908 | 1.31727 | 0.2387 |
| TODAY\_RETURN does not Granger Cause T\_INTBSI | | 6.22530 | 4.E-07 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/21/19 Time: 16:55 | | | |
| Sample: 1 915 | | |  |
| Lags: 15 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREALLBSI does not Granger Cause TODAY\_RETURN | 900 | 1.99140 | 0.0135 |
| TODAY\_RETURN does not Granger Cause T\_PREALLBSI | | 54.7519 | 2E-114 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/21/19 Time: 17:00 | | | |
| Sample: 1 915 | | |  |
| Lags: 14 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREALLBSI(1) does not Granger Cause TODAY\_RETURN | 900 | 1.90889 | 0.0223 |
| TODAY\_RETURN does not Granger Cause T\_PREALLBSI(1) | | 5.88284 | 4.E-11 |
|  |  |  |  |
|  |  |  |  |

1. 日间收盘收益率

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/21/19 Time: 16:40 | | | |
| Sample: 1 915 | | |  |
| Lags: 14 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREBSI does not Granger Cause CLOSE\_RETURN | 900 | 0.53692 | 0.9121 |
| CLOSE\_RETURN does not Granger Cause T\_PREBSI | | 54.4393 | 1E-108 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/21/19 Time: 16:43 | | | |
| Sample: 1 915 | | |  |
| Lags: 14 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREBSI(1) does not Granger Cause CLOSE\_RETURN | 899 | 1.61095 | 0.0704 |
| CLOSE\_RETURN does not Granger Cause T\_PREBSI(1) | | 1.86620 | 0.0265 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/21/19 Time: 16:44 | | | |
| Sample: 1 915 | | |  |
| Lags: 14 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_INTBSI does not Granger Cause CLOSE\_RETURN | 900 | 1.63132 | 0.0653 |
| CLOSE\_RETURN does not Granger Cause T\_INTBSI | | 4.17585 | 4.E-07 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/21/19 Time: 16:45 | | | |
| Sample: 1 915 | | |  |
| Lags: 14 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREALLBSI does not Granger Cause CLOSE\_RETURN | 900 | 1.73335 | 0.0446 |
| CLOSE\_RETURN does not Granger Cause T\_PREALLBSI | | 48.5160 | 7.E-99 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/21/19 Time: 16:46 | | | |
| Sample: 1 915 | | |  |
| Lags: 14 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREALLBSI(1) does not Granger Cause CLOSE\_RETURN | 899 | 2.46950 | 0.0020 |
| CLOSE\_RETURN does not Granger Cause T\_PREALLBSI(1) | | 5.81264 | 6.E-11 |
|  |  |  |  |
|  |  |  |  |

1. GARCH模型

对于月频数据的处理，我们采用的是VAR模型。对于低频的序列数据，其自身表现出较高的持久性，或者是平滑性，对其进行VAR回归之后的残差一般不表现很强的异方差性。但是对于高频数据（如日频的股指收益率），其明显表现的集群现象：波动在一些较长的时间内非常小，在其他一些较长的时间内非常大。

如沪深300的日间收盘收益率：



此时大多数的研究都采用ARCH相关的模型进行建模。

而在以上的估计中，残差仍存在序列相关。同时有异方差性。这时的OLS估计不是BLUE（最佳线性无偏估计）的。如，在第一个模型中，其残差各阶的自相关、偏相关系数和其Q统计量如下：

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Date: 02/20/19 Time: 22:43 | | | |  |  |  |
| Sample: 1 915 | |  |  |  |  |  |
| Included observations: 914 | | |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Autocorrelation | Partial Correlation |  | AC | PAC | Q-Stat | Prob |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| .| | | .| | | 1 | -0.002 | -0.002 | 0.0053 | 0.942 |
| \*| | | \*| | | 2 | -0.109 | -0.109 | 10.848 | 0.004 |
| .| | | .| | | 3 | -0.033 | -0.034 | 11.839 | 0.008 |
| .| | | .| | | 4 | 0.024 | 0.012 | 12.365 | 0.015 |
| .|\* | | .|\* | | 5 | 0.135 | 0.130 | 29.112 | 0.000 |
| .| | | .| | | 6 | -0.013 | -0.009 | 29.265 | 0.000 |
| .| | | .|\* | | 7 | 0.058 | 0.090 | 32.391 | 0.000 |
| .|\* | | .|\* | | 8 | 0.080 | 0.089 | 38.338 | 0.000 |
| .|\* | | .|\* | | 9 | 0.093 | 0.110 | 46.358 | 0.000 |
| .| | | .|\* | | 10 | 0.068 | 0.081 | 50.672 | 0.000 |
| .| | | .| | | 11 | -0.049 | -0.018 | 52.881 | 0.000 |
| .| | | .| | | 12 | 0.024 | 0.025 | 53.417 | 0.000 |
| .|\* | | .| | | 13 | 0.076 | 0.052 | 58.761 | 0.000 |
| .|\* | | .|\* | | 14 | 0.096 | 0.074 | 67.314 | 0.000 |
| .| | | .| | | 15 | 0.014 | 0.004 | 67.483 | 0.000 |
| .| | | .| | | 16 | -0.029 | -0.019 | 68.277 | 0.000 |
| .| | | .| | | 17 | 0.023 | -0.007 | 68.758 | 0.000 |
| .| | | .| | | 18 | 0.016 | -0.024 | 68.991 | 0.000 |
| .| | | .| | | 19 | 0.051 | 0.018 | 71.378 | 0.000 |
| .| | | .| | | 20 | 0.040 | 0.028 | 72.902 | 0.000 |
| .| | | .| | | 21 | 0.023 | 0.015 | 73.404 | 0.000 |
| .| | | .| | | 22 | 0.001 | -0.024 | 73.405 | 0.000 |
| .| | | .| | | 23 | -0.006 | -0.022 | 73.435 | 0.000 |
| .| | | .| | | 24 | 0.061 | 0.044 | 76.892 | 0.000 |
| .| | | .| | | 25 | 0.008 | 0.003 | 76.960 | 0.000 |
| .| | | .| | | 26 | 0.027 | 0.025 | 77.661 | 0.000 |
| \*| | | \*| | | 27 | -0.080 | -0.103 | 83.658 | 0.000 |
| .| | | .| | | 28 | 0.053 | 0.039 | 86.324 | 0.000 |
| .| | | .| | | 29 | 0.041 | -0.002 | 87.940 | 0.000 |
| .| | | .|\* | | 30 | 0.071 | 0.084 | 92.720 | 0.000 |
| .| | | .| | | 31 | 0.043 | 0.045 | 94.444 | 0.000 |
| .| | | .| | | 32 | -0.033 | 0.000 | 95.479 | 0.000 |
| .|\* | | .|\* | | 33 | 0.093 | 0.081 | 103.76 | 0.000 |
| .|\* | | .|\* | | 34 | 0.093 | 0.096 | 112.08 | 0.000 |
| .| | | .| | | 35 | 0.014 | 0.036 | 112.25 | 0.000 |
| \*| | | \*| | | 36 | -0.126 | -0.113 | 127.47 | 0.000 |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

其残差自相关检验如下：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Breusch-Godfrey Serial Correlation LM Test: | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 6.261596 | Prob. F(10,898) | | 0.0000 |
| Obs\*R-squared | 59.57739 | Prob. Chi-Square(10) | | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Test Equation: | |  |  |  |
| Dependent Variable: RESID | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 02/20/19 Time: 22:53 | | |  |  |
| Sample: 2 915 | |  |  |  |
| Included observations: 914 | | |  |  |
| Presample missing value lagged residuals set to zero. | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| DLNCPI | -0.208394 | 1.028078 | -0.202703 | 0.8394 |
| DLNIV | 0.517846 | 1.409617 | 0.367367 | 0.7134 |
| DLNM1 | -0.076004 | 0.229508 | -0.331162 | 0.7406 |
| T\_PREBSI | 0.000789 | 0.000756 | 1.043513 | 0.2970 |
| T\_INTBSI(-1) | -0.001280 | 0.000991 | -1.291006 | 0.1970 |
| C | -0.001074 | 0.000833 | -1.289730 | 0.1975 |
| RESID(-1) | -0.035287 | 0.033505 | -1.053177 | 0.2925 |
| RESID(-2) | -0.132140 | 0.033161 | -3.984833 | 0.0001 |
| RESID(-3) | -0.037241 | 0.033380 | -1.115687 | 0.2649 |
| RESID(-4) | 0.000426 | 0.033178 | 0.012848 | 0.9898 |
| RESID(-5) | 0.134707 | 0.033368 | 4.037005 | 0.0001 |
| RESID(-6) | 0.010609 | 0.033391 | 0.317715 | 0.7508 |
| RESID(-7) | 0.109957 | 0.033216 | 3.310356 | 0.0010 |
| RESID(-8) | 0.104150 | 0.033348 | 3.123113 | 0.0018 |
| RESID(-9) | 0.117289 | 0.033312 | 3.520927 | 0.0005 |
| RESID(-10) | 0.085021 | 0.033417 | 2.544254 | 0.0111 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.065183 | Mean dependent var | | -1.31E-19 |
| Adjusted R-squared | 0.049568 | S.D. dependent var | | 0.007220 |
| S.E. of regression | 0.007039 | Akaike info criterion | | -7.057438 |
| Sum squared resid | 0.044490 | Schwarz criterion | | -6.973100 |
| Log likelihood | 3241.249 | Hannan-Quinn criter. | | -7.025244 |
| F-statistic | 4.174398 | Durbin-Watson stat | | 1.991206 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

表明残差存在强烈的序列相关。同时，其残差平方的自相关系数、偏相关系数如下：

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Date: 02/20/19 Time: 22:54 | | | |  |  |  |
| Sample: 1 915 | |  |  |  |  |  |
| Included observations: 914 | | |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Autocorrelation | Partial Correlation |  | AC | PAC | Q-Stat | Prob |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| .|\* | | .|\* | | 1 | 0.157 | 0.157 | 22.577 | 0.000 |
| .|\*\* | | .|\*\* | | 2 | 0.346 | 0.330 | 132.77 | 0.000 |
| .| | | .| | | 3 | 0.047 | -0.047 | 134.79 | 0.000 |
| .| | | \*| | | 4 | 0.029 | -0.098 | 135.57 | 0.000 |
| .| | | .|\* | | 5 | 0.066 | 0.085 | 139.56 | 0.000 |
| .|\* | | .|\* | | 6 | 0.077 | 0.100 | 145.06 | 0.000 |
| .| | | .| | | 7 | 0.046 | -0.024 | 147.04 | 0.000 |
| .| | | .| | | 8 | 0.017 | -0.054 | 147.30 | 0.000 |
| .| | | .| | | 9 | 0.004 | 0.006 | 147.31 | 0.000 |
| .| | | .| | | 10 | 0.025 | 0.051 | 147.88 | 0.000 |
| .| | | .| | | 11 | 0.017 | 0.003 | 148.16 | 0.000 |
| .| | | .| | | 12 | 0.005 | -0.039 | 148.18 | 0.000 |
| .| | | .| | | 13 | 0.045 | 0.047 | 150.07 | 0.000 |
| .| | | .| | | 14 | 0.024 | 0.040 | 150.63 | 0.000 |
| .| | | .| | | 15 | 0.026 | -0.014 | 151.28 | 0.000 |
| .| | | .| | | 16 | 0.038 | 0.010 | 152.66 | 0.000 |
| .| | | .| | | 17 | 0.013 | 0.008 | 152.82 | 0.000 |
| .| | | .| | | 18 | 0.001 | -0.018 | 152.82 | 0.000 |
| .| | | .| | | 19 | 0.024 | 0.017 | 153.37 | 0.000 |
| .| | | .| | | 20 | 0.035 | 0.040 | 154.50 | 0.000 |
| .| | | .| | | 21 | 0.015 | -0.013 | 154.70 | 0.000 |
| .| | | .| | | 22 | 0.010 | -0.025 | 154.79 | 0.000 |
| .| | | .| | | 23 | 0.016 | 0.022 | 155.02 | 0.000 |
| .| | | .| | | 24 | 0.003 | 0.011 | 155.03 | 0.000 |
| .| | | .| | | 25 | 0.046 | 0.034 | 157.04 | 0.000 |
| .| | | .| | | 26 | 0.014 | -0.011 | 157.22 | 0.000 |
| .| | | .| | | 27 | 0.005 | -0.030 | 157.24 | 0.000 |
| .| | | .| | | 28 | -0.003 | 0.003 | 157.25 | 0.000 |
| .| | | .| | | 29 | -0.005 | 0.008 | 157.28 | 0.000 |
| .| | | .| | | 30 | 0.008 | 0.001 | 157.34 | 0.000 |
| .| | | .| | | 31 | -0.001 | -0.011 | 157.34 | 0.000 |
| .| | | .| | | 32 | 0.003 | -0.002 | 157.35 | 0.000 |
| .| | | .| | | 33 | 0.050 | 0.066 | 159.70 | 0.000 |
| .|\* | | .|\* | | 34 | 0.158 | 0.180 | 183.33 | 0.000 |
| .|\* | | .| | | 35 | 0.096 | 0.019 | 192.18 | 0.000 |
| .|\*\* | | .|\* | | 36 | 0.253 | 0.140 | 253.20 | 0.000 |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

其ARCH检验如下：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Heteroskedasticity Test: ARCH | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 21.04945 | Prob. F(10,893) | | 0.0000 |
| Obs\*R-squared | 172.4404 | Prob. Chi-Square(10) | | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Test Equation: | |  |  |  |
| Dependent Variable: RESID^2 | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 02/20/19 Time: 22:54 | | |  |  |
| Sample (adjusted): 12 915 | | |  |  |
| Included observations: 904 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.40E-05 | 9.88E-06 | 2.425220 | 0.0155 |
| RESID^2(-1) | 0.117974 | 0.030308 | 3.892527 | 0.0001 |
| RESID^2(-2) | 0.393048 | 0.030515 | 12.88038 | 0.0000 |
| RESID^2(-3) | -0.057274 | 0.032672 | -1.753001 | 0.0799 |
| RESID^2(-4) | -0.160407 | 0.032717 | -4.902890 | 0.0000 |
| RESID^2(-5) | 0.073815 | 0.032838 | 2.247862 | 0.0248 |
| RESID^2(-6) | 0.133391 | 0.032838 | 4.062125 | 0.0001 |
| RESID^2(-7) | -0.014017 | 0.032717 | -0.428428 | 0.6684 |
| RESID^2(-8) | -0.075013 | 0.032671 | -2.295991 | 0.0219 |
| RESID^2(-9) | -0.001693 | 0.030515 | -0.055494 | 0.9558 |
| RESID^2(-10) | 0.050927 | 0.030307 | 1.680370 | 0.0932 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.190753 | Mean dependent var | | 4.81E-05 |
| Adjusted R-squared | 0.181690 | S.D. dependent var | | 0.000311 |
| S.E. of regression | 0.000281 | Akaike info criterion | | -13.50448 |
| Sum squared resid | 7.05E-05 | Schwarz criterion | | -13.44599 |
| Log likelihood | 6115.026 | Hannan-Quinn criter. | | -13.48214 |
| F-statistic | 21.04945 | Durbin-Watson stat | | 1.942177 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

以上结果表明其存在很强的ARCH效应。

而GARCH模型能够获得较好的估计结果。

1. 开盘收益率与情绪指数、情绪分歧度

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 21:14 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 18 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*RESID(-2)^2 + C(9)\*GARCH(-1) | | | | |
| + C(10)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI | 0.003391 | 0.000374 | 9.059990 | 0.0000 |
| DLNCPI | -3.029974 | 0.663164 | -4.568964 | 0.0000 |
| DLNIV | 3.588011 | 0.740719 | 4.843956 | 0.0000 |
| DLNM1 | -0.395931 | 0.131752 | -3.005116 | 0.0027 |
| C | -0.002179 | 0.000217 | -10.05683 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 4.24E-06 | 1.22E-07 | 34.73485 | 0.0000 |
| RESID(-1)^2 | 0.146870 | 0.025846 | 5.682585 | 0.0000 |
| RESID(-2)^2 | 0.081723 | 0.035714 | 2.288268 | 0.0221 |
| GARCH(-1) | 0.813119 | 0.008922 | 91.13410 | 0.0000 |
| T\_PREALLARGS | -4.61E-05 | 2.14E-06 | -21.49382 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.107264 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.103335 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007353 | Akaike info criterion | | -7.735899 |
| Sum squared resid | 0.049148 | Schwarz criterion | | -7.683187 |
| Log likelihood | 3545.306 | Hannan-Quinn criter. | | -7.715778 |
| Durbin-Watson stat | 1.997924 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 21:21 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 10 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*RESID(-2)^2 + C(9)\*GARCH(-1) | | | | |
| + C(10)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI(-1) | -0.001074 | 0.000303 | -3.549164 | 0.0004 |
| DLNCPI | -4.596280 | 0.522741 | -8.792651 | 0.0000 |
| DLNIV | 6.442609 | 0.709199 | 9.084351 | 0.0000 |
| DLNM1 | -0.562135 | 0.104931 | -5.357178 | 0.0000 |
| C | -0.002056 | 0.000233 | -8.833420 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.21E-05 | 7.93E-07 | 27.90701 | 0.0000 |
| RESID(-1)^2 | 0.390982 | 0.043360 | 9.017000 | 0.0000 |
| RESID(-2)^2 | 0.112749 | 0.031572 | 3.571205 | 0.0004 |
| GARCH(-1) | 0.404936 | 0.030392 | 13.32383 | 0.0000 |
| T\_PREALLARGS | -0.000202 | 4.66E-06 | -43.34751 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.022385 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.018083 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007695 | Akaike info criterion | | -7.505787 |
| Sum squared resid | 0.053821 | Schwarz criterion | | -7.453076 |
| Log likelihood | 3440.145 | Hannan-Quinn criter. | | -7.485666 |
| Durbin-Watson stat | 1.908245 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 21:22 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 121 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*RESID(-2)^2 + C(9)\*GARCH(-1) | | | | |
| + C(10)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI(-2) | 0.000829 | 0.000290 | 2.854536 | 0.0043 |
| DLNCPI | -1.780996 | 0.485601 | -3.667608 | 0.0002 |
| DLNIV | 4.033220 | 0.547213 | 7.370475 | 0.0000 |
| DLNM1 | -0.322726 | 0.106404 | -3.033034 | 0.0024 |
| C | -0.001972 | 0.000191 | -10.32315 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.72E-07 | 8.85E-08 | 3.069565 | 0.0021 |
| RESID(-1)^2 | 0.311672 | 0.021114 | 14.76128 | 0.0000 |
| RESID(-2)^2 | -0.278344 | 0.021612 | -12.87943 | 0.0000 |
| GARCH(-1) | 0.961904 | 0.002427 | 396.2857 | 0.0000 |
| T\_PREALLARGS | -3.00E-06 | 1.37E-06 | -2.194726 | 0.0282 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.018824 | Mean dependent var | | -0.001101 |
| Adjusted R-squared | 0.014502 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007708 | Akaike info criterion | | -7.784114 |
| Sum squared resid | 0.053953 | Schwarz criterion | | -7.731357 |
| Log likelihood | 3563.448 | Hannan-Quinn criter. | | -7.763974 |
| Durbin-Watson stat | 1.969749 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 21:24 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 29 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*RESID(-2)^2 + C(9)\*GARCH(-1) | | | | |
| + C(10)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI(-1) | 0.001261 | 0.000672 | 1.877532 | 0.0604 |
| DLNCPI | -3.973401 | 0.720484 | -5.514905 | 0.0000 |
| DLNIV | 5.101880 | 0.849308 | 6.007106 | 0.0000 |
| DLNM1 | -0.336613 | 0.141075 | -2.386062 | 0.0170 |
| C | -0.001147 | 0.000619 | -1.854034 | 0.0637 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 1.04E-05 | 1.59E-06 | 6.536376 | 0.0000 |
| RESID(-1)^2 | 0.366176 | 0.051343 | 7.131982 | 0.0000 |
| RESID(-2)^2 | -0.164224 | 0.048340 | -3.397246 | 0.0007 |
| GARCH(-1) | 0.756919 | 0.035859 | 21.10821 | 0.0000 |
| T\_PREALLARGS | -0.000103 | 1.38E-05 | -7.485563 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.039293 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.035066 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007628 | Akaike info criterion | | -7.566563 |
| Sum squared resid | 0.052890 | Schwarz criterion | | -7.513852 |
| Log likelihood | 3467.919 | Hannan-Quinn criter. | | -7.546442 |
| Durbin-Watson stat | 1.974922 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 21:25 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 129 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*RESID(-2)^2 + C(9)\*GARCH(-1) | | | | |
| + C(10)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI(-2) | 0.000760 | 0.000409 | 1.856612 | 0.0634 |
| DLNCPI | -1.787021 | 0.477690 | -3.740968 | 0.0002 |
| DLNIV | 3.870610 | 0.541505 | 7.147873 | 0.0000 |
| DLNM1 | -0.304082 | 0.101112 | -3.007365 | 0.0026 |
| C | -0.001249 | 0.000315 | -3.964487 | 0.0001 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.77E-07 | 9.61E-08 | 3.919456 | 0.0001 |
| RESID(-1)^2 | 0.296848 | 0.022056 | 13.45890 | 0.0000 |
| RESID(-2)^2 | -0.259441 | 0.022579 | -11.49043 | 0.0000 |
| GARCH(-1) | 0.957834 | 0.002711 | 353.3117 | 0.0000 |
| T\_PREALLARGS | -4.62E-06 | 1.46E-06 | -3.159594 | 0.0016 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.022015 | Mean dependent var | | -0.001101 |
| Adjusted R-squared | 0.017707 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007696 | Akaike info criterion | | -7.779815 |
| Sum squared resid | 0.053778 | Schwarz criterion | | -7.727058 |
| Log likelihood | 3561.486 | Hannan-Quinn criter. | | -7.759676 |
| Durbin-Watson stat | 1.978933 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 21:25 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 129 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*RESID(-2)^2 + C(9)\*GARCH(-1) | | | | |
| + C(10)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI(-2) | 0.000760 | 0.000409 | 1.856612 | 0.0634 |
| DLNCPI | -1.787021 | 0.477690 | -3.740968 | 0.0002 |
| DLNIV | 3.870610 | 0.541505 | 7.147873 | 0.0000 |
| DLNM1 | -0.304082 | 0.101112 | -3.007365 | 0.0026 |
| C | -0.001249 | 0.000315 | -3.964487 | 0.0001 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.77E-07 | 9.61E-08 | 3.919456 | 0.0001 |
| RESID(-1)^2 | 0.296848 | 0.022056 | 13.45890 | 0.0000 |
| RESID(-2)^2 | -0.259441 | 0.022579 | -11.49043 | 0.0000 |
| GARCH(-1) | 0.957834 | 0.002711 | 353.3117 | 0.0000 |
| T\_PREALLARGS | -4.62E-06 | 1.46E-06 | -3.159594 | 0.0016 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.022015 | Mean dependent var | | -0.001101 |
| Adjusted R-squared | 0.017707 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007696 | Akaike info criterion | | -7.779815 |
| Sum squared resid | 0.053778 | Schwarz criterion | | -7.727058 |
| Log likelihood | 3561.486 | Hannan-Quinn criter. | | -7.759676 |
| Durbin-Watson stat | 1.978933 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 21:26 | | |  |  |
| Sample (adjusted): 4 915 | | |  |  |
| Included observations: 912 after adjustments | | | |  |
| Convergence achieved after 137 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*RESID(-2)^2 + C(9)\*GARCH(-1) | | | | |
| + C(10)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI(-3) | 0.000770 | 0.000419 | 1.838689 | 0.0660 |
| DLNCPI | -1.808050 | 0.474149 | -3.813251 | 0.0001 |
| DLNIV | 3.950745 | 0.548688 | 7.200344 | 0.0000 |
| DLNM1 | -0.315770 | 0.102860 | -3.069902 | 0.0021 |
| C | -0.001264 | 0.000327 | -3.864050 | 0.0001 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.15E-07 | 9.41E-08 | 3.349153 | 0.0008 |
| RESID(-1)^2 | 0.317314 | 0.023082 | 13.74748 | 0.0000 |
| RESID(-2)^2 | -0.280829 | 0.023548 | -11.92597 | 0.0000 |
| GARCH(-1) | 0.958781 | 0.002711 | 353.6543 | 0.0000 |
| T\_PREALLARGS | -3.60E-06 | 1.44E-06 | -2.495045 | 0.0126 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.020137 | Mean dependent var | | -0.001096 |
| Adjusted R-squared | 0.015815 | S.D. dependent var | | 0.007768 |
| S.E. of regression | 0.007706 | Akaike info criterion | | -7.796768 |
| Sum squared resid | 0.053862 | Schwarz criterion | | -7.743964 |
| Log likelihood | 3565.326 | Hannan-Quinn criter. | | -7.776609 |
| Durbin-Watson stat | 1.974664 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 21:26 | | |  |  |
| Sample (adjusted): 5 915 | | |  |  |
| Included observations: 911 after adjustments | | | |  |
| Failure to improve Likelihood after 13 iterations | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*RESID(-2)^2 + C(9)\*GARCH(-1) | | | | |
| + C(10)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI(-4) | -0.000867 | 0.000753 | -1.150374 | 0.2500 |
| DLNCPI | -4.161619 | 0.823048 | -5.056351 | 0.0000 |
| DLNIV | 6.076188 | 0.895462 | 6.785530 | 0.0000 |
| DLNM1 | -0.562860 | 0.181217 | -3.106001 | 0.0019 |
| C | -0.002622 | 0.000680 | -3.852499 | 0.0001 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.99E-05 | 1.87E-06 | 16.00444 | 0.0000 |
| RESID(-1)^2 | 0.202908 | 0.031398 | 6.462411 | 0.0000 |
| RESID(-2)^2 | 0.105908 | 0.043717 | 2.422591 | 0.0154 |
| GARCH(-1) | 0.497913 | 0.036131 | 13.78061 | 0.0000 |
| T\_PREALLARGS | -0.000247 | 1.18E-05 | -20.98743 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.019460 | Mean dependent var | | -0.001100 |
| Adjusted R-squared | 0.015131 | S.D. dependent var | | 0.007772 |
| S.E. of regression | 0.007712 | Akaike info criterion | | -7.382599 |
| Sum squared resid | 0.053891 | Schwarz criterion | | -7.329750 |
| Log likelihood | 3372.774 | Hannan-Quinn criter. | | -7.362422 |
| Durbin-Watson stat | 1.952509 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 21:49 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 21 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9) | | | | |
| \*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREALLBSI | 0.002675 | 0.000479 | 5.583545 | 0.0000 |
| DLNCPI | -3.005815 | 0.837772 | -3.587869 | 0.0003 |
| DLNIV | 1.518329 | 1.221903 | 1.242594 | 0.2140 |
| DLNM1 | -0.405298 | 0.178980 | -2.264488 | 0.0235 |
| C | -0.000830 | 0.000420 | -1.977332 | 0.0480 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 1.45E-05 | 3.26E-07 | 44.64517 | 0.0000 |
| RESID(-1)^2 | 0.257470 | 0.018735 | 13.74265 | 0.0000 |
| GARCH(-1) | 0.663483 | 0.008653 | 76.67228 | 0.0000 |
| T\_PREALLARGS | -0.000137 | 4.02E-06 | -34.03450 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.074265 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.070191 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007488 | Akaike info criterion | | -7.571754 |
| Sum squared resid | 0.050964 | Schwarz criterion | | -7.524314 |
| Log likelihood | 3469.292 | Hannan-Quinn criter. | | -7.553645 |
| Durbin-Watson stat | 1.995684 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 21:54 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 100 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*RESID(-2)^2 + C(9)\*GARCH(-1) | | | | |
| + C(10)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREALLBSI(-1) | 0.000828 | 0.000256 | 3.232307 | 0.0012 |
| DLNCPI | -1.687861 | 0.469123 | -3.597907 | 0.0003 |
| DLNIV | 3.902942 | 0.530182 | 7.361510 | 0.0000 |
| DLNM1 | -0.285965 | 0.100970 | -2.832184 | 0.0046 |
| C | -0.001536 | 0.000182 | -8.431644 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.66E-07 | 9.31E-08 | 3.933148 | 0.0001 |
| RESID(-1)^2 | 0.302732 | 0.024203 | 12.50800 | 0.0000 |
| RESID(-2)^2 | -0.264882 | 0.024498 | -10.81259 | 0.0000 |
| GARCH(-1) | 0.957750 | 0.002620 | 365.5351 | 0.0000 |
| T\_PREALLARGS | -4.47E-06 | 1.43E-06 | -3.130892 | 0.0017 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.017750 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.013428 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007713 | Akaike info criterion | | -7.778944 |
| Sum squared resid | 0.054076 | Schwarz criterion | | -7.726233 |
| Log likelihood | 3564.978 | Hannan-Quinn criter. | | -7.758823 |
| Durbin-Watson stat | 1.989367 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

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| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 21:56 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 27 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*RESID(-2)^2 + C(9)\*GARCH(-1) | | | | |
| + C(10)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREALLBSI(-2) | 0.000886 | 0.000267 | 3.321945 | 0.0009 |
| DLNCPI | -4.287863 | 0.400276 | -10.71225 | 0.0000 |
| DLNIV | 5.964812 | 0.372472 | 16.01411 | 0.0000 |
| DLNM1 | -0.552121 | 0.055328 | -9.979055 | 0.0000 |
| C | -0.002273 | 0.000196 | -11.59420 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 9.95E-06 | 1.50E-06 | 6.609517 | 0.0000 |
| RESID(-1)^2 | 0.595882 | 0.063198 | 9.428855 | 0.0000 |
| RESID(-2)^2 | -0.127769 | 0.056907 | -2.245237 | 0.0248 |
| GARCH(-1) | 0.612433 | 0.053194 | 11.51310 | 0.0000 |
| T\_PREALLARGS | -0.000105 | 1.42E-05 | -7.410754 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.023037 | Mean dependent var | | -0.001101 |
| Adjusted R-squared | 0.018734 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007692 | Akaike info criterion | | -7.598697 |
| Sum squared resid | 0.053722 | Schwarz criterion | | -7.545940 |
| Log likelihood | 3478.805 | Hannan-Quinn criter. | | -7.578557 |
| Durbin-Watson stat | 1.960860 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 21:56 | | |  |  |
| Sample (adjusted): 4 915 | | |  |  |
| Included observations: 912 after adjustments | | | |  |
| Convergence achieved after 105 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*RESID(-2)^2 + C(9)\*GARCH(-1) | | | | |
| + C(10)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREALLBSI(-3) | 0.000434 | 0.000282 | 1.540016 | 0.1236 |
| DLNCPI | -1.830559 | 0.479266 | -3.819502 | 0.0001 |
| DLNIV | 4.013203 | 0.553531 | 7.250190 | 0.0000 |
| DLNM1 | -0.336148 | 0.105140 | -3.197148 | 0.0014 |
| C | -0.001602 | 0.000208 | -7.694010 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.69E-07 | 9.29E-08 | 2.896297 | 0.0038 |
| RESID(-1)^2 | 0.332987 | 0.022947 | 14.51100 | 0.0000 |
| RESID(-2)^2 | -0.298605 | 0.023350 | -12.78822 | 0.0000 |
| GARCH(-1) | 0.961122 | 0.002661 | 361.1625 | 0.0000 |
| T\_PREALLARGS | -2.93E-06 | 1.43E-06 | -2.048250 | 0.0405 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.021546 | Mean dependent var | | -0.001096 |
| Adjusted R-squared | 0.017231 | S.D. dependent var | | 0.007768 |
| S.E. of regression | 0.007701 | Akaike info criterion | | -7.794052 |
| Sum squared resid | 0.053784 | Schwarz criterion | | -7.741249 |
| Log likelihood | 3564.088 | Hannan-Quinn criter. | | -7.773894 |
| Durbin-Watson stat | 1.973072 |  |  |  |
|  |  |  |  |  |
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| Convergence achieved after 10 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_PREARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI | 0.004637 | 0.000909 | 5.103600 | 0.0000 |
| DLNCPI | -3.036099 | 1.434892 | -2.115907 | 0.0344 |
| DLNIV | 3.585607 | 1.673536 | 2.142534 | 0.0322 |
| DLNM1 | -0.495945 | 0.333011 | -1.489278 | 0.1364 |
| C | -0.003038 | 0.000604 | -5.027060 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 4.27E-05 | 7.83E-06 | 5.453439 | 0.0000 |
| RESID(-1)^2 | 0.152064 | 0.028798 | 5.280425 | 0.0000 |
| GARCH(-1) | 0.590483 | 0.079032 | 7.471406 | 0.0000 |
| T\_PREARGS | -0.000215 | 3.28E-05 | -6.567260 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.124330 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.120477 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007282 | Akaike info criterion | | -7.324096 |
| Sum squared resid | 0.048208 | Schwarz criterion | | -7.276655 |
| Log likelihood | 3356.112 | Hannan-Quinn criter. | | -7.305986 |
| Durbin-Watson stat | 2.011839 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 22:03 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 16 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS( | | | | |
| -1) | |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI | 0.002944 | 0.000600 | 4.908306 | 0.0000 |
| DLNCPI | -3.035481 | 0.872394 | -3.479482 | 0.0005 |
| DLNIV | 3.586842 | 1.014976 | 3.533918 | 0.0004 |
| DLNM1 | -0.493156 | 0.207699 | -2.374375 | 0.0176 |
| C | -0.003162 | 0.000426 | -7.423781 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.53E-05 | 5.27E-06 | 6.693535 | 0.0000 |
| RESID(-1)^2 | 0.199461 | 0.028334 | 7.039712 | 0.0000 |
| GARCH(-1) | 0.558326 | 0.063980 | 8.726605 | 0.0000 |
| T\_INTARGS(-1) | -0.000210 | 2.88E-05 | -7.281784 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.097975 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.094006 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007391 | Akaike info criterion | | -7.456921 |
| Sum squared resid | 0.049659 | Schwarz criterion | | -7.409480 |
| Log likelihood | 3416.813 | Hannan-Quinn criter. | | -7.438811 |
| Durbin-Watson stat | 1.993874 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 22:04 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 13 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_PREARGS( | | | | |
| -2) | |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI | 0.003833 | 0.000627 | 6.108645 | 0.0000 |
| DLNCPI | -3.040724 | 1.079853 | -2.815868 | 0.0049 |
| DLNIV | 3.550375 | 1.225351 | 2.897435 | 0.0038 |
| DLNM1 | -0.496086 | 0.256359 | -1.935121 | 0.0530 |
| C | -0.002826 | 0.000533 | -5.306484 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.74E-05 | 9.25E-07 | 40.44886 | 0.0000 |
| RESID(-1)^2 | 0.172415 | 0.018282 | 9.430903 | 0.0000 |
| GARCH(-1) | 0.563286 | 0.023106 | 24.37858 | 0.0000 |
| T\_PREARGS(-2) | -0.000188 | 2.44E-08 | -7694.650 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.118228 | Mean dependent var | | -0.001101 |
| Adjusted R-squared | 0.114344 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007308 | Akaike info criterion | | -7.393290 |
| Sum squared resid | 0.048487 | Schwarz criterion | | -7.345809 |
| Log likelihood | 3384.037 | Hannan-Quinn criter. | | -7.375164 |
| Durbin-Watson stat | 2.016390 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 22:04 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 29 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS( | | | | |
| -2) | |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI | 0.003060 | 0.000467 | 6.546725 | 0.0000 |
| DLNCPI | -3.027054 | 0.831481 | -3.640558 | 0.0003 |
| DLNIV | 3.562675 | 1.073728 | 3.318043 | 0.0009 |
| DLNM1 | -0.453428 | 0.187655 | -2.416291 | 0.0157 |
| C | -0.003018 | 0.000281 | -10.75658 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 1.56E-05 | 2.67E-08 | 582.5548 | 0.0000 |
| RESID(-1)^2 | 0.239012 | 0.018042 | 13.24783 | 0.0000 |
| GARCH(-1) | 0.655211 | 0.013560 | 48.32085 | 0.0000 |
| T\_INTARGS(-2) | -9.53E-05 | 2.42E-06 | -39.30019 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.103953 | Mean dependent var | | -0.001101 |
| Adjusted R-squared | 0.100006 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007366 | Akaike info criterion | | -7.650289 |
| Sum squared resid | 0.049272 | Schwarz criterion | | -7.602807 |
| Log likelihood | 3501.357 | Hannan-Quinn criter. | | -7.632163 |
| Durbin-Watson stat | 2.004236 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

AIC和SC、对数似然值得到提升，说明模型有更好的拟合效果。

以上结果说明，情绪指数能够影响股价，从而影响收益率。盘前情绪越高，开盘的股价越高，从而开盘收益率越高。而盘中情绪越高，当日收盘的情绪越高，从而开盘收益率越低。而且盘前情绪的系数比滞后期的盘中情绪更大，说明情绪的影响具有短期性，对于越近的时间，其影响越大。

此外，一致性指数与收益率方差显著负相关。这正说明情绪一致性越大，收益率的方差越小，也就是散户的情绪越一致，股指收益的风险就越小。



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| --- | --- | --- | --- | --- |
| Heteroskedasticity Test: ARCH | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 0.505451 | Prob. F(10,893) | | 0.8869 |
| Obs\*R-squared | 5.087968 | Prob. Chi-Square(10) | | 0.8852 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Test Equation: | |  |  |  |
| Dependent Variable: WGT\_RESID^2 | | | |  |
| Method: Least Squares | | |  |  |
| Date: 02/21/19 Time: 01:14 | | |  |  |
| Sample (adjusted): 12 915 | | |  |  |
| Included observations: 904 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.623387 | 0.086474 | 7.208944 | 0.0000 |
| WGT\_RESID^2(-1) | 0.006653 | 0.015920 | 0.417916 | 0.6761 |
| WGT\_RESID^2(-2) | 0.000994 | 0.015920 | 0.062434 | 0.9502 |
| WGT\_RESID^2(-3) | 0.007202 | 0.015919 | 0.452410 | 0.6511 |
| WGT\_RESID^2(-4) | -0.000454 | 0.015919 | -0.028530 | 0.9772 |
| WGT\_RESID^2(-5) | 0.000456 | 0.015918 | 0.028636 | 0.9772 |
| WGT\_RESID^2(-6) | 0.018140 | 0.015918 | 1.139570 | 0.2548 |
| WGT\_RESID^2(-7) | 0.009323 | 0.015920 | 0.585627 | 0.5583 |
| WGT\_RESID^2(-8) | 0.011569 | 0.015920 | 0.726719 | 0.4676 |
| WGT\_RESID^2(-9) | 0.001181 | 0.015920 | 0.074172 | 0.9409 |
| WGT\_RESID^2(-10) | 0.025154 | 0.015920 | 1.580014 | 0.1145 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.005628 | Mean dependent var | | 0.689621 |
| Adjusted R-squared | -0.005507 | S.D. dependent var | | 2.277566 |
| S.E. of regression | 2.283828 | Akaike info criterion | | 4.501677 |
| Sum squared resid | 4657.773 | Schwarz criterion | | 4.560167 |
| Log likelihood | -2023.758 | Hannan-Quinn criter. | | 4.524016 |
| F-statistic | 0.505451 | Durbin-Watson stat | | 1.920938 |
| Prob(F-statistic) | 0.886944 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

1. 日内收益率

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| --- | --- | --- | --- | --- |
| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 22:12 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 31 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI | 0.015856 | 0.000694 | 22.85488 | 0.0000 |
| DLNIV | -2.994144 | 1.159953 | -2.581264 | 0.0098 |
| DLNM1 | 0.052191 | 0.214848 | 0.242921 | 0.8081 |
| DLNCPI | 1.330630 | 1.142354 | 1.164814 | 0.2441 |
| C | 0.010136 | 0.000521 | 19.44837 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.29E-06 | 1.18E-06 | 1.935184 | 0.0530 |
| RESID(-1)^2 | 0.065511 | 0.011060 | 5.923065 | 0.0000 |
| GARCH(-1) | 0.927339 | 0.009731 | 95.29419 | 0.0000 |
| T\_INTARGS | -1.72E-05 | 1.06E-05 | -1.620223 | 0.1052 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.290146 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | 0.287022 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.012061 | Akaike info criterion | | -6.560584 |
| Sum squared resid | 0.132221 | Schwarz criterion | | -6.513143 |
| Log likelihood | 3007.187 | Hannan-Quinn criter. | | -6.542475 |
| Durbin-Watson stat | 1.983207 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

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| --- | --- | --- | --- | --- |
| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 22:13 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 25 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(4) + C(5)\*RESID(-1)^2 + C(6)\*GARCH(-1) + C(7)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI | 0.015698 | 0.000673 | 23.31549 | 0.0000 |
| DLNIV | -2.373128 | 0.984274 | -2.411045 | 0.0159 |
| C | 0.010001 | 0.000512 | 19.54831 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.43E-06 | 1.18E-06 | 2.060399 | 0.0394 |
| RESID(-1)^2 | 0.065752 | 0.010965 | 5.996319 | 0.0000 |
| GARCH(-1) | 0.926734 | 0.009726 | 95.27958 | 0.0000 |
| T\_INTARGS | -1.84E-05 | 1.06E-05 | -1.739135 | 0.0820 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.288529 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | 0.286967 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.012061 | Akaike info criterion | | -6.562557 |
| Sum squared resid | 0.132522 | Schwarz criterion | | -6.525659 |
| Log likelihood | 3006.089 | Hannan-Quinn criter. | | -6.548472 |
| Durbin-Watson stat | 1.982683 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 22:18 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 3 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(5) + C(6)\*RESID(-1)^2 + C(7)\*GARCH(-1) + C(8)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI | -0.002283 | 0.001043 | -2.189215 | 0.0286 |
| DLNM1 | -0.800343 | 0.318214 | -2.515113 | 0.0119 |
| DLNCPI | -2.967432 | 1.407041 | -2.108987 | 0.0349 |
| C | 0.001325 | 0.000645 | 2.054214 | 0.0400 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.000141 | 3.15E-06 | 44.76216 | 0.0000 |
| RESID(-1)^2 | 0.140328 | 0.030986 | 4.528772 | 0.0000 |
| GARCH(-1) | 0.540152 | 0.030609 | 17.64702 | 0.0000 |
| T\_INTARGS | -0.000834 | 6.70E-06 | -124.3126 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | -0.001843 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | -0.005145 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.014320 | Akaike info criterion | | -5.894496 |
| Sum squared resid | 0.186608 | Schwarz criterion | | -5.852327 |
| Log likelihood | 2701.785 | Hannan-Quinn criter. | | -5.878399 |
| Durbin-Watson stat | 1.892203 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 22:19 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 7 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(5) + C(6)\*RESID(-1)^2 + C(7)\*GARCH(-1) + C(8)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI(-1) | -0.001512 | 0.001075 | -1.405891 | 0.1598 |
| DLNM1 | -0.823229 | 0.329960 | -2.494935 | 0.0126 |
| DLNCPI | -2.991336 | 1.442265 | -2.074054 | 0.0381 |
| C | 0.001726 | 0.000662 | 2.609360 | 0.0091 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.000142 | 5.72E-06 | 24.74749 | 0.0000 |
| RESID(-1)^2 | 0.144615 | 0.032720 | 4.419736 | 0.0000 |
| GARCH(-1) | 0.533368 | 0.039346 | 13.55572 | 0.0000 |
| T\_INTARGS | -0.000824 | 1.38E-06 | -596.7042 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.002591 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | -0.000697 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.014288 | Akaike info criterion | | -5.919501 |
| Sum squared resid | 0.185782 | Schwarz criterion | | -5.877332 |
| Log likelihood | 2713.212 | Hannan-Quinn criter. | | -5.903404 |
| Durbin-Watson stat | 1.990610 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 22:20 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 7 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(5) + C(6)\*RESID(-1)^2 + C(7)\*GARCH(-1) + C(8)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI(-2) | -0.001193 | 0.000949 | -1.258070 | 0.2084 |
| DLNM1 | -0.814666 | 0.334338 | -2.436652 | 0.0148 |
| DLNCPI | -2.950379 | 1.463539 | -2.015920 | 0.0438 |
| C | 0.001631 | 0.000667 | 2.443433 | 0.0145 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.000142 | 1.88E-06 | 75.51230 | 0.0000 |
| RESID(-1)^2 | 0.144978 | 0.033168 | 4.370981 | 0.0000 |
| GARCH(-1) | 0.533666 | 0.033259 | 16.04584 | 0.0000 |
| T\_INTARGS | -0.000825 | 3.05E-05 | -27.04703 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.003115 | Mean dependent var | | 0.001039 |
| Adjusted R-squared | -0.000175 | S.D. dependent var | | 0.014289 |
| S.E. of regression | 0.014290 | Akaike info criterion | | -5.918845 |
| Sum squared resid | 0.185622 | Schwarz criterion | | -5.876639 |
| Log likelihood | 2709.953 | Hannan-Quinn criter. | | -5.902733 |
| Durbin-Watson stat | 1.985812 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 22:27 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 30 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(5) + C(6)\*RESID(-1)^2 + C(7)\*GARCH(-1) + C(8)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI(-1) | -0.000883 | 0.000929 | -0.950614 | 0.3418 |
| DLNM1 | -0.211888 | 0.215959 | -0.981151 | 0.3265 |
| DLNCPI | -1.593882 | 1.053857 | -1.512427 | 0.1304 |
| C | 0.000942 | 0.000588 | 1.601468 | 0.1093 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.92E-06 | 1.25E-06 | 3.140877 | 0.0017 |
| RESID(-1)^2 | 0.060636 | 0.009526 | 6.365319 | 0.0000 |
| GARCH(-1) | 0.933166 | 0.007873 | 118.5228 | 0.0000 |
| T\_INTARGS | -3.20E-05 | 1.09E-05 | -2.935361 | 0.0033 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | -0.000271 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | -0.003569 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.014309 | Akaike info criterion | | -6.202067 |
| Sum squared resid | 0.186316 | Schwarz criterion | | -6.159898 |
| Log likelihood | 2842.345 | Hannan-Quinn criter. | | -6.185970 |
| Durbin-Watson stat | 1.961838 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 22:28 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 3 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(5) + C(6)\*RESID(-1)^2 + C(7)\*GARCH(-1) + C(8)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI(-2) | 0.000517 | 0.001522 | 0.339967 | 0.7339 |
| DLNM1 | -0.798825 | 0.332988 | -2.398963 | 0.0164 |
| DLNCPI | -2.807680 | 1.459356 | -1.923917 | 0.0544 |
| C | 0.000998 | 0.001118 | 0.892573 | 0.3721 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.000141 | 7.42E-07 | 190.5412 | 0.0000 |
| RESID(-1)^2 | 0.140784 | 0.030819 | 4.568119 | 0.0000 |
| GARCH(-1) | 0.540586 | 0.026174 | 20.65355 | 0.0000 |
| T\_INTARGS | -0.000837 | 3.42E-05 | -24.47977 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | -0.000365 | Mean dependent var | | 0.001039 |
| Adjusted R-squared | -0.003666 | S.D. dependent var | | 0.014289 |
| S.E. of regression | 0.014315 | Akaike info criterion | | -5.665086 |
| Sum squared resid | 0.186270 | Schwarz criterion | | -5.622880 |
| Log likelihood | 2594.112 | Hannan-Quinn criter. | | -5.648974 |
| Durbin-Watson stat | 1.981652 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 22:35 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Failure to improve Likelihood after 5 iterations | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(5) + C(6)\*RESID(-1)^2 + C(7)\*GARCH(-1) + C(8)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREALLBSI | -0.001435 | 0.001197 | -1.198478 | 0.2307 |
| DLNCPI | -0.399358 | 0.986809 | -0.404696 | 0.6857 |
| DLNIV | 0.272532 | 2.804834 | 0.097165 | 0.9226 |
| C | 0.000196 | 0.001046 | 0.187851 | 0.8510 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.000126 | 3.07E-06 | 40.99463 | 0.0000 |
| RESID(-1)^2 | 0.179775 | 0.037198 | 4.832854 | 0.0000 |
| GARCH(-1) | 0.540640 | 0.029102 | 18.57742 | 0.0000 |
| T\_INTARGS | -0.000736 | 3.31E-05 | -22.27140 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | -0.003072 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | -0.006379 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.014329 | Akaike info criterion | | -5.947584 |
| Sum squared resid | 0.186837 | Schwarz criterion | | -5.905415 |
| Log likelihood | 2726.046 | Hannan-Quinn criter. | | -5.931487 |
| Durbin-Watson stat | 1.931954 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 22:30 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 24 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(4) + C(5)\*RESID(-1)^2 + C(6)\*GARCH(-1) + C(7)\*T\_INTARGS( | | | | |
| -1) | |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI | 0.015690 | 0.000674 | 23.28380 | 0.0000 |
| DLNIV | -2.309167 | 1.000296 | -2.308485 | 0.0210 |
| C | 0.009984 | 0.000513 | 19.46000 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.33E-06 | 1.17E-06 | 1.985150 | 0.0471 |
| RESID(-1)^2 | 0.065886 | 0.010944 | 6.020498 | 0.0000 |
| GARCH(-1) | 0.926884 | 0.009668 | 95.87547 | 0.0000 |
| T\_INTARGS(-1) | -1.75E-05 | 1.06E-05 | -1.661308 | 0.0967 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.288481 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | 0.286919 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.012061 | Akaike info criterion | | -6.562273 |
| Sum squared resid | 0.132531 | Schwarz criterion | | -6.525375 |
| Log likelihood | 3005.959 | Hannan-Quinn criter. | | -6.548188 |
| Durbin-Watson stat | 1.982891 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 22:30 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 29 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(4) + C(5)\*RESID(-1)^2 + C(6)\*GARCH(-1) + C(7)\*T\_PREARGS( | | | | |
| -1) | |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI | 0.015832 | 0.000682 | 23.19906 | 0.0000 |
| DLNIV | -2.291960 | 1.018268 | -2.250841 | 0.0244 |
| C | 0.010047 | 0.000515 | 19.49516 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 1.73E-06 | 8.61E-07 | 2.003189 | 0.0452 |
| RESID(-1)^2 | 0.065887 | 0.010777 | 6.113506 | 0.0000 |
| GARCH(-1) | 0.928668 | 0.009325 | 99.58594 | 0.0000 |
| T\_PREARGS(-1) | -1.17E-05 | 7.37E-06 | -1.588202 | 0.1122 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.289638 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | 0.288078 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.012052 | Akaike info criterion | | -6.562863 |
| Sum squared resid | 0.132316 | Schwarz criterion | | -6.525965 |
| Log likelihood | 3006.229 | Hannan-Quinn criter. | | -6.548778 |
| Durbin-Watson stat | 1.980566 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

与格兰杰因果检验矛盾的原因是，格兰杰因果检验本身是通过建立VAR模型然后用OLS估计的，但是VAR模型存在异方差性，因此估计不是BLUE的，因此其结果存在偏差。

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| VAR Residual Heteroskedasticity Tests: No Cross Terms (only levels and squares) | | | | | |
| Date: 02/21/19 Time: 22:53 | | |  |  |  |
| Sample: 1 915 | |  |  |  |  |
| Included observations: 900 | | |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Joint test: | |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Chi-sq | df | Prob. |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| 597.1385 | 180 | 0.0000 |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Individual components: | | |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Dependent | R-squared | F(60,839) | Prob. | Chi-sq(60) | Prob. |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| res1\*res1 | 0.316608 | 6.478327 | 0.0000 | 284.9473 | 0.0000 |
| res2\*res2 | 0.125895 | 2.013980 | 0.0000 | 113.3054 | 0.0000 |
| res2\*res1 | 0.229933 | 4.175256 | 0.0000 | 206.9396 | 0.0000 |
|  |  |  |  |  |  |
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| --- | --- | --- | --- | --- | --- |
| VAR Residual Heteroskedasticity Tests: No Cross Terms (only levels and squares) | | | | | |
| Date: 02/21/19 Time: 22:54 | | |  |  |  |
| Sample: 1 915 | |  |  |  |  |
| Included observations: 900 | | |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Joint test: | |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Chi-sq | df | Prob. |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| 530.0267 | 168 | 0.0000 |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Individual components: | | |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| Dependent | R-squared | F(56,843) | Prob. | Chi-sq(56) | Prob. |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| res1\*res1 | 0.301594 | 6.500601 | 0.0000 | 271.4343 | 0.0000 |
| res2\*res2 | 0.126279 | 2.175700 | 0.0000 | 113.6514 | 0.0000 |
| res2\*res1 | 0.188474 | 3.496133 | 0.0000 | 169.6264 | 0.0000 |
|  |  |  |  |  |  |
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3) 日间收盘收益率

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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 22:57 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 33 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI | 0.017692 | 0.000711 | 24.89764 | 0.0000 |
| DLNCPI | -0.006910 | 1.183084 | -0.005841 | 0.9953 |
| DLNIV | -0.279180 | 1.075265 | -0.259638 | 0.7951 |
| DLNM1 | -0.176007 | 0.204604 | -0.860234 | 0.3897 |
| C | 0.009838 | 0.000537 | 18.33089 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.26E-06 | 1.32E-06 | 2.460566 | 0.0139 |
| RESID(-1)^2 | 0.059538 | 0.009207 | 6.466483 | 0.0000 |
| GARCH(-1) | 0.932203 | 0.008457 | 110.2340 | 0.0000 |
| T\_INTARGS | -2.57E-05 | 1.17E-05 | -2.191042 | 0.0284 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.301145 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.298070 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.013555 | Akaike info criterion | | -6.376579 |
| Sum squared resid | 0.167028 | Schwarz criterion | | -6.329138 |
| Log likelihood | 2923.097 | Hannan-Quinn criter. | | -6.358470 |
| Durbin-Watson stat | 1.951900 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 22:58 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 3 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI | 0.002754 | 0.001214 | 2.268381 | 0.0233 |
| DLNCPI | -7.106700 | 2.329905 | -3.050210 | 0.0023 |
| DLNIV | 6.668458 | 3.335629 | 1.999160 | 0.0456 |
| DLNM1 | -1.483483 | 0.430880 | -3.442918 | 0.0006 |
| C | -0.003113 | 0.000882 | -3.531787 | 0.0004 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.000178 | 3.93E-06 | 45.14830 | 0.0000 |
| RESID(-1)^2 | 0.150220 | 0.031248 | 4.807363 | 0.0000 |
| GARCH(-1) | 0.528695 | 0.039435 | 13.40672 | 0.0000 |
| T\_INTARGS | -0.001048 | 2.75E-05 | -38.10883 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.015514 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.011182 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016089 | Akaike info criterion | | -5.653254 |
| Sum squared resid | 0.235294 | Schwarz criterion | | -5.605814 |
| Log likelihood | 2592.537 | Hannan-Quinn criter. | | -5.635145 |
| Durbin-Watson stat | 1.965175 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 22:58 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 37 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI(-1) | -0.000227 | 0.000768 | -0.295867 | 0.7673 |
| DLNCPI | -3.229639 | 1.346672 | -2.398237 | 0.0165 |
| DLNIV | 4.788227 | 1.217375 | 3.933239 | 0.0001 |
| DLNM1 | -0.461062 | 0.241526 | -1.908959 | 0.0563 |
| C | -0.000235 | 0.000520 | -0.452237 | 0.6511 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 5.02E-06 | 1.31E-06 | 3.819121 | 0.0001 |
| RESID(-1)^2 | 0.057782 | 0.007885 | 7.328135 | 0.0000 |
| GARCH(-1) | 0.935906 | 0.006619 | 141.3917 | 0.0000 |
| T\_INTARGS | -4.16E-05 | 1.14E-05 | -3.647061 | 0.0003 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.009223 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.004863 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016140 | Akaike info criterion | | -5.986828 |
| Sum squared resid | 0.236798 | Schwarz criterion | | -5.939388 |
| Log likelihood | 2744.981 | Hannan-Quinn criter. | | -5.968719 |
| Durbin-Watson stat | 1.895205 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 23:00 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 38 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI(-1) | 0.001319 | 0.001072 | 1.229602 | 0.2188 |
| DLNCPI | -2.940352 | 1.344690 | -2.186640 | 0.0288 |
| DLNIV | 4.481009 | 1.239577 | 3.614951 | 0.0003 |
| DLNM1 | -0.419211 | 0.241174 | -1.738211 | 0.0822 |
| C | 0.000396 | 0.000785 | 0.504336 | 0.6140 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 4.86E-06 | 1.28E-06 | 3.799584 | 0.0001 |
| RESID(-1)^2 | 0.058379 | 0.007984 | 7.311863 | 0.0000 |
| GARCH(-1) | 0.935450 | 0.006637 | 140.9530 | 0.0000 |
| T\_INTARGS | -4.01E-05 | 1.12E-05 | -3.583505 | 0.0003 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.014113 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.009775 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016100 | Akaike info criterion | | -5.988589 |
| Sum squared resid | 0.235629 | Schwarz criterion | | -5.941149 |
| Log likelihood | 2745.785 | Hannan-Quinn criter. | | -5.970480 |
| Durbin-Watson stat | 1.931511 |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 23:02 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 3 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI(-2) | 0.002134 | 0.001621 | 1.315956 | 0.1882 |
| DLNCPI | -7.824755 | 2.280966 | -3.430457 | 0.0006 |
| DLNIV | 8.560318 | 3.119426 | 2.744197 | 0.0061 |
| DLNM1 | -1.507504 | 0.426698 | -3.532951 | 0.0004 |
| C | -0.001413 | 0.001455 | -0.971130 | 0.3315 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.000179 | 2.21E-06 | 81.01757 | 0.0000 |
| RESID(-1)^2 | 0.151012 | 0.030560 | 4.941428 | 0.0000 |
| GARCH(-1) | 0.528389 | 0.036792 | 14.36157 | 0.0000 |
| T\_INTARGS | -0.001062 | 3.88E-05 | -27.35799 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.003754 | Mean dependent var | | -6.26E-05 |
| Adjusted R-squared | -0.000635 | S.D. dependent var | | 0.016188 |
| S.E. of regression | 0.016194 | Akaike info criterion | | -5.561763 |
| Sum squared resid | 0.238105 | Schwarz criterion | | -5.514282 |
| Log likelihood | 2547.945 | Hannan-Quinn criter. | | -5.543638 |
| Durbin-Watson stat | 1.886883 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 23:02 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 34 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
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|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI(-2) | -0.000347 | 0.000760 | -0.456533 | 0.6480 |
| DLNCPI | -3.191113 | 1.337777 | -2.385385 | 0.0171 |
| DLNIV | 4.786863 | 1.214813 | 3.940412 | 0.0001 |
| DLNM1 | -0.465077 | 0.240198 | -1.936227 | 0.0528 |
| C | -0.000191 | 0.000544 | -0.351070 | 0.7255 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
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|  |  |  |  |  |
| C | 4.73E-06 | 1.30E-06 | 3.646388 | 0.0003 |
| RESID(-1)^2 | 0.056177 | 0.007753 | 7.245563 | 0.0000 |
| GARCH(-1) | 0.937241 | 0.006518 | 143.8018 | 0.0000 |
| T\_INTARGS | -3.92E-05 | 1.14E-05 | -3.430175 | 0.0006 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.008894 | Mean dependent var | | -6.26E-05 |
| Adjusted R-squared | 0.004528 | S.D. dependent var | | 0.016188 |
| S.E. of regression | 0.016152 | Akaike info criterion | | -5.992239 |
| Sum squared resid | 0.236876 | Schwarz criterion | | -5.944757 |
| Log likelihood | 2744.457 | Hannan-Quinn criter. | | -5.974113 |
| Durbin-Watson stat | 1.896055 |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 23:03 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 3 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
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|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREALLBSI | 0.004412 | 0.001350 | 3.268660 | 0.0011 |
| DLNCPI | -6.808797 | 2.297919 | -2.963027 | 0.0030 |
| DLNIV | 4.241200 | 3.671906 | 1.155041 | 0.2481 |
| DLNM1 | -1.413694 | 0.421971 | -3.350213 | 0.0008 |
| C | -0.000510 | 0.001243 | -0.410757 | 0.6813 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
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|  |  |  |  |  |
| C | 0.000178 | 2.41E-05 | 7.372539 | 0.0000 |
| RESID(-1)^2 | 0.150221 | 0.023256 | 6.459572 | 0.0000 |
| GARCH(-1) | 0.529068 | 0.029224 | 18.10397 | 0.0000 |
| T\_INTARGS | -0.001050 | 0.000171 | -6.156382 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.019459 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.015144 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016057 | Akaike info criterion | | -5.273581 |
| Sum squared resid | 0.234351 | Schwarz criterion | | -5.226141 |
| Log likelihood | 2419.027 | Hannan-Quinn criter. | | -5.255472 |
| Durbin-Watson stat | 2.012017 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 23:03 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 3 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
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|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREALLBSI(-1) | 9.98E-05 | 0.001272 | 0.078465 | 0.9375 |
| DLNCPI | -7.929033 | 2.318892 | -3.419319 | 0.0006 |
| DLNIV | 8.792357 | 3.196252 | 2.750833 | 0.0059 |
| DLNM1 | -1.533927 | 0.430616 | -3.562166 | 0.0004 |
| C | -0.002300 | 0.001002 | -2.296086 | 0.0217 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.000179 | 6.34E-06 | 28.32702 | 0.0000 |
| RESID(-1)^2 | 0.151620 | 0.031389 | 4.830311 | 0.0000 |
| GARCH(-1) | 0.528801 | 0.043303 | 12.21172 | 0.0000 |
| T\_INTARGS | -0.001059 | 1.43E-05 | -73.91249 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.007892 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.003526 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016151 | Akaike info criterion | | -5.660214 |
| Sum squared resid | 0.237116 | Schwarz criterion | | -5.612774 |
| Log likelihood | 2595.718 | Hannan-Quinn criter. | | -5.642105 |
| Durbin-Watson stat | 1.888943 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 23:03 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 34 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
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|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREALLBSI(-2) | -0.000456 | 0.000787 | -0.579348 | 0.5624 |
| DLNCPI | -3.259965 | 1.348575 | -2.417341 | 0.0156 |
| DLNIV | 4.796783 | 1.210912 | 3.961297 | 0.0001 |
| DLNM1 | -0.479087 | 0.241143 | -1.986739 | 0.0470 |
| C | -0.000372 | 0.000490 | -0.759133 | 0.4478 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 4.79E-06 | 1.30E-06 | 3.691356 | 0.0002 |
| RESID(-1)^2 | 0.055961 | 0.007750 | 7.220839 | 0.0000 |
| GARCH(-1) | 0.937342 | 0.006527 | 143.6015 | 0.0000 |
| T\_INTARGS | -3.96E-05 | 1.14E-05 | -3.475331 | 0.0005 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.008641 | Mean dependent var | | -6.26E-05 |
| Adjusted R-squared | 0.004273 | S.D. dependent var | | 0.016188 |
| S.E. of regression | 0.016154 | Akaike info criterion | | -5.992401 |
| Sum squared resid | 0.236937 | Schwarz criterion | | -5.944919 |
| Log likelihood | 2744.531 | Hannan-Quinn criter. | | -5.974275 |
| Durbin-Watson stat | 1.894927 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 23:08 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 40 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_PREARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI | 0.001916 | 0.000759 | 2.525197 | 0.0116 |
| DLNCPI | -2.911812 | 1.388328 | -2.097351 | 0.0360 |
| DLNIV | 4.207428 | 1.368042 | 3.075511 | 0.0021 |
| DLNM1 | -0.540766 | 0.246885 | -2.190355 | 0.0285 |
| C | -0.000895 | 0.000503 | -1.777840 | 0.0754 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.34E-06 | 8.52E-07 | 2.748441 | 0.0060 |
| RESID(-1)^2 | 0.059536 | 0.007708 | 7.724196 | 0.0000 |
| GARCH(-1) | 0.937846 | 0.006094 | 153.8946 | 0.0000 |
| T\_PREARGS | -1.67E-05 | 7.17E-06 | -2.329380 | 0.0198 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.019429 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.015114 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016057 | Akaike info criterion | | -5.987167 |
| Sum squared resid | 0.234359 | Schwarz criterion | | -5.939727 |
| Log likelihood | 2745.136 | Hannan-Quinn criter. | | -5.969058 |
| Durbin-Watson stat | 1.959720 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 23:08 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 35 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS( | | | | |
| -1) | |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI | 0.001836 | 0.000770 | 2.382816 | 0.0172 |
| DLNCPI | -2.811431 | 1.392259 | -2.019331 | 0.0435 |
| DLNIV | 4.045924 | 1.325073 | 3.053361 | 0.0023 |
| DLNM1 | -0.486941 | 0.245758 | -1.981386 | 0.0475 |
| C | -0.000787 | 0.000508 | -1.550884 | 0.1209 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 4.93E-06 | 1.37E-06 | 3.608511 | 0.0003 |
| RESID(-1)^2 | 0.059725 | 0.008254 | 7.235699 | 0.0000 |
| GARCH(-1) | 0.934093 | 0.006859 | 136.1892 | 0.0000 |
| T\_INTARGS(-1) | -4.07E-05 | 1.19E-05 | -3.414904 | 0.0006 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.018540 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.014221 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016064 | Akaike info criterion | | -5.992663 |
| Sum squared resid | 0.234571 | Schwarz criterion | | -5.945223 |
| Log likelihood | 2747.647 | Hannan-Quinn criter. | | -5.974554 |
| Durbin-Watson stat | 1.956021 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 23:08 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 31 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_PREARGS( | | | | |
| -2) | |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI | 0.001898 | 0.000755 | 2.513186 | 0.0120 |
| DLNCPI | -2.935476 | 1.392175 | -2.108554 | 0.0350 |
| DLNIV | 4.337397 | 1.388285 | 3.124283 | 0.0018 |
| DLNM1 | -0.564862 | 0.247920 | -2.278406 | 0.0227 |
| C | -0.000909 | 0.000502 | -1.811846 | 0.0700 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.10E-06 | 8.17E-07 | 2.572075 | 0.0101 |
| RESID(-1)^2 | 0.058807 | 0.007651 | 7.686670 | 0.0000 |
| GARCH(-1) | 0.938216 | 0.006032 | 155.5503 | 0.0000 |
| T\_PREARGS(-2) | -1.45E-05 | 6.97E-06 | -2.077271 | 0.0378 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.019493 | Mean dependent var | | -6.26E-05 |
| Adjusted R-squared | 0.015173 | S.D. dependent var | | 0.016188 |
| S.E. of regression | 0.016065 | Akaike info criterion | | -5.992309 |
| Sum squared resid | 0.234343 | Schwarz criterion | | -5.944827 |
| Log likelihood | 2744.489 | Hannan-Quinn criter. | | -5.974183 |
| Durbin-Watson stat | 1.959656 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 23:09 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 35 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS( | | | | |
| -2) | |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI | 0.001825 | 0.000768 | 2.377136 | 0.0174 |
| DLNCPI | -2.791196 | 1.393902 | -2.002434 | 0.0452 |
| DLNIV | 4.198764 | 1.342237 | 3.128183 | 0.0018 |
| DLNM1 | -0.519357 | 0.246649 | -2.105658 | 0.0352 |
| C | -0.000818 | 0.000507 | -1.613816 | 0.1066 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 4.76E-06 | 1.38E-06 | 3.461179 | 0.0005 |
| RESID(-1)^2 | 0.058787 | 0.008184 | 7.183314 | 0.0000 |
| GARCH(-1) | 0.934467 | 0.006817 | 137.0837 | 0.0000 |
| T\_INTARGS(-2) | -3.90E-05 | 1.20E-05 | -3.240817 | 0.0012 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.018652 | Mean dependent var | | -6.26E-05 |
| Adjusted R-squared | 0.014329 | S.D. dependent var | | 0.016188 |
| S.E. of regression | 0.016072 | Akaike info criterion | | -5.997807 |
| Sum squared resid | 0.234544 | Schwarz criterion | | -5.950325 |
| Log likelihood | 2746.999 | Hannan-Quinn criter. | | -5.979681 |
| Durbin-Watson stat | 1.956452 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 23:09 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 31 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9) | | | | |
| \*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI | 0.001925 | 0.000753 | 2.555150 | 0.0106 |
| DLNCPI | -2.872717 | 1.418668 | -2.024940 | 0.0429 |
| DLNIV | 4.106607 | 1.397852 | 2.937799 | 0.0033 |
| DLNM1 | -0.514842 | 0.248987 | -2.067743 | 0.0387 |
| C | -0.000858 | 0.000502 | -1.707631 | 0.0877 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.53E-06 | 1.13E-06 | 2.237490 | 0.0253 |
| RESID(-1)^2 | 0.061798 | 0.007859 | 7.863445 | 0.0000 |
| GARCH(-1) | 0.936082 | 0.006201 | 150.9684 | 0.0000 |
| T\_PREALLARGS | -3.31E-05 | 1.78E-05 | -1.862130 | 0.0626 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.019219 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.014903 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016059 | Akaike info criterion | | -5.985848 |
| Sum squared resid | 0.234409 | Schwarz criterion | | -5.938407 |
| Log likelihood | 2744.532 | Hannan-Quinn criter. | | -5.967738 |
| Durbin-Watson stat | 1.959428 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 23:10 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 41 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9) | | | | |
| \*T\_PREALLARGS(-1) | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI | 0.001940 | 0.000753 | 2.575309 | 0.0100 |
| DLNCPI | -2.899561 | 1.413869 | -2.050799 | 0.0403 |
| DLNIV | 4.174787 | 1.399763 | 2.982496 | 0.0029 |
| DLNM1 | -0.535852 | 0.249598 | -2.146861 | 0.0318 |
| C | -0.000872 | 0.000503 | -1.734243 | 0.0829 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.47E-06 | 1.13E-06 | 2.185157 | 0.0289 |
| RESID(-1)^2 | 0.062223 | 0.007898 | 7.878808 | 0.0000 |
| GARCH(-1) | 0.935705 | 0.006237 | 150.0365 | 0.0000 |
| T\_PREALLARGS(-1) | -3.20E-05 | 1.77E-05 | -1.806035 | 0.0709 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.019410 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.015095 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016057 | Akaike info criterion | | -5.985719 |
| Sum squared resid | 0.234363 | Schwarz criterion | | -5.938279 |
| Log likelihood | 2744.474 | Hannan-Quinn criter. | | -5.967610 |
| Durbin-Watson stat | 1.960248 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/21/19 Time: 23:11 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 31 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9) | | | | |
| \*T\_PREALLARGS(-2) | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI | 0.001900 | 0.000753 | 2.523849 | 0.0116 |
| DLNCPI | -2.913931 | 1.408775 | -2.068415 | 0.0386 |
| DLNIV | 4.253002 | 1.398091 | 3.042007 | 0.0024 |
| DLNM1 | -0.551704 | 0.248617 | -2.219092 | 0.0265 |
| C | -0.000874 | 0.000501 | -1.742643 | 0.0814 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.44E-06 | 1.08E-06 | 2.250874 | 0.0244 |
| RESID(-1)^2 | 0.060473 | 0.007795 | 7.757911 | 0.0000 |
| GARCH(-1) | 0.936717 | 0.006141 | 152.5335 | 0.0000 |
| T\_PREALLARGS(-2) | -3.15E-05 | 1.71E-05 | -1.838907 | 0.0659 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.019355 | Mean dependent var | | -6.26E-05 |
| Adjusted R-squared | 0.015035 | S.D. dependent var | | 0.016188 |
| S.E. of regression | 0.016066 | Akaike info criterion | | -5.991835 |
| Sum squared resid | 0.234376 | Schwarz criterion | | -5.944354 |
| Log likelihood | 2744.273 | Hannan-Quinn criter. | | -5.973709 |
| Durbin-Watson stat | 1.959320 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

1. 沪深300情绪一致性指数、情绪指数与沪深300交易量的关系
2. 单位根检验

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 变量 | 检验形式 | 滞后阶数(SIC) | t值 | P值 | 10%临界值 | 5%临界值 | 1%临界值 |
| Lnvolume | C | 2 | -3.983938 | 0.0016 | -2.568397 | -2.864496 | -3.437298 |

1. 格兰杰因果检验

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/22/19 Time: 01:15 | | | |
| Sample: 1 915 | | |  |
| Lags: 6 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_INTBSI does not Granger Cause LNVOLUME | 909 | 4.36968 | 0.0002 |
| LNVOLUME does not Granger Cause T\_INTBSI | | 2.01385 | 0.0613 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/22/19 Time: 01:16 | | | |
| Sample: 1 915 | | |  |
| Lags: 11 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREBSI does not Granger Cause LNVOLUME | 904 | 2.26666 | 0.0100 |
| LNVOLUME does not Granger Cause T\_PREBSI | | 1.04620 | 0.4030 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/22/19 Time: 01:17 | | | |
| Sample: 1 915 | | |  |
| Lags: 11 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREBSI(1) does not Granger Cause LNVOLUME | 903 | 6.68880 | 8.E-11 |
| LNVOLUME does not Granger Cause T\_PREBSI(1) | | 1.35339 | 0.1900 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/22/19 Time: 01:17 | | | |
| Sample: 1 915 | | |  |
| Lags: 11 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREALLBSI does not Granger Cause LNVOLUME | 904 | 3.13122 | 0.0004 |
| LNVOLUME does not Granger Cause T\_PREALLBSI | | 0.99479 | 0.4491 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/22/19 Time: 01:19 | | | |
| Sample: 1 915 | | |  |
| Lags: 11 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREALLBSI(1) does not Granger Cause LNVOLUME | 903 | 8.09744 | 1.E-13 |
| LNVOLUME does not Granger Cause T\_PREALLBSI(1) | | 1.08235 | 0.3722 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/22/19 Time: 01:20 | | | |
| Sample: 1 915 | | |  |
| Lags: 7 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_INTARGS does not Granger Cause LNVOLUME | 908 | 1.37268 | 0.2134 |
| LNVOLUME does not Granger Cause T\_INTARGS | | 5.13580 | 1.E-05 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/22/19 Time: 01:22 | | | |
| Sample: 1 915 | | |  |
| Lags: 15 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREARGS does not Granger Cause LNVOLUME | 900 | 1.83419 | 0.0265 |
| LNVOLUME does not Granger Cause T\_PREARGS | | 2.40051 | 0.0021 |
|  |  |  |  |
|  |  |  |  |

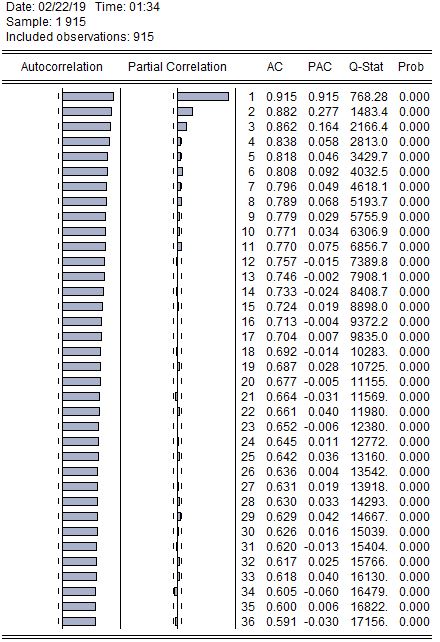
|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/22/19 Time: 01:22 | | | |
| Sample: 1 915 | | |  |
| Lags: 15 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREARGS(1) does not Granger Cause LNVOLUME | 899 | 1.83096 | 0.0268 |
| LNVOLUME does not Granger Cause T\_PREARGS(1) | | 2.31580 | 0.0031 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/22/19 Time: 01:24 | | | |
| Sample: 1 915 | | |  |
| Lags: 6 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREALLARGS does not Granger Cause LNVOLUME | 909 | 0.96990 | 0.4444 |
| LNVOLUME does not Granger Cause T\_PREALLARGS | | 7.71217 | 4.E-08 |
|  |  |  |  |
|  |  |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Pairwise Granger Causality Tests | | | |
| Date: 02/22/19 Time: 01:26 | | | |
| Sample: 1 915 | | |  |
| Lags: 6 | |  |  |
|  |  |  |  |
|  |  |  |  |
| Null Hypothesis: | Obs | F-Statistic | Prob. |
|  |  |  |  |
|  |  |  |  |
| T\_PREALLARGS(1) does not Granger Cause LNVOLUME | 908 | 1.45638 | 0.1902 |
| LNVOLUME does not Granger Cause T\_PREALLARGS(1) | | 5.84453 | 5.E-06 |
|  |  |  |  |
|  |  |  |  |

1. 建立AR模型

观察lnvolume的自相关和偏自相关函数图：



可以看出，自相关函数是拖尾的，偏自相关函数是截尾的。可以用AR模型进行建模。根据偏自相关截尾的阶数，选择1,2,3,6,8阶，并加入dlnm1，dlniv, dlncpi外生控制变量，得到如下模型：

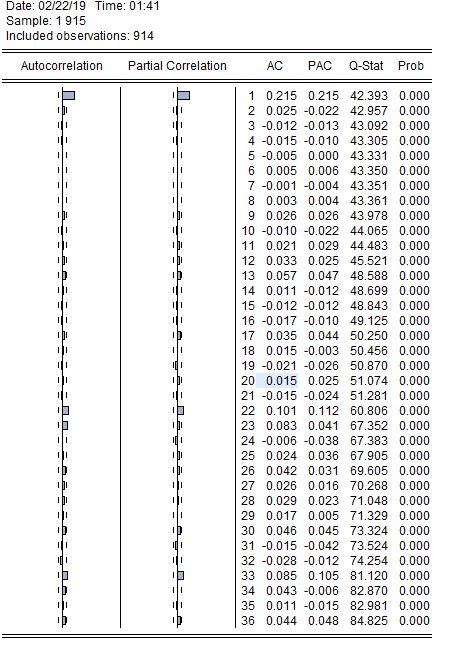
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ARMA Generalized Least Squares (Gauss-Newton) | | | | |
| Date: 02/22/19 Time: 01:38 | | |  |  |
| Sample: 2 915 | |  |  |  |
| Included observations: 914 | | |  |  |
| Convergence achieved after 9 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| d.f. adjustment for standard errors & covariance | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| DLNM1 | 12.88690 | 8.765637 | 1.470162 | 0.1419 |
| DLNIV | 104.5831 | 39.75013 | 2.631014 | 0.0087 |
| DLNCPI | -13.74502 | 39.73175 | -0.345946 | 0.7295 |
| C | 18.67931 | 0.218123 | 85.63656 | 0.0000 |
| AR(1) | 0.583259 | 0.033147 | 17.59608 | 0.0000 |
| AR(2) | 0.147485 | 0.038344 | 3.846376 | 0.0001 |
| AR(3) | 0.115386 | 0.035495 | 3.250815 | 0.0012 |
| AR(6) | 0.054946 | 0.031707 | 1.732935 | 0.0834 |
| AR(8) | 0.069944 | 0.028092 | 2.489844 | 0.0130 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865416 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.864227 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.205471 | Akaike info criterion | | -0.314585 |
| Sum squared resid | 38.20755 | Schwarz criterion | | -0.267145 |
| Log likelihood | 152.7654 | Hannan-Quinn criter. | | -0.296476 |
| F-statistic | 727.4298 | Durbin-Watson stat | | 2.003930 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .56-.45i | .56+.45i | .03-.65i |
|  | .03+.65i | -.44+.53i | -.44-.53i | -.69 |
|  |  |  |  |  |
|  |  |  |  |  |

上述模型中，dlncpi不显著，去掉后重新构建模型如下：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ARMA Generalized Least Squares (Gauss-Newton) | | | | |
| Date: 02/22/19 Time: 01:39 | | |  |  |
| Sample: 2 915 | |  |  |  |
| Included observations: 914 | | |  |  |
| Convergence achieved after 8 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| d.f. adjustment for standard errors & covariance | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| DLNM1 | 15.45594 | 4.691354 | 3.294558 | 0.0010 |
| DLNIV | 95.03032 | 28.62130 | 3.320265 | 0.0009 |
| C | 18.67927 | 0.218018 | 85.67760 | 0.0000 |
| AR(1) | 0.582764 | 0.033116 | 17.59772 | 0.0000 |
| AR(2) | 0.148255 | 0.038271 | 3.873809 | 0.0001 |
| AR(3) | 0.115482 | 0.035480 | 3.254812 | 0.0012 |
| AR(6) | 0.054419 | 0.031669 | 1.718355 | 0.0861 |
| AR(8) | 0.070100 | 0.028072 | 2.497163 | 0.0127 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865398 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.864359 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.205371 | Akaike info criterion | | -0.316641 |
| Sum squared resid | 38.21259 | Schwarz criterion | | -0.274472 |
| Log likelihood | 152.7050 | Hannan-Quinn criter. | | -0.300544 |
| F-statistic | 832.1400 | Durbin-Watson stat | | 2.004035 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .56+.45i | .56-.45i | .03-.65i |
|  | .03+.65i | -.44-.53i | -.44+.53i | -.69 |
|  |  |  |  |  |
|  |  |  |  |  |

上述模型拟合效果良好。

但是，观察上述方程的残差平方的自相关函数和偏相关函数图：



并通过ARCH异方差检验

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Heteroskedasticity Test: ARCH | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 4.555061 | Prob. F(10,893) | | 0.0000 |
| Obs\*R-squared | 43.87377 | Prob. Chi-Square(10) | | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Test Equation: | |  |  |  |
| Dependent Variable: RESID^2 | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 02/22/19 Time: 01:40 | | |  |  |
| Sample (adjusted): 12 915 | | |  |  |
| Included observations: 904 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033800 | 0.004550 | 7.429260 | 0.0000 |
| RESID^2(-1) | 0.220728 | 0.033457 | 6.597415 | 0.0000 |
| RESID^2(-2) | -0.018493 | 0.034247 | -0.539976 | 0.5893 |
| RESID^2(-3) | -0.011079 | 0.034253 | -0.323456 | 0.7464 |
| RESID^2(-4) | -0.009478 | 0.034251 | -0.276715 | 0.7821 |
| RESID^2(-5) | -0.003380 | 0.034279 | -0.098602 | 0.9215 |
| RESID^2(-6) | 0.008125 | 0.034287 | 0.236969 | 0.8127 |
| RESID^2(-7) | -0.004128 | 0.034294 | -0.120364 | 0.9042 |
| RESID^2(-8) | -0.002101 | 0.034291 | -0.061271 | 0.9512 |
| RESID^2(-9) | 0.030535 | 0.034282 | 0.890689 | 0.3733 |
| RESID^2(-10) | -0.021796 | 0.033462 | -0.651369 | 0.5150 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.048533 | Mean dependent var | | 0.041675 |
| Adjusted R-squared | 0.037878 | S.D. dependent var | | 0.083692 |
| S.E. of regression | 0.082092 | Akaike info criterion | | -2.149859 |
| Sum squared resid | 6.018014 | Schwarz criterion | | -2.091369 |
| Log likelihood | 982.7361 | Hannan-Quinn criter. | | -2.127520 |
| F-statistic | 4.555061 | Durbin-Watson stat | | 1.998454 |
| Prob(F-statistic) | 0.000003 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

因此更好的选择是建立GARCH模型。

1. Garch模型

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 01:44 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 13 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI | 0.056534 | 0.019045 | 2.968527 | 0.0030 |
| DLNM1 | 16.10867 | 4.703539 | 3.424798 | 0.0006 |
| DLNIV | 83.49442 | 26.98987 | 3.093546 | 0.0020 |
| C | 18.67701 | 0.221319 | 84.38957 | 0.0000 |
| AR(1) | 0.592294 | 0.035153 | 16.84895 | 0.0000 |
| AR(2) | 0.159089 | 0.043108 | 3.690522 | 0.0002 |
| AR(3) | 0.102749 | 0.037253 | 2.758092 | 0.0058 |
| AR(6) | 0.058856 | 0.033418 | 1.761207 | 0.0782 |
| AR(8) | 0.059429 | 0.028673 | 2.072640 | 0.0382 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033831 | 0.002128 | 15.90029 | 0.0000 |
| RESID(-1)^2 | 0.092574 | 0.028940 | 3.198773 | 0.0014 |
| RESID(-2)^2 | 0.088012 | 0.030500 | 2.885635 | 0.0039 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.866612 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.865433 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.204556 | Akaike info criterion | | -0.344221 |
| Sum squared resid | 37.86816 | Schwarz criterion | | -0.280967 |
| Log likelihood | 169.3090 | Hannan-Quinn criter. | | -0.320076 |
| Durbin-Watson stat | 2.036008 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.45i | .54-.45i | .03-.63i |
|  | .03+.63i | -.43+.52i | -.43-.52i | -.68 |
|  |  |  |  |  |
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| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 01:45 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 12 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI(-1) | 0.081711 | 0.022095 | 3.698212 | 0.0002 |
| DLNM1 | 16.73293 | 4.744470 | 3.526828 | 0.0004 |
| DLNIV | 87.30989 | 26.93526 | 3.241472 | 0.0012 |
| C | 18.69693 | 0.215759 | 86.65638 | 0.0000 |
| AR(1) | 0.585760 | 0.035915 | 16.30941 | 0.0000 |
| AR(2) | 0.165403 | 0.044347 | 3.729721 | 0.0002 |
| AR(3) | 0.104115 | 0.037371 | 2.785999 | 0.0053 |
| AR(6) | 0.063241 | 0.033573 | 1.883670 | 0.0596 |
| AR(8) | 0.053025 | 0.028597 | 1.854226 | 0.0637 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033125 | 0.002020 | 16.39827 | 0.0000 |
| RESID(-1)^2 | 0.098060 | 0.029379 | 3.337787 | 0.0008 |
| RESID(-2)^2 | 0.096743 | 0.026010 | 3.719498 | 0.0002 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.866825 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.865648 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.204393 | Akaike info criterion | | -0.351672 |
| Sum squared resid | 37.80763 | Schwarz criterion | | -0.288418 |
| Log likelihood | 172.7141 | Hannan-Quinn criter. | | -0.327527 |
| Durbin-Watson stat | 2.043419 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .53+.44i | .53-.44i | .02-.61i |
|  | .02+.61i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 01:46 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 12 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTBSI(-2) | 0.018749 | 0.025207 | 0.743785 | 0.4570 |
| DLNM1 | 16.32634 | 4.539592 | 3.596434 | 0.0003 |
| DLNIV | 89.06783 | 26.40873 | 3.372667 | 0.0007 |
| C | 18.65119 | 0.221537 | 84.18994 | 0.0000 |
| AR(1) | 0.593628 | 0.035160 | 16.88384 | 0.0000 |
| AR(2) | 0.160417 | 0.043380 | 3.697959 | 0.0002 |
| AR(3) | 0.099888 | 0.037358 | 2.673795 | 0.0075 |
| AR(6) | 0.062313 | 0.033462 | 1.862209 | 0.0626 |
| AR(8) | 0.055724 | 0.028629 | 1.946414 | 0.0516 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033695 | 0.002082 | 16.18148 | 0.0000 |
| RESID(-1)^2 | 0.097194 | 0.029528 | 3.291550 | 0.0010 |
| RESID(-2)^2 | 0.092948 | 0.028978 | 3.207558 | 0.0013 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865062 | Mean dependent var | | 18.67316 |
| Adjusted R-squared | 0.863868 | S.D. dependent var | | 0.556552 |
| S.E. of regression | 0.205346 | Akaike info criterion | | -0.339440 |
| Sum squared resid | 38.11887 | Schwarz criterion | | -0.276132 |
| Log likelihood | 166.9545 | Hannan-Quinn criter. | | -0.315273 |
| Durbin-Watson stat | 2.035441 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.45i | .54-.45i | .02-.62i |
|  | .02+.62i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 01:46 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 12 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI | 0.088784 | 0.015045 | 5.901021 | 0.0000 |
| DLNM1 | 14.64751 | 4.349345 | 3.367751 | 0.0008 |
| DLNIV | 54.48740 | 27.48447 | 1.982480 | 0.0474 |
| C | 18.65034 | 0.211054 | 88.36769 | 0.0000 |
| AR(1) | 0.591754 | 0.035558 | 16.64195 | 0.0000 |
| AR(2) | 0.155712 | 0.044333 | 3.512347 | 0.0004 |
| AR(3) | 0.105708 | 0.037596 | 2.811664 | 0.0049 |
| AR(6) | 0.060341 | 0.033301 | 1.812000 | 0.0700 |
| AR(8) | 0.057643 | 0.028568 | 2.017756 | 0.0436 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.032635 | 0.001912 | 17.06569 | 0.0000 |
| RESID(-1)^2 | 0.099118 | 0.029926 | 3.312121 | 0.0009 |
| RESID(-2)^2 | 0.088521 | 0.023303 | 3.798670 | 0.0001 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.869703 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.868551 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.202172 | Akaike info criterion | | -0.373845 |
| Sum squared resid | 36.99066 | Schwarz criterion | | -0.310591 |
| Log likelihood | 182.8470 | Hannan-Quinn criter. | | -0.349699 |
| Durbin-Watson stat | 2.033523 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.45i | .54-.45i | .02-.62i |
|  | .02+.62i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 01:46 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 14 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREBSI(-1) | 0.014496 | 0.016893 | 0.858130 | 0.3908 |
| DLNM1 | 16.54633 | 4.537205 | 3.646812 | 0.0003 |
| DLNIV | 90.43789 | 26.55015 | 3.406304 | 0.0007 |
| C | 18.62408 | 0.222611 | 83.66191 | 0.0000 |
| AR(1) | 0.591241 | 0.035281 | 16.75817 | 0.0000 |
| AR(2) | 0.166177 | 0.043762 | 3.797296 | 0.0001 |
| AR(3) | 0.099160 | 0.037351 | 2.654797 | 0.0079 |
| AR(6) | 0.058728 | 0.033622 | 1.746686 | 0.0807 |
| AR(8) | 0.056810 | 0.028318 | 2.006150 | 0.0448 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033502 | 0.002083 | 16.08317 | 0.0000 |
| RESID(-1)^2 | 0.098954 | 0.030063 | 3.291503 | 0.0010 |
| RESID(-2)^2 | 0.098502 | 0.029307 | 3.361084 | 0.0008 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865232 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.864040 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.205612 | Akaike info criterion | | -0.337853 |
| Sum squared resid | 38.25993 | Schwarz criterion | | -0.274599 |
| Log likelihood | 166.3988 | Hannan-Quinn criter. | | -0.313707 |
| Durbin-Watson stat | 2.036344 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.44i | .54-.44i | .03-.62i |
|  | .03+.62i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

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| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 01:48 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 32 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREALLBSI | 0.102353 | 0.017704 | 5.781346 | 0.0000 |
| DLNM1 | 13.54799 | 4.595415 | 2.948153 | 0.0032 |
| DLNIV | -1.894165 | 32.20658 | -0.058813 | 0.9531 |
| C | 18.71337 | 0.210866 | 88.74551 | 0.0000 |
| AR(1) | 0.586706 | 0.035557 | 16.50053 | 0.0000 |
| AR(2) | 0.160085 | 0.044604 | 3.588984 | 0.0003 |
| AR(3) | 0.107029 | 0.037480 | 2.855650 | 0.0043 |
| AR(6) | 0.064615 | 0.033365 | 1.936587 | 0.0528 |
| AR(8) | 0.052736 | 0.028502 | 1.850258 | 0.0643 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.032652 | 0.001934 | 16.88707 | 0.0000 |
| RESID(-1)^2 | 0.098912 | 0.029726 | 3.327492 | 0.0009 |
| RESID(-2)^2 | 0.091026 | 0.023324 | 3.902730 | 0.0001 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.869226 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.868070 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.202542 | Akaike info criterion | | -0.371102 |
| Sum squared resid | 37.12602 | Schwarz criterion | | -0.307849 |
| Log likelihood | 181.5938 | Hannan-Quinn criter. | | -0.346957 |
| Durbin-Watson stat | 2.040461 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .53+.44i | .53-.44i | .02-.61i |
|  | .02+.61i | -.41-.52i | -.41+.52i | -.68 |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 01:48 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 11 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREALLBSI(-1) | 0.028246 | 0.017983 | 1.570693 | 0.1163 |
| DLNM1 | 16.75242 | 4.600258 | 3.641626 | 0.0003 |
| DLNIV | 98.26468 | 27.46826 | 3.577390 | 0.0003 |
| C | 18.63270 | 0.222264 | 83.83124 | 0.0000 |
| AR(1) | 0.585604 | 0.035163 | 16.65380 | 0.0000 |
| AR(2) | 0.170571 | 0.043655 | 3.907229 | 0.0001 |
| AR(3) | 0.099897 | 0.036998 | 2.700052 | 0.0069 |
| AR(6) | 0.061592 | 0.033546 | 1.836029 | 0.0664 |
| AR(8) | 0.054548 | 0.028428 | 1.918787 | 0.0550 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033377 | 0.002087 | 15.99484 | 0.0000 |
| RESID(-1)^2 | 0.100503 | 0.030418 | 3.304039 | 0.0010 |
| RESID(-2)^2 | 0.098761 | 0.030283 | 3.261209 | 0.0011 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865470 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.864281 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.205430 | Akaike info criterion | | -0.339898 |
| Sum squared resid | 38.19230 | Schwarz criterion | | -0.276644 |
| Log likelihood | 167.3334 | Hannan-Quinn criter. | | -0.315753 |
| Durbin-Watson stat | 2.036160 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.44i | .54-.44i | .02-.61i |
|  | .02+.61i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

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| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 01:48 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 13 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREALLBSI(-2) | 0.029792 | 0.016390 | 1.817678 | 0.0691 |
| DLNM1 | 16.52112 | 4.584274 | 3.603869 | 0.0003 |
| DLNIV | 93.71947 | 26.83532 | 3.492392 | 0.0005 |
| C | 18.64767 | 0.223591 | 83.40098 | 0.0000 |
| AR(1) | 0.595501 | 0.035155 | 16.93907 | 0.0000 |
| AR(2) | 0.148911 | 0.043327 | 3.436917 | 0.0006 |
| AR(3) | 0.107217 | 0.037307 | 2.873877 | 0.0041 |
| AR(6) | 0.057802 | 0.033541 | 1.723322 | 0.0848 |
| AR(8) | 0.062804 | 0.028923 | 2.171394 | 0.0299 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.034229 | 0.002088 | 16.39399 | 0.0000 |
| RESID(-1)^2 | 0.093989 | 0.028401 | 3.309394 | 0.0009 |
| RESID(-2)^2 | 0.077312 | 0.030700 | 2.518339 | 0.0118 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865897 | Mean dependent var | | 18.67316 |
| Adjusted R-squared | 0.864710 | S.D. dependent var | | 0.556552 |
| S.E. of regression | 0.204709 | Akaike info criterion | | -0.342286 |
| Sum squared resid | 37.88294 | Schwarz criterion | | -0.278977 |
| Log likelihood | 168.2536 | Hannan-Quinn criter. | | -0.318118 |
| Durbin-Watson stat | 2.031864 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .55+.45i | .55-.45i | .03-.64i |
|  | .03+.64i | -.43-.52i | -.43+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

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| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 01:50 | | |  |  |
| Sample (adjusted): 4 915 | | |  |  |
| Included observations: 912 after adjustments | | | |  |
| Convergence achieved after 13 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREALLBSI(-3) | -0.010195 | 0.016319 | -0.624748 | 0.5321 |
| DLNM1 | 16.30514 | 4.519589 | 3.607661 | 0.0003 |
| DLNIV | 89.37414 | 26.31783 | 3.395954 | 0.0007 |
| C | 18.62306 | 0.216562 | 85.99411 | 0.0000 |
| AR(1) | 0.598315 | 0.035414 | 16.89499 | 0.0000 |
| AR(2) | 0.157755 | 0.043547 | 3.622654 | 0.0003 |
| AR(3) | 0.099930 | 0.037462 | 2.667512 | 0.0076 |
| AR(6) | 0.060884 | 0.033572 | 1.813563 | 0.0697 |
| AR(8) | 0.054045 | 0.028377 | 1.904540 | 0.0568 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033708 | 0.002085 | 16.16376 | 0.0000 |
| RESID(-1)^2 | 0.096730 | 0.029358 | 3.294907 | 0.0010 |
| RESID(-2)^2 | 0.093717 | 0.029494 | 3.177525 | 0.0015 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.864766 | Mean dependent var | | 18.67216 |
| Adjusted R-squared | 0.863568 | S.D. dependent var | | 0.556037 |
| S.E. of regression | 0.205382 | Akaike info criterion | | -0.338570 |
| Sum squared resid | 38.09007 | Schwarz criterion | | -0.275207 |
| Log likelihood | 166.3881 | Hannan-Quinn criter. | | -0.314380 |
| Durbin-Watson stat | 2.029654 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.44i | .54-.44i | .02-.61i |
|  | .02+.61i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

（4） GARCH模型 情绪一致性指数

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 01:57 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 17 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTARGS | -3.067696 | 0.358489 | -8.557287 | 0.0000 |
| DLNM1 | 14.93512 | 4.748900 | 3.144965 | 0.0017 |
| DLNIV | 116.1266 | 26.01356 | 4.464079 | 0.0000 |
| C | 18.91122 | 0.176500 | 107.1456 | 0.0000 |
| AR(1) | 0.573177 | 0.034810 | 16.46595 | 0.0000 |
| AR(2) | 0.154688 | 0.041373 | 3.738847 | 0.0002 |
| AR(3) | 0.112138 | 0.036082 | 3.107894 | 0.0019 |
| AR(6) | 0.045297 | 0.033198 | 1.364445 | 0.1724 |
| AR(8) | 0.080499 | 0.029023 | 2.773608 | 0.0055 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033323 | 0.002089 | 15.95500 | 0.0000 |
| RESID(-1)^2 | 0.074237 | 0.026507 | 2.800633 | 0.0051 |
| RESID(-2)^2 | 0.061481 | 0.030242 | 2.032922 | 0.0421 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.875657 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.874558 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.197499 | Akaike info criterion | | -0.403377 |
| Sum squared resid | 35.30031 | Schwarz criterion | | -0.340123 |
| Log likelihood | 196.3432 | Hannan-Quinn criter. | | -0.379231 |
| Durbin-Watson stat | 2.033916 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .98 | .57+.45i | .57-.45i | .03-.67i |
|  | .03+.67i | -.45-.53i | -.45+.53i | -.70 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 01:58 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 18 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTARGS(-1) | -0.390248 | 0.408595 | -0.955097 | 0.3395 |
| DLNM1 | 16.30241 | 4.536372 | 3.593710 | 0.0003 |
| DLNIV | 86.49793 | 26.57974 | 3.254281 | 0.0011 |
| C | 18.66631 | 0.223319 | 83.58594 | 0.0000 |
| AR(1) | 0.587610 | 0.037884 | 15.51097 | 0.0000 |
| AR(2) | 0.165656 | 0.043617 | 3.797970 | 0.0001 |
| AR(3) | 0.100631 | 0.037703 | 2.669050 | 0.0076 |
| AR(6) | 0.058133 | 0.033762 | 1.721840 | 0.0851 |
| AR(8) | 0.059107 | 0.029044 | 2.035071 | 0.0418 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033748 | 0.002091 | 16.13946 | 0.0000 |
| RESID(-1)^2 | 0.099025 | 0.030137 | 3.285816 | 0.0010 |
| RESID(-2)^2 | 0.090869 | 0.028589 | 3.178464 | 0.0015 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865325 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.864134 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.205541 | Akaike info criterion | | -0.338026 |
| Sum squared resid | 38.23350 | Schwarz criterion | | -0.274773 |
| Log likelihood | 166.4781 | Hannan-Quinn criter. | | -0.313881 |
| Durbin-Watson stat | 2.036149 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.44i | .54-.44i | .03-.63i |
|  | .03+.63i | -.43-.52i | -.43+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 01:58 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 15 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_INTARGS(-2) | -0.633890 | 0.434342 | -1.459426 | 0.1444 |
| DLNM1 | 16.11614 | 4.526264 | 3.560585 | 0.0004 |
| DLNIV | 87.25626 | 25.92457 | 3.365774 | 0.0008 |
| C | 18.69313 | 0.213643 | 87.49720 | 0.0000 |
| AR(1) | 0.598272 | 0.035154 | 17.01884 | 0.0000 |
| AR(2) | 0.146068 | 0.044022 | 3.318065 | 0.0009 |
| AR(3) | 0.105852 | 0.037371 | 2.832488 | 0.0046 |
| AR(6) | 0.063063 | 0.033487 | 1.883197 | 0.0597 |
| AR(8) | 0.057254 | 0.028544 | 2.005793 | 0.0449 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033629 | 0.002106 | 15.96555 | 0.0000 |
| RESID(-1)^2 | 0.099597 | 0.029590 | 3.365946 | 0.0008 |
| RESID(-2)^2 | 0.090330 | 0.029298 | 3.083110 | 0.0020 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865285 | Mean dependent var | | 18.67316 |
| Adjusted R-squared | 0.864093 | S.D. dependent var | | 0.556552 |
| S.E. of regression | 0.205176 | Akaike info criterion | | -0.341423 |
| Sum squared resid | 38.05591 | Schwarz criterion | | -0.278115 |
| Log likelihood | 167.8598 | Hannan-Quinn criter. | | -0.317256 |
| Durbin-Watson stat | 2.035496 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.45i | .54-.45i | .02-.62i |
|  | .02+.62i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 01:58 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 19 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREARGS | 0.418785 | 0.338900 | 1.235718 | 0.2166 |
| DLNM1 | 16.98782 | 4.548432 | 3.734874 | 0.0002 |
| DLNIV | 111.8773 | 32.10937 | 3.484256 | 0.0005 |
| C | 18.59751 | 0.227393 | 81.78565 | 0.0000 |
| AR(1) | 0.600947 | 0.035393 | 16.97917 | 0.0000 |
| AR(2) | 0.158445 | 0.043523 | 3.640471 | 0.0003 |
| AR(3) | 0.098518 | 0.037313 | 2.640321 | 0.0083 |
| AR(6) | 0.058267 | 0.033477 | 1.740513 | 0.0818 |
| AR(8) | 0.056546 | 0.028317 | 1.996876 | 0.0458 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033725 | 0.002093 | 16.11453 | 0.0000 |
| RESID(-1)^2 | 0.098628 | 0.029509 | 3.342332 | 0.0008 |
| RESID(-2)^2 | 0.091268 | 0.029021 | 3.144869 | 0.0017 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865487 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.864298 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.205417 | Akaike info criterion | | -0.338760 |
| Sum squared resid | 38.18738 | Schwarz criterion | | -0.275506 |
| Log likelihood | 166.8132 | Hannan-Quinn criter. | | -0.314614 |
| Durbin-Watson stat | 2.034352 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.44i | .54-.44i | .03-.62i |
|  | .03+.62i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 01:59 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 19 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREARGS | 0.418785 | 0.338900 | 1.235718 | 0.2166 |
| DLNM1 | 16.98782 | 4.548432 | 3.734874 | 0.0002 |
| DLNIV | 111.8773 | 32.10937 | 3.484256 | 0.0005 |
| C | 18.59751 | 0.227393 | 81.78565 | 0.0000 |
| AR(1) | 0.600947 | 0.035393 | 16.97917 | 0.0000 |
| AR(2) | 0.158445 | 0.043523 | 3.640471 | 0.0003 |
| AR(3) | 0.098518 | 0.037313 | 2.640321 | 0.0083 |
| AR(6) | 0.058267 | 0.033477 | 1.740513 | 0.0818 |
| AR(8) | 0.056546 | 0.028317 | 1.996876 | 0.0458 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033725 | 0.002093 | 16.11453 | 0.0000 |
| RESID(-1)^2 | 0.098628 | 0.029509 | 3.342332 | 0.0008 |
| RESID(-2)^2 | 0.091268 | 0.029021 | 3.144869 | 0.0017 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865487 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.864298 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.205417 | Akaike info criterion | | -0.338760 |
| Sum squared resid | 38.18738 | Schwarz criterion | | -0.275506 |
| Log likelihood | 166.8132 | Hannan-Quinn criter. | | -0.314614 |
| Durbin-Watson stat | 2.034352 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.44i | .54-.44i | .03-.62i |
|  | .03+.62i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 01:59 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 15 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREARGS(-1) | 0.116123 | 0.291274 | 0.398674 | 0.6901 |
| DLNM1 | 16.33398 | 4.521302 | 3.612672 | 0.0003 |
| DLNIV | 86.11048 | 26.66494 | 3.229352 | 0.0012 |
| C | 18.62396 | 0.224900 | 82.80991 | 0.0000 |
| AR(1) | 0.598356 | 0.035185 | 17.00590 | 0.0000 |
| AR(2) | 0.158955 | 0.043559 | 3.649157 | 0.0003 |
| AR(3) | 0.099650 | 0.037448 | 2.661024 | 0.0078 |
| AR(6) | 0.057235 | 0.033547 | 1.706146 | 0.0880 |
| AR(8) | 0.058042 | 0.028383 | 2.044988 | 0.0409 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033805 | 0.002092 | 16.15933 | 0.0000 |
| RESID(-1)^2 | 0.097154 | 0.029456 | 3.298280 | 0.0010 |
| RESID(-2)^2 | 0.091835 | 0.029004 | 3.166256 | 0.0015 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865298 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.864107 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.205561 | Akaike info criterion | | -0.337191 |
| Sum squared resid | 38.24112 | Schwarz criterion | | -0.273937 |
| Log likelihood | 166.0962 | Hannan-Quinn criter. | | -0.313045 |
| Durbin-Watson stat | 2.036510 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.44i | .54-.44i | .03-.62i |
|  | .03+.62i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 02:00 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 14 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREALLARGS | -0.623341 | 0.549558 | -1.134260 | 0.2567 |
| DLNM1 | 15.58838 | 4.484384 | 3.476148 | 0.0005 |
| DLNIV | 81.91491 | 26.64019 | 3.074862 | 0.0021 |
| C | 18.66553 | 0.220955 | 84.47659 | 0.0000 |
| AR(1) | 0.594397 | 0.036086 | 16.47164 | 0.0000 |
| AR(2) | 0.159115 | 0.043648 | 3.645429 | 0.0003 |
| AR(3) | 0.099769 | 0.037702 | 2.646257 | 0.0081 |
| AR(6) | 0.058706 | 0.033733 | 1.740311 | 0.0818 |
| AR(8) | 0.059280 | 0.028887 | 2.052133 | 0.0402 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033715 | 0.002088 | 16.15024 | 0.0000 |
| RESID(-1)^2 | 0.098373 | 0.030319 | 3.244582 | 0.0012 |
| RESID(-2)^2 | 0.091943 | 0.028052 | 3.277597 | 0.0010 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865397 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.864207 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.205485 | Akaike info criterion | | -0.338536 |
| Sum squared resid | 38.21292 | Schwarz criterion | | -0.275282 |
| Log likelihood | 166.7108 | Hannan-Quinn criter. | | -0.314390 |
| Durbin-Watson stat | 2.037562 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.45i | .54-.45i | .03-.63i |
|  | .03+.63i | -.43-.52i | -.43+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / Marquardt | | | | |
| steps) | |  |  |  |
| Date: 02/22/19 Time: 02:00 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 28 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(10) + C(11)\*RESID(-1)^2 + C(12)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| T\_PREALLARGS(-1) | 0.028520 | 0.507918 | 0.056151 | 0.9552 |
| DLNM1 | 16.35654 | 4.529441 | 3.611161 | 0.0003 |
| DLNIV | 88.39308 | 26.33984 | 3.355870 | 0.0008 |
| C | 18.63110 | 0.224775 | 82.88791 | 0.0000 |
| AR(1) | 0.598151 | 0.035285 | 16.95216 | 0.0000 |
| AR(2) | 0.158713 | 0.043777 | 3.625464 | 0.0003 |
| AR(3) | 0.099424 | 0.037495 | 2.651675 | 0.0080 |
| AR(6) | 0.057269 | 0.033597 | 1.704590 | 0.0883 |
| AR(8) | 0.058486 | 0.028377 | 2.061080 | 0.0393 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033796 | 0.002098 | 16.11059 | 0.0000 |
| RESID(-1)^2 | 0.097834 | 0.029610 | 3.304138 | 0.0010 |
| RESID(-2)^2 | 0.091616 | 0.029043 | 3.154502 | 0.0016 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865277 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.864086 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.205577 | Akaike info criterion | | -0.337002 |
| Sum squared resid | 38.24705 | Schwarz criterion | | -0.273748 |
| Log likelihood | 166.0097 | Hannan-Quinn criter. | | -0.312856 |
| Durbin-Watson stat | 2.035898 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.44i | .54-.44i | .03-.63i |
|  | .03+.63i | -.43-.52i | -.43+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

从以上结果可以看出，情绪一致性指数不具有超前的预测解释作用。只有同期的盘中情绪一致性指数有解释预测作用。

1. 情绪指数、情绪一致性指数对股市影响的非对称效应
2. 看涨看跌的非对称效应
3. 开盘收益率

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 15:24 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 27 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_BSI0\*T\_PREBSI | 0.001660 | 0.000541 | 3.070110 | 0.0021 |
| (1-D\_BSI0)\*T\_PREBSI | 0.005028 | 0.000853 | 5.893938 | 0.0000 |
| DLNCPI | -3.015858 | 0.758636 | -3.975370 | 0.0001 |
| DLNIV | 3.492923 | 1.107095 | 3.155035 | 0.0016 |
| DLNM1 | -0.394646 | 0.163284 | -2.416924 | 0.0157 |
| C | -0.002089 | 0.000384 | -5.437196 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 1.70E-05 | 8.11E-07 | 21.01075 | 0.0000 |
| RESID(-1)^2 | 0.290222 | 0.048330 | 6.005035 | 0.0000 |
| RESID(-2)^2 | 0.146284 | 0.056345 | 2.596211 | 0.0094 |
| GARCH(-1) | 0.519171 | 0.034791 | 14.92245 | 0.0000 |
| T\_PREALLARGS | -0.000152 | 9.98E-06 | -15.22300 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.102095 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.097151 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007378 | Akaike info criterion | | -7.618596 |
| Sum squared resid | 0.049432 | Schwarz criterion | | -7.560613 |
| Log likelihood | 3492.698 | Hannan-Quinn criter. | | -7.596462 |
| Durbin-Watson stat | 2.001181 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

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| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / EViews legacy) | | | | |
| Date: 02/22/19 Time: 19:25 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 95 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI00(-1)\*T\_PREBSI(-1) | 0.000446 | 0.000395 | 1.127939 | 0.2593 |
| (1-D\_PREBSI00(-1))\*T\_PREBSI(-1) | -0.000534 | 0.000850 | -0.628723 | 0.5295 |
| DLNCPI | -1.884714 | 0.490820 | -3.839929 | 0.0001 |
| DLNIV | 3.949611 | 0.559141 | 7.063718 | 0.0000 |
| DLNM1 | -0.326201 | 0.106866 | -3.052438 | 0.0023 |
| C | -0.001817 | 0.000268 | -6.781475 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.27E-07 | 9.02E-08 | 3.622934 | 0.0003 |
| RESID(-1)^2 | 0.309263 | 0.022765 | 13.58511 | 0.0000 |
| RESID(-2)^2 | -0.276217 | 0.023087 | -11.96438 | 0.0000 |
| GARCH(-1) | 0.962159 | 0.002513 | 382.9226 | 0.0000 |
| T\_PREALLARGS | -3.91E-06 | 1.38E-06 | -2.834246 | 0.0046 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.018199 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.012793 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007715 | Akaike info criterion | | -7.769055 |
| Sum squared resid | 0.054051 | Schwarz criterion | | -7.711072 |
| Log likelihood | 3561.458 | Hannan-Quinn criter. | | -7.746922 |
| Durbin-Watson stat | 1.967811 |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 15:27 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 24 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_BSI0(-1)\*T\_INTBSI(-1) | 0.023862 | 0.004736 | 5.038230 | 0.0000 |
| (1-D\_BSI0(-1))\*T\_INTBSI(-1) | 0.001184 | 0.000630 | 1.878011 | 0.0604 |
| DLNCPI | -3.764051 | 0.668846 | -5.627677 | 0.0000 |
| DLNIV | 5.384772 | 0.815299 | 6.604656 | 0.0000 |
| DLNM1 | -0.356094 | 0.128692 | -2.767023 | 0.0057 |
| C | -0.001484 | 0.000595 | -2.494639 | 0.0126 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 6.48E-06 | 7.21E-07 | 8.993241 | 0.0000 |
| RESID(-1)^2 | 0.316750 | 0.042401 | 7.470274 | 0.0000 |
| RESID(-2)^2 | -0.180084 | 0.042920 | -4.195765 | 0.0000 |
| GARCH(-1) | 0.834969 | 0.015408 | 54.18993 | 0.0000 |
| T\_PREALLARGS | -7.05E-05 | 6.66E-06 | -10.58344 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.036026 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.030718 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007645 | Akaike info criterion | | -7.598036 |
| Sum squared resid | 0.053070 | Schwarz criterion | | -7.540053 |
| Log likelihood | 3483.302 | Hannan-Quinn criter. | | -7.575903 |
| Durbin-Watson stat | 1.982655 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / EViews legacy) | | | | |
| Date: 02/22/19 Time: 19:24 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 239 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI00(-2)\*T\_INTBSI(-2) | 0.003490 | 0.008574 | 0.407088 | 0.6839 |
| (1-D\_INTBSI00(-2))\*T\_INTBSI(-2) | 0.000470 | 0.000414 | 1.135534 | 0.2562 |
| DLNCPI | -3.676481 | 0.450748 | -8.156394 | 0.0000 |
| DLNIV | 4.952692 | 0.507523 | 9.758551 | 0.0000 |
| DLNM1 | -0.656404 | 0.091873 | -7.144708 | 0.0000 |
| C | -0.001430 | 0.000319 | -4.478597 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.90E-07 | 1.10E-07 | 3.552453 | 0.0004 |
| RESID(-1)^2 | 0.306323 | 0.024686 | 12.40871 | 0.0000 |
| RESID(-2)^2 | -0.264747 | 0.025111 | -10.54301 | 0.0000 |
| GARCH(-1) | 0.953714 | 0.003295 | 289.4625 | 0.0000 |
| T\_PREALLARGS | -4.65E-06 | 1.66E-06 | -2.809273 | 0.0050 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.027020 | Mean dependent var | | -0.001101 |
| Adjusted R-squared | 0.021656 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007680 | Akaike info criterion | | -7.769845 |
| Sum squared resid | 0.053503 | Schwarz criterion | | -7.711812 |
| Log likelihood | 3557.934 | Hannan-Quinn criter. | | -7.747692 |
| Durbin-Watson stat | 1.977770 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 15:32 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 15 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_BSI0\*T\_PREALLBSI | 0.005690 | 0.002114 | 2.691194 | 0.0071 |
| (1-D\_BSI0)\*T\_PREALLBSI | -0.000828 | 0.000742 | -1.115760 | 0.2645 |
| DLNCPI | -2.967587 | 1.116443 | -2.658072 | 0.0079 |
| DLNIV | 1.398834 | 1.987544 | 0.703800 | 0.4816 |
| DLNM1 | -0.434831 | 0.240680 | -1.806674 | 0.0708 |
| C | -0.001913 | 0.000664 | -2.879639 | 0.0040 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.66E-05 | 1.76E-06 | 20.78306 | 0.0000 |
| RESID(-1)^2 | 0.200812 | 0.030942 | 6.489930 | 0.0000 |
| RESID(-2)^2 | 0.117352 | 0.042288 | 2.775100 | 0.0055 |
| GARCH(-1) | 0.403259 | 0.042358 | 9.520348 | 0.0000 |
| T\_PREALLARGS | -0.000268 | 2.26E-05 | -11.85712 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.039979 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.034692 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007629 | Akaike info criterion | | -7.380003 |
| Sum squared resid | 0.052852 | Schwarz criterion | | -7.322021 |
| Log likelihood | 3383.661 | Hannan-Quinn criter. | | -7.357870 |
| Durbin-Watson stat | 1.981130 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / EViews legacy) | | | | |
| Date: 02/22/19 Time: 19:25 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 87 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI00(-1)\*T\_PREALLBSI(-1) | 0.003192 | 0.000431 | 7.403749 | 0.0000 |
| (1-D\_PREALLBSI00(-1))\*T\_PREALLBSI(-1) | -0.000538 | 0.000376 | -1.430299 | 0.1526 |
| DLNCPI | -1.811610 | 0.463119 | -3.911758 | 0.0001 |
| DLNIV | 4.105606 | 0.519595 | 7.901553 | 0.0000 |
| DLNM1 | -0.300868 | 0.099385 | -3.027295 | 0.0025 |
| C | -0.002161 | 0.000205 | -10.55782 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.64E-07 | 9.67E-08 | 2.731491 | 0.0063 |
| RESID(-1)^2 | 0.346387 | 0.028552 | 12.13195 | 0.0000 |
| RESID(-2)^2 | -0.307468 | 0.028631 | -10.73909 | 0.0000 |
| GARCH(-1) | 0.958082 | 0.002686 | 356.6284 | 0.0000 |
| T\_PREALLARGS | -2.95E-06 | 1.48E-06 | -1.987763 | 0.0468 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.019228 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.013827 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007711 | Akaike info criterion | | -7.792397 |
| Sum squared resid | 0.053994 | Schwarz criterion | | -7.734414 |
| Log likelihood | 3572.125 | Hannan-Quinn criter. | | -7.770263 |
| Durbin-Watson stat | 1.985453 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Newton-Raphson / EViews legacy) | | | | |
| Date: 02/22/19 Time: 19:26 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 111 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI00(-2)\*T\_PREALLBSI(-2) | 0.001616 | 0.000561 | 2.880631 | 0.0040 |
| (1-D\_PREALLBSI00(-2))\*T\_PREALLBSI(-2) | 0.000377 | 0.000381 | 0.990937 | 0.3217 |
| DLNCPI | -1.763957 | 0.479712 | -3.677113 | 0.0002 |
| DLNIV | 4.109442 | 0.547825 | 7.501376 | 0.0000 |
| DLNM1 | -0.306988 | 0.105092 | -2.921128 | 0.0035 |
| C | -0.001777 | 0.000238 | -7.466211 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.74E-07 | 9.59E-08 | 2.860314 | 0.0042 |
| RESID(-1)^2 | 0.319053 | 0.025267 | 12.62726 | 0.0000 |
| RESID(-2)^2 | -0.283539 | 0.025606 | -11.07305 | 0.0000 |
| GARCH(-1) | 0.960120 | 0.002597 | 369.7267 | 0.0000 |
| T\_PREALLARGS | -3.02E-06 | 1.47E-06 | -2.055443 | 0.0398 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.020716 | Mean dependent var | | -0.001101 |
| Adjusted R-squared | 0.015318 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007705 | Akaike info criterion | | -7.783503 |
| Sum squared resid | 0.053849 | Schwarz criterion | | -7.725470 |
| Log likelihood | 3564.169 | Hannan-Quinn criter. | | -7.761349 |
| Durbin-Watson stat | 1.974659 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

1. 日内收益率

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| --- | --- | --- | --- | --- |
| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (OPG - BHHH / Marquardt steps) | | | | |
| Date: 02/22/19 Time: 15:55 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 42 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(5) + C(6)\*RESID(-1)^2 + C(7)\*GARCH(-1) + C(8)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI0\*T\_INTBSI | -0.005239 | 0.005565 | -0.941392 | 0.3465 |
| (1-D\_INTBSI0)\*T\_INTBSI | 0.016452 | 0.000753 | 21.83773 | 0.0000 |
| DLNIV | -2.227337 | 0.977265 | -2.279153 | 0.0227 |
| C | 0.010412 | 0.000570 | 18.26611 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.45E-06 | 1.20E-06 | 2.032651 | 0.0421 |
| RESID(-1)^2 | 0.068131 | 0.011440 | 5.955549 | 0.0000 |
| GARCH(-1) | 0.924758 | 0.010098 | 91.57770 | 0.0000 |
| T\_INTARGS | -1.88E-05 | 1.08E-05 | -1.739382 | 0.0820 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.284627 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | 0.282269 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.012101 | Akaike info criterion | | -6.569649 |
| Sum squared resid | 0.133249 | Schwarz criterion | | -6.527480 |
| Log likelihood | 3010.330 | Hannan-Quinn criter. | | -6.553552 |
| Durbin-Watson stat | 1.970898 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

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| --- | --- | --- | --- | --- |
| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 19:28 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 40 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI00(-1)\*T\_INTBSI(-1) | 0.010488 | 0.009356 | 1.121056 | 0.2623 |
| (1-D\_INTBSI00(-1))\*T\_INTBSI(-1) | -0.001570 | 0.001033 | -1.519713 | 0.1286 |
| DLNM1 | -0.216190 | 0.215704 | -1.002251 | 0.3162 |
| DLNCPI | -1.634307 | 1.050129 | -1.556291 | 0.1196 |
| C | 0.000512 | 0.000659 | 0.777337 | 0.4370 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.85E-06 | 1.24E-06 | 3.103084 | 0.0019 |
| RESID(-1)^2 | 0.061944 | 0.009676 | 6.402115 | 0.0000 |
| GARCH(-1) | 0.932438 | 0.007897 | 118.0793 | 0.0000 |
| T\_INTARGS | -3.15E-05 | 1.09E-05 | -2.904826 | 0.0037 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.002680 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | -0.001708 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.014296 | Akaike info criterion | | -6.202611 |
| Sum squared resid | 0.185766 | Schwarz criterion | | -6.155170 |
| Log likelihood | 2843.593 | Hannan-Quinn criter. | | -6.184502 |
| Durbin-Watson stat | 1.958486 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 19:31 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 3 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI00\*T\_PREBSI | -0.001050 | 0.001687 | -0.622019 | 0.5339 |
| (1-D\_PREBSI00)\*T\_PREBSI | -0.005570 | 0.002935 | -1.898066 | 0.0577 |
| DLNM1 | -0.809841 | 0.318206 | -2.545023 | 0.0109 |
| DLNCPI | -2.951034 | 1.404610 | -2.100963 | 0.0356 |
| C | 0.000598 | 0.000967 | 0.618564 | 0.5362 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.000141 | 4.36E-06 | 32.33741 | 0.0000 |
| RESID(-1)^2 | 0.139331 | 0.031203 | 4.465362 | 0.0000 |
| GARCH(-1) | 0.536505 | 0.033892 | 15.82978 | 0.0000 |
| T\_INTARGS | -0.000831 | 2.88E-06 | -288.7882 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | -0.000460 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | -0.004863 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.014318 | Akaike info criterion | | -5.907013 |
| Sum squared resid | 0.186351 | Schwarz criterion | | -5.859572 |
| Log likelihood | 2708.505 | Hannan-Quinn criter. | | -5.888904 |
| Durbin-Watson stat | 1.877532 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 19:29 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 27 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI00(-1)\*T\_PREBSI(-1) | -0.000457 | 0.001019 | -0.448472 | 0.6538 |
| (1-D\_PREBSI00(-1))\*T\_PREBSI(-1) | -0.000119 | 0.001903 | -0.062540 | 0.9501 |
| DLNM1 | -0.215861 | 0.214769 | -1.005084 | 0.3149 |
| DLNCPI | -1.626942 | 1.056698 | -1.539647 | 0.1236 |
| C | 0.001571 | 0.000566 | 2.774167 | 0.0055 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.84E-06 | 1.26E-06 | 3.055022 | 0.0023 |
| RESID(-1)^2 | 0.060973 | 0.009546 | 6.387555 | 0.0000 |
| GARCH(-1) | 0.932937 | 0.007862 | 118.6568 | 0.0000 |
| T\_INTARGS | -3.12E-05 | 1.10E-05 | -2.845777 | 0.0044 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.002258 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | -0.002133 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.014299 | Akaike info criterion | | -6.199157 |
| Sum squared resid | 0.185845 | Schwarz criterion | | -6.151716 |
| Log likelihood | 2842.015 | Hannan-Quinn criter. | | -6.181048 |
| Durbin-Watson stat | 1.988544 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 19:35 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 3 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
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|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI00\*T\_PREALLBSI | 0.004716 | 0.003335 | 1.414011 | 0.1574 |
| (1-D\_PREALLBSI00)\*T\_PREALLBSI | -0.002285 | 0.001546 | -1.477678 | 0.1395 |
| DLNM1 | -0.814184 | 0.330326 | -2.464787 | 0.0137 |
| DLNCPI | -2.910966 | 1.407826 | -2.067702 | 0.0387 |
| C | -0.000390 | 0.000957 | -0.407976 | 0.6833 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.000141 | 1.24E-06 | 113.3020 | 0.0000 |
| RESID(-1)^2 | 0.139569 | 0.031005 | 4.501510 | 0.0000 |
| GARCH(-1) | 0.537218 | 0.029506 | 18.20693 | 0.0000 |
| T\_INTARGS | -0.000831 | 2.70E-05 | -30.80060 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.004991 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | 0.000612 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.014279 | Akaike info criterion | | -5.840431 |
| Sum squared resid | 0.185336 | Schwarz criterion | | -5.792991 |
| Log likelihood | 2678.077 | Hannan-Quinn criter. | | -5.822322 |
| Durbin-Watson stat | 1.960773 |  |  |  |
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1. 日间收盘收益率

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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 16:17 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 34 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*GARCH(-1) + C(10)\*T\_INTARGS | | | | |
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| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
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|  |  |  |  |  |
| D\_INTBSI0\*T\_INTBSI | -0.001398 | 0.005424 | -0.257680 | 0.7967 |
| (1-D\_INTBSI0)\*T\_INTBSI | 0.018443 | 0.000810 | 22.76592 | 0.0000 |
| DLNCPI | 0.123917 | 1.198289 | 0.103412 | 0.9176 |
| DLNIV | 0.094534 | 1.080985 | 0.087452 | 0.9303 |
| DLNM1 | -0.132609 | 0.205995 | -0.643745 | 0.5197 |
| C | 0.010166 | 0.000588 | 17.27756 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.19E-06 | 1.33E-06 | 2.394502 | 0.0166 |
| RESID(-1)^2 | 0.060789 | 0.009528 | 6.380078 | 0.0000 |
| GARCH(-1) | 0.931464 | 0.008586 | 108.4908 | 0.0000 |
| T\_INTARGS | -2.54E-05 | 1.18E-05 | -2.149117 | 0.0316 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.301039 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.297190 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.013564 | Akaike info criterion | | -6.381414 |
| Sum squared resid | 0.167053 | Schwarz criterion | | -6.328702 |
| Log likelihood | 2926.306 | Hannan-Quinn criter. | | -6.361293 |
| Durbin-Watson stat | 1.954940 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 16:18 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 6 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*GARCH(-1) + C(10)\*T\_INTARGS | | | | |
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|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI0\*T\_PREBSI | 0.000346 | 0.001291 | 0.267707 | 0.7889 |
| (1-D\_PREBSI0)\*T\_PREBSI | -0.001558 | 0.002291 | -0.679914 | 0.4966 |
| DLNCPI | -7.105230 | 1.541588 | -4.609032 | 0.0000 |
| DLNIV | 6.670870 | 2.165061 | 3.081146 | 0.0021 |
| DLNM1 | -1.434378 | 0.306345 | -4.682232 | 0.0000 |
| C | -0.002300 | 0.000766 | -3.001102 | 0.0027 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 8.06E-05 | 2.62E-06 | 30.77365 | 0.0000 |
| RESID(-1)^2 | 0.236699 | 0.033217 | 7.125926 | 0.0000 |
| GARCH(-1) | 0.592928 | 0.030168 | 19.65444 | 0.0000 |
| T\_INTARGS | -0.000498 | 2.29E-05 | -21.73689 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.004166 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | -0.001317 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016190 | Akaike info criterion | | -5.784475 |
| Sum squared resid | 0.238006 | Schwarz criterion | | -5.731764 |
| Log likelihood | 2653.505 | Hannan-Quinn criter. | | -5.764354 |
| Durbin-Watson stat | 1.873391 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 19:40 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 34 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*GARCH(-1) + C(10)\*T\_INTARGS | | | | |
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|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI00(-1)\*T\_PREBSI(-1) | -0.000529 | 0.001085 | -0.487906 | 0.6256 |
| (1-D\_PREBSI00(-1))\*T\_PREBSI(-1) | 0.000762 | 0.002210 | 0.344955 | 0.7301 |
| DLNCPI | -3.240654 | 1.349651 | -2.401105 | 0.0163 |
| DLNIV | 4.765883 | 1.222368 | 3.898894 | 0.0001 |
| DLNM1 | -0.464336 | 0.241858 | -1.919871 | 0.0549 |
| C | -6.05E-05 | 0.000661 | -0.091560 | 0.9270 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 5.02E-06 | 1.31E-06 | 3.821725 | 0.0001 |
| RESID(-1)^2 | 0.057355 | 0.007971 | 7.195708 | 0.0000 |
| GARCH(-1) | 0.936254 | 0.006646 | 140.8646 | 0.0000 |
| T\_INTARGS | -4.17E-05 | 1.14E-05 | -3.648731 | 0.0003 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.010145 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.004695 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016141 | Akaike info criterion | | -5.984809 |
| Sum squared resid | 0.236577 | Schwarz criterion | | -5.932097 |
| Log likelihood | 2745.058 | Hannan-Quinn criter. | | -5.964687 |
| Durbin-Watson stat | 1.895468 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 16:19 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 3 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*GARCH(-1) + C(10)\*T\_INTARGS | | | | |
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|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI0\*T\_PREALLBSI | 0.007450 | 0.004349 | 1.713139 | 0.0867 |
| (1-D\_PREALLBSI0)\*T\_PREALLBSI | 0.002415 | 0.001660 | 1.454835 | 0.1457 |
| DLNCPI | -6.425168 | 2.347436 | -2.737100 | 0.0062 |
| DLNIV | 2.982598 | 3.981598 | 0.749096 | 0.4538 |
| DLNM1 | -1.345693 | 0.427671 | -3.146564 | 0.0017 |
| C | -0.001465 | 0.001304 | -1.122824 | 0.2615 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.000177 | 7.90E-06 | 22.41064 | 0.0000 |
| RESID(-1)^2 | 0.151159 | 0.032101 | 4.708837 | 0.0000 |
| GARCH(-1) | 0.526981 | 0.045727 | 11.52462 | 0.0000 |
| T\_INTARGS | -0.001044 | 1.07E-06 | -979.3578 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.018958 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.013556 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016069 | Akaike info criterion | | -5.626832 |
| Sum squared resid | 0.234471 | Schwarz criterion | | -5.574120 |
| Log likelihood | 2581.462 | Hannan-Quinn criter. | | -5.606711 |
| Durbin-Watson stat | 1.982181 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 16:21 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 39 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*GARCH(-1) + C(10)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI0(-1)\*T\_PREALLBSI(-1) | 0.002819 | 0.002223 | 1.268142 | 0.2047 |
| (1-D\_PREALLBSI0(-1))\*T\_PREALLBSI(-1) | -4.18E-05 | 0.001130 | -0.036969 | 0.9705 |
| DLNCPI | -2.931216 | 1.364976 | -2.147449 | 0.0318 |
| DLNIV | 4.814642 | 1.202079 | 4.005263 | 0.0001 |
| DLNM1 | -0.406193 | 0.241910 | -1.679108 | 0.0931 |
| C | -0.000654 | 0.000623 | -1.049206 | 0.2941 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 4.94E-06 | 1.30E-06 | 3.793066 | 0.0001 |
| RESID(-1)^2 | 0.057499 | 0.007831 | 7.342806 | 0.0000 |
| GARCH(-1) | 0.936270 | 0.006533 | 143.3177 | 0.0000 |
| T\_INTARGS | -4.10E-05 | 1.14E-05 | -3.611375 | 0.0003 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.010749 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.005301 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016137 | Akaike info criterion | | -5.987543 |
| Sum squared resid | 0.236433 | Schwarz criterion | | -5.934831 |
| Log likelihood | 2746.307 | Hannan-Quinn criter. | | -5.967422 |
| Durbin-Watson stat | 1.905492 |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 16:22 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 14 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*GARCH(-1) + C(10)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI0(-1)\*T\_INTBSI(-1) | 0.037764 | 0.013057 | 2.892184 | 0.0038 |
| (1-D\_INTBSI0(-1))\*T\_INTBSI(-1) | -0.000154 | 0.001337 | -0.115395 | 0.9081 |
| DLNCPI | -7.233020 | 1.537752 | -4.703634 | 0.0000 |
| DLNIV | 8.097646 | 2.199459 | 3.681653 | 0.0002 |
| DLNM1 | -1.109030 | 0.310660 | -3.569918 | 0.0004 |
| C | -0.000825 | 0.001088 | -0.758166 | 0.4484 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.75E-05 | 1.32E-06 | 28.47450 | 0.0000 |
| RESID(-1)^2 | 0.154319 | 0.020481 | 7.534735 | 0.0000 |
| GARCH(-1) | 0.768999 | 0.017103 | 44.96289 | 0.0000 |
| T\_INTARGS | -0.000247 | 1.74E-05 | -14.20876 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.022847 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.017466 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016038 | Akaike info criterion | | -5.871562 |
| Sum squared resid | 0.233542 | Schwarz criterion | | -5.818851 |
| Log likelihood | 2693.304 | Hannan-Quinn criter. | | -5.851441 |
| Durbin-Watson stat | 1.939181 |  |  |  |
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1. 交易量

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| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 17:21 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 72 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(11) + C(12)\*RESID(-1)^2 + C(13)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI0\*T\_INTBSI | 0.196114 | 0.128631 | 1.524629 | 0.1274 |
| (1-D\_INTBSI0)\*T\_INTBSI | 0.049029 | 0.020947 | 2.340685 | 0.0192 |
| DLNIV | 82.02247 | 27.15216 | 3.020845 | 0.0025 |
| DLNM1 | 15.93854 | 4.762630 | 3.346584 | 0.0008 |
| C | 18.66887 | 0.219985 | 84.86436 | 0.0000 |
| AR(1) | 0.593811 | 0.035109 | 16.91328 | 0.0000 |
| AR(2) | 0.156145 | 0.043244 | 3.610748 | 0.0003 |
| AR(3) | 0.105013 | 0.037290 | 2.816081 | 0.0049 |
| AR(6) | 0.058506 | 0.033416 | 1.750817 | 0.0800 |
| AR(8) | 0.058685 | 0.028607 | 2.051372 | 0.0402 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033659 | 0.002134 | 15.77482 | 0.0000 |
| RESID(-1)^2 | 0.093445 | 0.029073 | 3.214170 | 0.0013 |
| RESID(-2)^2 | 0.091177 | 0.030869 | 2.953689 | 0.0031 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.866645 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.865317 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.204644 | Akaike info criterion | | -0.342991 |
| Sum squared resid | 37.85873 | Schwarz criterion | | -0.274466 |
| Log likelihood | 169.7468 | Hannan-Quinn criter. | | -0.316833 |
| Durbin-Watson stat | 2.036986 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54-.44i | .54+.44i | .03+.63i |
|  | .03-.63i | -.42+.52i | -.42-.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 17:22 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 38 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(11) + C(12)\*RESID(-1)^2 + C(13)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI0(-1)\*T\_INTBSI(-1) | 0.110944 | 0.178416 | 0.621828 | 0.5341 |
| (1-D\_INTBSI0(-1))\*T\_INTBSI(-1) | 0.080221 | 0.022877 | 3.506572 | 0.0005 |
| DLNIV | 87.62934 | 26.98387 | 3.247471 | 0.0012 |
| DLNM1 | 16.72126 | 4.746496 | 3.522864 | 0.0004 |
| C | 18.69634 | 0.215866 | 86.61091 | 0.0000 |
| AR(1) | 0.585313 | 0.035895 | 16.30613 | 0.0000 |
| AR(2) | 0.166595 | 0.044428 | 3.749749 | 0.0002 |
| AR(3) | 0.103481 | 0.037458 | 2.762624 | 0.0057 |
| AR(6) | 0.063287 | 0.033584 | 1.884459 | 0.0595 |
| AR(8) | 0.052885 | 0.028639 | 1.846573 | 0.0648 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033117 | 0.002025 | 16.35341 | 0.0000 |
| RESID(-1)^2 | 0.097684 | 0.029289 | 3.335125 | 0.0009 |
| RESID(-2)^2 | 0.097319 | 0.026222 | 3.711369 | 0.0002 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.866842 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.865516 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.204493 | Akaike info criterion | | -0.349526 |
| Sum squared resid | 37.80288 | Schwarz criterion | | -0.281001 |
| Log likelihood | 172.7335 | Hannan-Quinn criter. | | -0.323369 |
| Durbin-Watson stat | 2.043399 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .53+.44i | .53-.44i | .02-.61i |
|  | .02+.61i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 17:23 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 32 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(11) + C(12)\*RESID(-1)^2 + C(13)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI0(-2)\*T\_INTBSI(-2) | 0.230774 | 0.192434 | 1.199235 | 0.2304 |
| (1-D\_INTBSI0(-2))\*T\_INTBSI(-2) | 0.007298 | 0.026096 | 0.279656 | 0.7797 |
| DLNIV | 88.28247 | 26.40185 | 3.343799 | 0.0008 |
| DLNM1 | 16.41329 | 4.515459 | 3.634910 | 0.0003 |
| C | 18.64784 | 0.219508 | 84.95284 | 0.0000 |
| AR(1) | 0.594431 | 0.035201 | 16.88674 | 0.0000 |
| AR(2) | 0.158383 | 0.043375 | 3.651462 | 0.0003 |
| AR(3) | 0.102101 | 0.037468 | 2.725032 | 0.0064 |
| AR(6) | 0.061863 | 0.033645 | 1.838689 | 0.0660 |
| AR(8) | 0.054889 | 0.028721 | 1.911084 | 0.0560 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033770 | 0.002081 | 16.22995 | 0.0000 |
| RESID(-1)^2 | 0.094565 | 0.028708 | 3.294022 | 0.0010 |
| RESID(-2)^2 | 0.091068 | 0.028830 | 3.158792 | 0.0016 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865439 | Mean dependent var | | 18.67316 |
| Adjusted R-squared | 0.864098 | S.D. dependent var | | 0.556552 |
| S.E. of regression | 0.205172 | Akaike info criterion | | -0.339544 |
| Sum squared resid | 38.01244 | Schwarz criterion | | -0.270959 |
| Log likelihood | 168.0017 | Hannan-Quinn criter. | | -0.313362 |
| Durbin-Watson stat | 2.035379 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.44i | .54-.44i | .02-.61i |
|  | .02+.61i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

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| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 17:24 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 29 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(11) + C(12)\*RESID(-1)^2 + C(13)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI0\*T\_PREBSI | 0.169983 | 0.022283 | 7.628352 | 0.0000 |
| (1-D\_PREBSI0)\*T\_PREBSI | -0.092629 | 0.036799 | -2.517176 | 0.0118 |
| DLNIV | 52.91086 | 27.28385 | 1.939274 | 0.0525 |
| DLNM1 | 13.76029 | 4.234489 | 3.249575 | 0.0012 |
| C | 18.59677 | 0.212355 | 87.57395 | 0.0000 |
| AR(1) | 0.579930 | 0.035917 | 16.14650 | 0.0000 |
| AR(2) | 0.168521 | 0.043222 | 3.898950 | 0.0001 |
| AR(3) | 0.100215 | 0.036849 | 2.719607 | 0.0065 |
| AR(6) | 0.073376 | 0.033134 | 2.214511 | 0.0268 |
| AR(8) | 0.049846 | 0.028994 | 1.719189 | 0.0856 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.032337 | 0.001877 | 17.22638 | 0.0000 |
| RESID(-1)^2 | 0.090590 | 0.029553 | 3.065327 | 0.0022 |
| RESID(-2)^2 | 0.072397 | 0.027882 | 2.596604 | 0.0094 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.874766 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.873519 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.198315 | Akaike info criterion | | -0.405383 |
| Sum squared resid | 35.55331 | Schwarz criterion | | -0.336858 |
| Log likelihood | 198.2600 | Hannan-Quinn criter. | | -0.379225 |
| Durbin-Watson stat | 2.026764 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .53+.45i | .53-.45i | .02-.59i |
|  | .02+.59i | -.41-.52i | -.41+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

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| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 17:24 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 33 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(11) + C(12)\*RESID(-1)^2 + C(13)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI0(-1)\*T\_PREBSI(-1) | 0.004518 | 0.023530 | 0.192000 | 0.8477 |
| (1-D\_PREBSI0(-1))\*T\_PREBSI(-1) | 0.035837 | 0.039613 | 0.904683 | 0.3656 |
| DLNIV | 90.44160 | 26.54936 | 3.406546 | 0.0007 |
| DLNM1 | 16.48085 | 4.606933 | 3.577402 | 0.0003 |
| C | 18.62685 | 0.223885 | 83.19829 | 0.0000 |
| AR(1) | 0.595050 | 0.035864 | 16.59181 | 0.0000 |
| AR(2) | 0.165015 | 0.044230 | 3.730814 | 0.0002 |
| AR(3) | 0.096024 | 0.037498 | 2.560801 | 0.0104 |
| AR(6) | 0.059126 | 0.033625 | 1.758392 | 0.0787 |
| AR(8) | 0.056941 | 0.028358 | 2.007925 | 0.0447 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033390 | 0.002094 | 15.94903 | 0.0000 |
| RESID(-1)^2 | 0.100674 | 0.031085 | 3.238706 | 0.0012 |
| RESID(-2)^2 | 0.099618 | 0.031064 | 3.206806 | 0.0013 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865215 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.863873 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.205738 | Akaike info criterion | | -0.336135 |
| Sum squared resid | 38.26471 | Schwarz criterion | | -0.267610 |
| Log likelihood | 166.6135 | Hannan-Quinn criter. | | -0.309977 |
| Durbin-Watson stat | 2.037854 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.44i | .54-.44i | .03-.62i |
|  | .03+.62i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 17:24 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 33 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(11) + C(12)\*RESID(-1)^2 + C(13)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI0(-1)\*T\_PREALLBSI(-1) | 0.041327 | 0.038530 | 1.072607 | 0.2834 |
| (1-D\_PREALLBSI0(-1))\*T\_PREALLBSI(-1) | 0.021823 | 0.023302 | 0.936559 | 0.3490 |
| DLNIV | 99.04802 | 27.50734 | 3.600785 | 0.0003 |
| DLNM1 | 16.73902 | 4.613100 | 3.628583 | 0.0003 |
| C | 18.63390 | 0.221789 | 84.01652 | 0.0000 |
| AR(1) | 0.584510 | 0.035298 | 16.55938 | 0.0000 |
| AR(2) | 0.170676 | 0.043740 | 3.902057 | 0.0001 |
| AR(3) | 0.101420 | 0.037048 | 2.737525 | 0.0062 |
| AR(6) | 0.061109 | 0.033761 | 1.810016 | 0.0703 |
| AR(8) | 0.054470 | 0.028486 | 1.912153 | 0.0559 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033480 | 0.002097 | 15.96355 | 0.0000 |
| RESID(-1)^2 | 0.098578 | 0.029906 | 3.296292 | 0.0010 |
| RESID(-2)^2 | 0.097413 | 0.030219 | 3.223612 | 0.0013 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865572 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.864234 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.205465 | Akaike info criterion | | -0.337897 |
| Sum squared resid | 38.16328 | Schwarz criterion | | -0.269372 |
| Log likelihood | 167.4187 | Hannan-Quinn criter. | | -0.311739 |
| Durbin-Watson stat | 2.035245 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.44i | .54-.44i | .02-.61i |
|  | .02+.61i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 17:25 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 43 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(11) + C(12)\*RESID(-1)^2 + C(13)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI0\*T\_PREALLBSI | 0.199082 | 0.042518 | 4.682268 | 0.0000 |
| (1-D\_PREALLBSI0)\*T\_PREALLBSI | 0.067470 | 0.020920 | 3.225171 | 0.0013 |
| DLNIV | -25.16811 | 33.80138 | -0.744588 | 0.4565 |
| DLNM1 | 12.89436 | 4.451781 | 2.896449 | 0.0038 |
| C | 18.70309 | 0.214316 | 87.26876 | 0.0000 |
| AR(1) | 0.579728 | 0.035354 | 16.39790 | 0.0000 |
| AR(2) | 0.168620 | 0.044186 | 3.816130 | 0.0001 |
| AR(3) | 0.107583 | 0.037059 | 2.902987 | 0.0037 |
| AR(6) | 0.066881 | 0.033828 | 1.977099 | 0.0480 |
| AR(8) | 0.048945 | 0.028729 | 1.703658 | 0.0884 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.032435 | 0.001903 | 17.04336 | 0.0000 |
| RESID(-1)^2 | 0.089765 | 0.027584 | 3.254215 | 0.0011 |
| RESID(-2)^2 | 0.099090 | 0.025955 | 3.817787 | 0.0001 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.870544 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.869255 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.201630 | Akaike info criterion | | -0.376976 |
| Sum squared resid | 36.75189 | Schwarz criterion | | -0.308451 |
| Log likelihood | 185.2781 | Hannan-Quinn criter. | | -0.350819 |
| Durbin-Watson stat | 2.042160 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .52+.44i | .52-.44i | .02-.60i |
|  | .02+.60i | -.41-.52i | -.41+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

1. 相对正向、负向的非对称效应
2. 开盘收益率

0: 大于均值

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (OPG - BHHH / Marquardt steps) | | | | |
| Date: 02/22/19 Time: 16:28 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Failure to improve likelihood (non-zero gradients) after 220 iterations | | | | |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI0\*T\_PREBSI | 0.001974 | 0.000288 | 6.866091 | 0.0000 |
| (1-D\_PREBSI0)\*T\_PREBSI | 0.003663 | 0.000543 | 6.745729 | 0.0000 |
| DLNCPI | -1.125324 | 0.588840 | -1.911086 | 0.0560 |
| DLNIV | 3.044810 | 0.864865 | 3.520559 | 0.0004 |
| DLNM1 | 0.191903 | 0.132530 | 1.447997 | 0.1476 |
| C | -0.002796 | 0.000149 | -18.69996 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.60E-05 | 3.76E-06 | 6.921133 | 0.0000 |
| RESID(-1)^2 | 0.512439 | 0.064848 | 7.902102 | 0.0000 |
| RESID(-2)^2 | 0.239061 | 0.087045 | 2.746420 | 0.0060 |
| GARCH(-1) | 0.245598 | 0.087195 | 2.816636 | 0.0049 |
| T\_PREALLARGS | -0.000226 | 3.31E-05 | -6.824737 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.085532 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.080496 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007446 | Akaike info criterion | | -7.612169 |
| Sum squared resid | 0.050344 | Schwarz criterion | | -7.554186 |
| Log likelihood | 3489.761 | Hannan-Quinn criter. | | -7.590035 |
| Durbin-Watson stat | 1.987732 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:18 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 103 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI00\*T\_PREBSI | 0.003847 | 0.000250 | 15.40748 | 0.0000 |
| (1-D\_PREBSI00)\*T\_PREBSI | 0.002756 | 0.000397 | 6.939856 | 0.0000 |
| DLNCPI | -0.994240 | 0.461477 | -2.154475 | 0.0312 |
| DLNIV | 1.760213 | 0.477549 | 3.685934 | 0.0002 |
| DLNM1 | -0.227295 | 0.101509 | -2.239169 | 0.0251 |
| C | -0.002422 | 0.000115 | -21.03681 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 1.46E-07 | 5.81E-08 | 2.519852 | 0.0117 |
| RESID(-1)^2 | 0.380009 | 0.016500 | 23.03097 | 0.0000 |
| RESID(-2)^2 | -0.346707 | 0.016746 | -20.70357 | 0.0000 |
| GARCH(-1) | 0.963241 | 0.002178 | 442.2042 | 0.0000 |
| T\_PREALLARGS | -1.51E-06 | 9.31E-07 | -1.624372 | 0.1043 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.103959 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.099025 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007371 | Akaike info criterion | | -7.953132 |
| Sum squared resid | 0.049330 | Schwarz criterion | | -7.895149 |
| Log likelihood | 3645.581 | Hannan-Quinn criter. | | -7.930998 |
| Durbin-Watson stat | 2.009626 |  |  |  |
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| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:12 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 63 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*RESID(-2)^2 + C(9)\*GARCH(-1) | | | | |
| + C(10)\*T\_PREALLARGS | | |  |  |
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| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI00(-1)\*T\_INTBSI(-1) | 0.002439 | 0.000455 | 5.357157 | 0.0000 |
| (1-D\_INTBSI00(-1))\*T\_INTBSI(-1) | 0.002628 | 0.000192 | 13.70870 | 0.0000 |
| DLNCPI | -1.298079 | 0.456668 | -2.842499 | 0.0045 |
| DLNIV | 2.579418 | 0.450877 | 5.720888 | 0.0000 |
| DLNM1 | -0.172046 | 0.097391 | -1.766552 | 0.0773 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 4.86E-07 | 9.53E-08 | 5.098003 | 0.0000 |
| RESID(-1)^2 | 0.284698 | 0.020991 | 13.56278 | 0.0000 |
| RESID(-2)^2 | -0.239334 | 0.021745 | -11.00655 | 0.0000 |
| GARCH(-1) | 0.949941 | 0.002984 | 318.3857 | 0.0000 |
| T\_PREALLARGS | -6.21E-06 | 1.44E-06 | -4.306845 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.042290 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.038076 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007616 | Akaike info criterion | | -7.814117 |
| Sum squared resid | 0.052725 | Schwarz criterion | | -7.761406 |
| Log likelihood | 3581.052 | Hannan-Quinn criter. | | -7.793996 |
| Durbin-Watson stat | 2.001025 |  |  |  |
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| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:05 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 21 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
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| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
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|  |  |  |  |  |
| D\_PREBSI00(-1)\*T\_PREBSI(-1) | -0.001763 | 0.000706 | -2.498513 | 0.0125 |
| (1-D\_PREBSI00(-1))\*T\_PREBSI(-1) | 0.001129 | 0.001452 | 0.777621 | 0.4368 |
| DLNCPI | -4.617298 | 0.910296 | -5.072305 | 0.0000 |
| DLNIV | 6.468120 | 1.019796 | 6.342561 | 0.0000 |
| DLNM1 | -0.642512 | 0.203457 | -3.157966 | 0.0016 |
| C | -0.001439 | 0.000568 | -2.535503 | 0.0112 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
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|  |  |  |  |  |
| C | 3.69E-05 | 1.81E-06 | 20.35120 | 0.0000 |
| RESID(-1)^2 | 0.201031 | 0.033419 | 6.015468 | 0.0000 |
| RESID(-2)^2 | 0.107912 | 0.044180 | 2.442585 | 0.0146 |
| GARCH(-1) | 0.428964 | 0.046206 | 9.283665 | 0.0000 |
| T\_PREALLARGS | -0.000291 | 1.05E-05 | -27.59462 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.018277 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.012871 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007715 | Akaike info criterion | | -7.338959 |
| Sum squared resid | 0.054047 | Schwarz criterion | | -7.280977 |
| Log likelihood | 3364.904 | Hannan-Quinn criter. | | -7.316826 |
| Durbin-Watson stat | 1.919486 |  |  |  |
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| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:06 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 30 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
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| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
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|  |  |  |  |  |
| D\_PREBSI00(-2)\*T\_PREBSI(-2) | 0.001110 | 0.000213 | 5.204177 | 0.0000 |
| (1-D\_PREBSI00(-2))\*T\_PREBSI(-2) | 0.000656 | 0.000500 | 1.310596 | 0.1900 |
| DLNCPI | -4.737074 | 0.309069 | -15.32690 | 0.0000 |
| DLNIV | 5.538893 | 0.270956 | 20.44203 | 0.0000 |
| DLNM1 | -0.709194 | 0.044143 | -16.06571 | 0.0000 |
| C | -0.002425 | 0.000133 | -18.22938 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.51E-06 | 2.14E-07 | 16.38910 | 0.0000 |
| RESID(-1)^2 | 0.855529 | 0.081985 | 10.43523 | 0.0000 |
| RESID(-2)^2 | -0.386330 | 0.049549 | -7.797006 | 0.0000 |
| GARCH(-1) | 0.728037 | 0.022220 | 32.76513 | 0.0000 |
| T\_PREALLARGS | -4.33E-05 | 1.86E-06 | -23.33948 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.023819 | Mean dependent var | | -0.001101 |
| Adjusted R-squared | 0.018437 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007693 | Akaike info criterion | | -7.659378 |
| Sum squared resid | 0.053679 | Schwarz criterion | | -7.601345 |
| Log likelihood | 3507.506 | Hannan-Quinn criter. | | -7.637224 |
| Durbin-Watson stat | 1.963024 |  |  |  |
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| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:07 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 171 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
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| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
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|  |  |  |  |  |
| D\_INTBSI00(-2)\*T\_INTBSI(-2) | 0.001125 | 0.000844 | 1.333828 | 0.1823 |
| (1-D\_INTBSI00(-2))\*T\_INTBSI(-2) | 0.000792 | 0.000451 | 1.756715 | 0.0790 |
| DLNCPI | -1.831049 | 0.478287 | -3.828344 | 0.0001 |
| DLNIV | 3.869412 | 0.540212 | 7.162765 | 0.0000 |
| DLNM1 | -0.310103 | 0.100775 | -3.077181 | 0.0021 |
| C | -0.001174 | 0.000368 | -3.185938 | 0.0014 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.79E-07 | 9.67E-08 | 3.917119 | 0.0001 |
| RESID(-1)^2 | 0.301475 | 0.023678 | 12.73236 | 0.0000 |
| RESID(-2)^2 | -0.264114 | 0.024146 | -10.93821 | 0.0000 |
| GARCH(-1) | 0.957932 | 0.002713 | 353.1529 | 0.0000 |
| T\_PREALLARGS | -4.66E-06 | 1.47E-06 | -3.174462 | 0.0015 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.022489 | Mean dependent var | | -0.001101 |
| Adjusted R-squared | 0.017100 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007698 | Akaike info criterion | | -7.778027 |
| Sum squared resid | 0.053752 | Schwarz criterion | | -7.719994 |
| Log likelihood | 3561.669 | Hannan-Quinn criter. | | -7.755873 |
| Durbin-Watson stat | 1.978786 |  |  |  |
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| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:20 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 129 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
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|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI00\*T\_PREALLBSI | 0.004616 | 0.000596 | 7.750036 | 0.0000 |
| (1-D\_PREALLBSI00)\*T\_PREALLBSI | 0.002265 | 0.000345 | 6.563381 | 0.0000 |
| DLNCPI | -1.494021 | 0.446717 | -3.344445 | 0.0008 |
| DLNIV | 0.560422 | 0.644408 | 0.869670 | 0.3845 |
| DLNM1 | -0.268160 | 0.099085 | -2.706352 | 0.0068 |
| C | -0.000612 | 0.000192 | -3.182678 | 0.0015 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.71E-07 | 8.03E-08 | 3.374883 | 0.0007 |
| RESID(-1)^2 | 0.317959 | 0.020409 | 15.57936 | 0.0000 |
| RESID(-2)^2 | -0.276706 | 0.020905 | -13.23643 | 0.0000 |
| GARCH(-1) | 0.954601 | 0.002653 | 359.8589 | 0.0000 |
| T\_PREALLARGS | -3.07E-06 | 1.23E-06 | -2.508401 | 0.0121 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.075151 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.070059 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007488 | Akaike info criterion | | -7.882502 |
| Sum squared resid | 0.050916 | Schwarz criterion | | -7.824519 |
| Log likelihood | 3613.303 | Hannan-Quinn criter. | | -7.860369 |
| Durbin-Watson stat | 2.002258 |  |  |  |
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| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:21 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 89 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
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|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI00(-1)\*T\_PREALLBSI(-1) | 0.002621 | 0.000387 | 6.775750 | 0.0000 |
| (1-D\_PREALLBSI00(-1))\*T\_PREALLBSI(-1) | -0.000213 | 0.000352 | -0.604621 | 0.5454 |
| DLNCPI | -1.845681 | 0.463421 | -3.982735 | 0.0001 |
| DLNIV | 4.017077 | 0.514778 | 7.803518 | 0.0000 |
| DLNM1 | -0.302372 | 0.099511 | -3.038582 | 0.0024 |
| C | -0.001949 | 0.000186 | -10.46420 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.82E-07 | 9.90E-08 | 2.848572 | 0.0044 |
| RESID(-1)^2 | 0.344899 | 0.027990 | 12.32231 | 0.0000 |
| RESID(-2)^2 | -0.305684 | 0.028067 | -10.89116 | 0.0000 |
| GARCH(-1) | 0.957801 | 0.002696 | 355.2549 | 0.0000 |
| T\_PREALLARGS | -3.25E-06 | 1.51E-06 | -2.148812 | 0.0316 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.017771 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.012362 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007717 | Akaike info criterion | | -7.790095 |
| Sum squared resid | 0.054075 | Schwarz criterion | | -7.732112 |
| Log likelihood | 3571.073 | Hannan-Quinn criter. | | -7.767961 |
| Durbin-Watson stat | 1.986112 |  |  |  |
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| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (OPG - BHHH / Marquardt steps) | | | | |
| Date: 02/22/19 Time: 16:37 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 45 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(5) + C(6)\*RESID(-1)^2 + C(7)\*GARCH(-1) + C(8)\*T\_INTARGS | | | | |
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|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI0\*T\_INTBSI | 0.013689 | 0.001318 | 10.38403 | 0.0000 |
| (1-D\_INTBSI0)\*T\_INTBSI | 0.015341 | 0.000674 | 22.75594 | 0.0000 |
| DLNIV | -2.346582 | 0.962432 | -2.438180 | 0.0148 |
| C | 0.009460 | 0.000538 | 17.57463 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.43E-06 | 1.19E-06 | 2.037522 | 0.0416 |
| RESID(-1)^2 | 0.066209 | 0.011122 | 5.953246 | 0.0000 |
| GARCH(-1) | 0.926457 | 0.009841 | 94.13780 | 0.0000 |
| T\_INTARGS | -1.85E-05 | 1.07E-05 | -1.740237 | 0.0818 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.287386 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | 0.285036 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.012077 | Akaike info criterion | | -6.562685 |
| Sum squared resid | 0.132735 | Schwarz criterion | | -6.520516 |
| Log likelihood | 3007.147 | Hannan-Quinn criter. | | -6.546588 |
| Durbin-Watson stat | 1.981273 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:27 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 3 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI00\*T\_PREBSI | -0.001723 | 0.001409 | -1.223088 | 0.2213 |
| (1-D\_PREBSI00)\*T\_PREBSI | -0.004083 | 0.002204 | -1.852542 | 0.0639 |
| DLNM1 | -0.804295 | 0.320831 | -2.506909 | 0.0122 |
| DLNCPI | -2.965702 | 1.408398 | -2.105727 | 0.0352 |
| C | 0.001096 | 0.000771 | 1.421761 | 0.1551 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.000141 | 1.80E-06 | 78.56791 | 0.0000 |
| RESID(-1)^2 | 0.139292 | 0.031311 | 4.448606 | 0.0000 |
| GARCH(-1) | 0.536666 | 0.030326 | 17.69685 | 0.0000 |
| T\_INTARGS | -0.000829 | 2.70E-05 | -30.68991 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | -0.001265 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | -0.005671 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.014324 | Akaike info criterion | | -5.911396 |
| Sum squared resid | 0.186501 | Schwarz criterion | | -5.863955 |
| Log likelihood | 2710.508 | Hannan-Quinn criter. | | -5.893287 |
| Durbin-Watson stat | 1.881440 |  |  |  |
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| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:27 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 3 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI00\*T\_PREALLBSI | 0.003698 | 0.003065 | 1.206645 | 0.2276 |
| (1-D\_PREALLBSI00)\*T\_PREALLBSI | -0.001670 | 0.001436 | -1.163318 | 0.2447 |
| DLNM1 | -0.826293 | 0.332320 | -2.486435 | 0.0129 |
| DLNCPI | -2.979960 | 1.423964 | -2.092721 | 0.0364 |
| C | 3.01E-05 | 0.000877 | 0.034280 | 0.9727 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
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|  |  |  |  |  |
| C | 0.000141 | 2.04E-06 | 69.19734 | 0.0000 |
| RESID(-1)^2 | 0.139652 | 0.031493 | 4.434310 | 0.0000 |
| GARCH(-1) | 0.537264 | 0.031908 | 16.83812 | 0.0000 |
| T\_INTARGS | -0.000831 | 2.32E-05 | -35.77642 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.004267 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | -0.000115 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.014284 | Akaike info criterion | | -5.872115 |
| Sum squared resid | 0.185470 | Schwarz criterion | | -5.824675 |
| Log likelihood | 2692.557 | Hannan-Quinn criter. | | -5.854006 |
| Durbin-Watson stat | 1.967295 |  |  |  |
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| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:29 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 7 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
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| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
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|  |  |  |  |  |
| D\_PREBSI00(-1)\*T\_PREBSI(-1) | -0.002441 | 0.001429 | -1.707684 | 0.0877 |
| (1-D\_PREBSI00(-1))\*T\_PREBSI(-1) | 0.000983 | 0.002084 | 0.471653 | 0.6372 |
| DLNM1 | -0.805226 | 0.331361 | -2.430054 | 0.0151 |
| DLNCPI | -2.899866 | 1.442688 | -2.010043 | 0.0444 |
| C | 0.002126 | 0.000753 | 2.824441 | 0.0047 |
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|  |  |  |  |  |
|  | Variance Equation | |  |  |
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|  |  |  |  |  |
| C | 0.000142 | 2.27E-06 | 62.46722 | 0.0000 |
| RESID(-1)^2 | 0.144251 | 0.032580 | 4.427613 | 0.0000 |
| GARCH(-1) | 0.530200 | 0.033425 | 15.86241 | 0.0000 |
| T\_INTARGS | -0.000818 | 3.99E-05 | -20.47537 | 0.0000 |
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|  |  |  |  |  |
| R-squared | 0.004665 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | 0.000285 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.014281 | Akaike info criterion | | -5.920425 |
| Sum squared resid | 0.185396 | Schwarz criterion | | -5.872984 |
| Log likelihood | 2714.634 | Hannan-Quinn criter. | | -5.902315 |
| Durbin-Watson stat | 1.988222 |  |  |  |
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| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:28 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 3 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
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| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
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|  |  |  |  |  |
| D\_INTBSI00(-1)\*T\_INTBSI(-1) | 0.007571 | 0.003822 | 1.980872 | 0.0476 |
| (1-D\_INTBSI00(-1))\*T\_INTBSI(-1) | 0.002409 | 0.001812 | 1.329195 | 0.1838 |
| DLNM1 | -0.735217 | 0.326955 | -2.248675 | 0.0245 |
| DLNCPI | -2.604930 | 1.428263 | -1.823845 | 0.0682 |
| C | 0.002805 | 0.001623 | 1.727603 | 0.0841 |
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|  |  |  |  |  |
|  | Variance Equation | |  |  |
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|  |  |  |  |  |
| C | 0.000141 | 5.15E-06 | 27.34372 | 0.0000 |
| RESID(-1)^2 | 0.139107 | 0.031874 | 4.364354 | 0.0000 |
| GARCH(-1) | 0.537129 | 0.037337 | 14.38607 | 0.0000 |
| T\_INTARGS | -0.000827 | 3.30E-06 | -250.8112 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.003139 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | -0.001247 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.014292 | Akaike info criterion | | -5.831083 |
| Sum squared resid | 0.185680 | Schwarz criterion | | -5.783643 |
| Log likelihood | 2673.805 | Hannan-Quinn criter. | | -5.812974 |
| Durbin-Watson stat | 2.020682 |  |  |  |
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| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:30 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 3 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
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| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
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|  |  |  |  |  |
| D\_PREALLBSI00(-1)\*T\_PREALLBSI(-1) | 0.000687 | 0.003131 | 0.219414 | 0.8263 |
| (1-D\_PREALLBSI00(-1))\*T\_PREALLBSI(-1) | -0.001369 | 0.001378 | -0.993979 | 0.3202 |
| DLNM1 | -0.750694 | 0.335866 | -2.235098 | 0.0254 |
| DLNCPI | -2.587073 | 1.494434 | -1.731139 | 0.0834 |
| C | 0.000459 | 0.000801 | 0.573400 | 0.5664 |
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|  |  |  |  |  |
|  | Variance Equation | |  |  |
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|  |  |  |  |  |
| C | 0.000142 | 3.27E-06 | 43.32797 | 0.0000 |
| RESID(-1)^2 | 0.139659 | 0.031075 | 4.494299 | 0.0000 |
| GARCH(-1) | 0.537585 | 0.034029 | 15.79804 | 0.0000 |
| T\_INTARGS | -0.000831 | 1.41E-05 | -59.05815 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.000716 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | -0.003681 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.014310 | Akaike info criterion | | -5.910541 |
| Sum squared resid | 0.186132 | Schwarz criterion | | -5.863100 |
| Log likelihood | 2710.117 | Hannan-Quinn criter. | | -5.892432 |
| Durbin-Watson stat | 1.987155 |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 16:52 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 33 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*GARCH(-1) + C(10)\*T\_INTARGS | | | | |
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| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
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| D\_INTBSI0\*T\_INTBSI | 0.015470 | 0.001422 | 10.88018 | 0.0000 |
| (1-D\_INTBSI0)\*T\_INTBSI | 0.017308 | 0.000703 | 24.62209 | 0.0000 |
| DLNCPI | 0.078725 | 1.183342 | 0.066528 | 0.9470 |
| DLNIV | -0.249969 | 1.079912 | -0.231471 | 0.8169 |
| DLNM1 | -0.142696 | 0.206054 | -0.692519 | 0.4886 |
| C | 0.009225 | 0.000568 | 16.24044 | 0.0000 |
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|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.17E-06 | 1.31E-06 | 2.412430 | 0.0158 |
| RESID(-1)^2 | 0.059725 | 0.009336 | 6.397464 | 0.0000 |
| GARCH(-1) | 0.932404 | 0.008452 | 110.3221 | 0.0000 |
| T\_INTARGS | -2.51E-05 | 1.15E-05 | -2.175897 | 0.0296 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.300519 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.296667 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.013569 | Akaike info criterion | | -6.376891 |
| Sum squared resid | 0.167178 | Schwarz criterion | | -6.324179 |
| Log likelihood | 2924.239 | Hannan-Quinn criter. | | -6.356769 |
| Durbin-Watson stat | 1.953056 |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 16:56 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 6 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*GARCH(-1) + C(10)\*T\_INTARGS | | | | |
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| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI0\*T\_PREBSI | 0.000469 | 0.001077 | 0.435230 | 0.6634 |
| (1-D\_PREBSI0)\*T\_PREBSI | -0.001644 | 0.001836 | -0.895591 | 0.3705 |
| DLNCPI | -7.112707 | 1.640206 | -4.336472 | 0.0000 |
| DLNIV | 6.676809 | 2.327035 | 2.869234 | 0.0041 |
| DLNM1 | -1.436085 | 0.321997 | -4.459933 | 0.0000 |
| C | -0.002313 | 0.000711 | -3.252517 | 0.0011 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 9.96E-05 | 3.59E-06 | 27.69799 | 0.0000 |
| RESID(-1)^2 | 0.260003 | 0.038793 | 6.702265 | 0.0000 |
| GARCH(-1) | 0.538099 | 0.035963 | 14.96274 | 0.0000 |
| T\_INTARGS | -0.000591 | 3.81E-05 | -15.51678 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.004116 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | -0.001368 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016191 | Akaike info criterion | | -5.771955 |
| Sum squared resid | 0.238018 | Schwarz criterion | | -5.719243 |
| Log likelihood | 2647.783 | Hannan-Quinn criter. | | -5.751833 |
| Durbin-Watson stat | 1.873410 |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 16:58 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 24 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*GARCH(-1) + C(10)\*T\_INTARGS | | | | |
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| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
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|  |  |  |  |  |
| D\_PREALLBSI0\*T\_PREALLBSI | 0.005436 | 0.001675 | 3.245233 | 0.0012 |
| (1-D\_PREALLBSI0)\*T\_PREALLBSI | -6.15E-05 | 0.001082 | -0.056837 | 0.9547 |
| DLNCPI | -2.989506 | 1.311917 | -2.278731 | 0.0227 |
| DLNIV | 2.284150 | 1.438370 | 1.588012 | 0.1123 |
| DLNM1 | -0.465434 | 0.239790 | -1.941006 | 0.0523 |
| C | -8.76E-05 | 0.000605 | -0.144788 | 0.8849 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 4.45E-06 | 1.30E-06 | 3.413116 | 0.0006 |
| RESID(-1)^2 | 0.062745 | 0.008280 | 7.577649 | 0.0000 |
| GARCH(-1) | 0.931942 | 0.006747 | 138.1286 | 0.0000 |
| T\_INTARGS | -3.63E-05 | 1.14E-05 | -3.193419 | 0.0014 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.020439 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.015044 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016057 | Akaike info criterion | | -5.995801 |
| Sum squared resid | 0.234117 | Schwarz criterion | | -5.943090 |
| Log likelihood | 2750.081 | Hannan-Quinn criter. | | -5.975680 |
| Durbin-Watson stat | 1.933546 |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 16:59 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 11 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*GARCH(-1) + C(10)\*T\_INTARGS | | | | |
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| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI0(-1)\*T\_INTBSI(-1) | 0.001629 | 0.003246 | 0.501774 | 0.6158 |
| (1-D\_INTBSI0(-1))\*T\_INTBSI(-1) | 0.000713 | 0.001590 | 0.448385 | 0.6539 |
| DLNCPI | -7.135431 | 1.729034 | -4.126831 | 0.0000 |
| DLNIV | 7.923681 | 2.547965 | 3.109808 | 0.0019 |
| DLNM1 | -1.186182 | 0.338520 | -3.504029 | 0.0005 |
| C | -0.000602 | 0.001505 | -0.400047 | 0.6891 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 8.25E-05 | 3.77E-06 | 21.88874 | 0.0000 |
| RESID(-1)^2 | 0.211879 | 0.033495 | 6.325731 | 0.0000 |
| GARCH(-1) | 0.616471 | 0.034226 | 18.01163 | 0.0000 |
| T\_INTARGS | -0.000490 | 1.02E-05 | -47.83847 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.018189 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.012783 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016076 | Akaike info criterion | | -5.812376 |
| Sum squared resid | 0.234655 | Schwarz criterion | | -5.759664 |
| Log likelihood | 2666.256 | Hannan-Quinn criter. | | -5.792255 |
| Durbin-Watson stat | 1.915787 |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 17:00 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 33 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*GARCH(-1) + C(10)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI0(-1)\*T\_PREBSI(-1) | -0.000277 | 0.000916 | -0.302321 | 0.7624 |
| (1-D\_PREBSI0(-1))\*T\_PREBSI(-1) | -2.11E-05 | 0.001630 | -0.012972 | 0.9896 |
| DLNCPI | -3.234674 | 1.347739 | -2.400074 | 0.0164 |
| DLNIV | 4.786205 | 1.219327 | 3.925283 | 0.0001 |
| DLNM1 | -0.463293 | 0.241727 | -1.916595 | 0.0553 |
| C | -0.000215 | 0.000558 | -0.385356 | 0.7000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 5.03E-06 | 1.32E-06 | 3.815626 | 0.0001 |
| RESID(-1)^2 | 0.057678 | 0.007896 | 7.304660 | 0.0000 |
| GARCH(-1) | 0.935974 | 0.006629 | 141.1965 | 0.0000 |
| T\_INTARGS | -4.17E-05 | 1.14E-05 | -3.644581 | 0.0003 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.009440 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.003986 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016147 | Akaike info criterion | | -5.984658 |
| Sum squared resid | 0.236746 | Schwarz criterion | | -5.931946 |
| Log likelihood | 2744.989 | Hannan-Quinn criter. | | -5.964536 |
| Durbin-Watson stat | 1.895351 |  |  |  |
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| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 17:00 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 35 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*GARCH(-1) + C(10)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI0(-1)\*T\_PREALLBSI(-1) | 0.002837 | 0.001875 | 1.513390 | 0.1302 |
| (1-D\_PREALLBSI0(-1))\*T\_PREALLBSI(-1) | -5.20E-05 | 0.001018 | -0.051136 | 0.9592 |
| DLNCPI | -2.949421 | 1.374027 | -2.146553 | 0.0318 |
| DLNIV | 4.837775 | 1.199068 | 4.034613 | 0.0001 |
| DLNM1 | -0.400036 | 0.241462 | -1.656724 | 0.0976 |
| C | -0.000606 | 0.000560 | -1.082066 | 0.2792 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 4.89E-06 | 1.31E-06 | 3.718787 | 0.0002 |
| RESID(-1)^2 | 0.057593 | 0.007826 | 7.359515 | 0.0000 |
| GARCH(-1) | 0.936308 | 0.006522 | 143.5626 | 0.0000 |
| T\_INTARGS | -4.06E-05 | 1.15E-05 | -3.550001 | 0.0004 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.010713 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.005266 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.016137 | Akaike info criterion | | -5.988176 |
| Sum squared resid | 0.236442 | Schwarz criterion | | -5.935465 |
| Log likelihood | 2746.597 | Hannan-Quinn criter. | | -5.968055 |
| Durbin-Watson stat | 1.905301 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

1. 交易量

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 17:06 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 79 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(11) + C(12)\*RESID(-1)^2 + C(13)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI0\*T\_INTBSI | 0.142678 | 0.034627 | 4.120382 | 0.0000 |
| (1-D\_INTBSI0)\*T\_INTBSI | 0.068048 | 0.019036 | 3.574648 | 0.0004 |
| DLNM1 | 15.33845 | 4.747056 | 3.231151 | 0.0012 |
| DLNIV | 80.53606 | 27.11178 | 2.970519 | 0.0030 |
| C | 18.68174 | 0.218316 | 85.57187 | 0.0000 |
| AR(1) | 0.602743 | 0.035316 | 17.06728 | 0.0000 |
| AR(2) | 0.151561 | 0.043730 | 3.465838 | 0.0005 |
| AR(3) | 0.102131 | 0.037247 | 2.742019 | 0.0061 |
| AR(6) | 0.057726 | 0.033220 | 1.737655 | 0.0823 |
| AR(8) | 0.057956 | 0.028392 | 2.041263 | 0.0412 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033047 | 0.002142 | 15.42561 | 0.0000 |
| RESID(-1)^2 | 0.100284 | 0.030413 | 3.297423 | 0.0010 |
| RESID(-2)^2 | 0.096046 | 0.031513 | 3.047799 | 0.0023 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.867322 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.866001 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.204124 | Akaike info criterion | | -0.349590 |
| Sum squared resid | 37.66663 | Schwarz criterion | | -0.281065 |
| Log likelihood | 172.7626 | Hannan-Quinn criter. | | -0.323432 |
| Durbin-Watson stat | 2.042648 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.44i | .54-.44i | .03-.62i |
|  | .03+.62i | -.42+.52i | -.42-.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 17:08 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 28 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(11) + C(12)\*RESID(-1)^2 + C(13)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI0(-1)\*T\_INTBSI(-1) | 0.051107 | 0.043633 | 1.171294 | 0.2415 |
| (1-D\_INTBSI0(-1))\*T\_INTBSI(-1) | 0.076754 | 0.024168 | 3.175835 | 0.0015 |
| DLNM1 | 16.67813 | 4.743301 | 3.516143 | 0.0004 |
| DLNIV | 85.91597 | 26.83744 | 3.201348 | 0.0014 |
| C | 18.68649 | 0.215803 | 86.59038 | 0.0000 |
| AR(1) | 0.588377 | 0.036053 | 16.31956 | 0.0000 |
| AR(2) | 0.162289 | 0.044745 | 3.626975 | 0.0003 |
| AR(3) | 0.103786 | 0.037388 | 2.775897 | 0.0055 |
| AR(6) | 0.063298 | 0.033592 | 1.884329 | 0.0595 |
| AR(8) | 0.053770 | 0.028514 | 1.885701 | 0.0593 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033085 | 0.002023 | 16.35122 | 0.0000 |
| RESID(-1)^2 | 0.100403 | 0.029808 | 3.368349 | 0.0008 |
| RESID(-2)^2 | 0.094761 | 0.025962 | 3.649936 | 0.0003 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.866898 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.865573 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.204450 | Akaike info criterion | | -0.350381 |
| Sum squared resid | 37.78689 | Schwarz criterion | | -0.281856 |
| Log likelihood | 173.1241 | Hannan-Quinn criter. | | -0.324223 |
| Durbin-Watson stat | 2.043918 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .53+.44i | .53-.44i | .02-.61i |
|  | .02+.61i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 17:08 | | |  |  |
| Sample (adjusted): 3 915 | | |  |  |
| Included observations: 913 after adjustments | | | |  |
| Convergence achieved after 19 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(11) + C(12)\*RESID(-1)^2 + C(13)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI0(-2)\*T\_INTBSI(-2) | 0.027511 | 0.045491 | 0.604755 | 0.5453 |
| (1-D\_INTBSI0(-2))\*T\_INTBSI(-2) | 0.020081 | 0.026094 | 0.769546 | 0.4416 |
| DLNM1 | 16.39210 | 4.540375 | 3.610296 | 0.0003 |
| DLNIV | 88.83162 | 26.44938 | 3.358552 | 0.0008 |
| C | 18.65419 | 0.223267 | 83.55102 | 0.0000 |
| AR(1) | 0.593635 | 0.035176 | 16.87604 | 0.0000 |
| AR(2) | 0.160020 | 0.043381 | 3.688696 | 0.0002 |
| AR(3) | 0.100568 | 0.037416 | 2.687850 | 0.0072 |
| AR(6) | 0.062084 | 0.033627 | 1.846246 | 0.0649 |
| AR(8) | 0.055637 | 0.028648 | 1.942121 | 0.0521 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033743 | 0.002085 | 16.18496 | 0.0000 |
| RESID(-1)^2 | 0.096945 | 0.029467 | 3.289963 | 0.0010 |
| RESID(-2)^2 | 0.091698 | 0.028896 | 3.173398 | 0.0015 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865091 | Mean dependent var | | 18.67316 |
| Adjusted R-squared | 0.863747 | S.D. dependent var | | 0.556552 |
| S.E. of regression | 0.205437 | Akaike info criterion | | -0.337322 |
| Sum squared resid | 38.11058 | Schwarz criterion | | -0.268738 |
| Log likelihood | 166.9876 | Hannan-Quinn criter. | | -0.311141 |
| Durbin-Watson stat | 2.035605 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.45i | .54-.45i | .02-.62i |
|  | .02+.62i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 17:09 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 30 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(11) + C(12)\*RESID(-1)^2 + C(13)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI0\*T\_PREBSI | 0.138145 | 0.018304 | 7.547174 | 0.0000 |
| (1-D\_PREBSI0)\*T\_PREBSI | -0.028703 | 0.027524 | -1.042848 | 0.2970 |
| DLNM1 | 13.83954 | 4.323774 | 3.200800 | 0.0014 |
| DLNIV | 55.92583 | 27.06431 | 2.066405 | 0.0388 |
| C | 18.62078 | 0.213886 | 87.05929 | 0.0000 |
| AR(1) | 0.586451 | 0.035790 | 16.38571 | 0.0000 |
| AR(2) | 0.159808 | 0.043725 | 3.654830 | 0.0003 |
| AR(3) | 0.106359 | 0.037027 | 2.872488 | 0.0041 |
| AR(6) | 0.067725 | 0.033245 | 2.037117 | 0.0416 |
| AR(8) | 0.051644 | 0.029106 | 1.774365 | 0.0760 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.032198 | 0.001856 | 17.34533 | 0.0000 |
| RESID(-1)^2 | 0.098254 | 0.031088 | 3.160472 | 0.0016 |
| RESID(-2)^2 | 0.074197 | 0.024876 | 2.982697 | 0.0029 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.873823 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.872567 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.199060 | Akaike info criterion | | -0.400574 |
| Sum squared resid | 35.82096 | Schwarz criterion | | -0.332049 |
| Log likelihood | 196.0621 | Hannan-Quinn criter. | | -0.374416 |
| Durbin-Watson stat | 2.034340 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .53+.45i | .53-.45i | .02-.60i |
|  | .02+.60i | -.41-.52i | -.41+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 17:10 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 34 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(11) + C(12)\*RESID(-1)^2 + C(13)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI0(-1)\*T\_PREBSI(-1) | 0.006929 | 0.019962 | 0.347137 | 0.7285 |
| (1-D\_PREBSI0(-1))\*T\_PREBSI(-1) | 0.031345 | 0.028926 | 1.083630 | 0.2785 |
| DLNM1 | 16.39205 | 4.553590 | 3.599808 | 0.0003 |
| DLNIV | 90.75054 | 26.50353 | 3.424092 | 0.0006 |
| C | 18.62509 | 0.224877 | 82.82344 | 0.0000 |
| AR(1) | 0.595879 | 0.035765 | 16.66075 | 0.0000 |
| AR(2) | 0.164091 | 0.044419 | 3.694175 | 0.0002 |
| AR(3) | 0.096137 | 0.037574 | 2.558627 | 0.0105 |
| AR(6) | 0.058991 | 0.033503 | 1.760787 | 0.0783 |
| AR(8) | 0.057162 | 0.028289 | 2.020625 | 0.0433 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033308 | 0.002123 | 15.68600 | 0.0000 |
| RESID(-1)^2 | 0.100730 | 0.030713 | 3.279710 | 0.0010 |
| RESID(-2)^2 | 0.101869 | 0.031324 | 3.252081 | 0.0011 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865177 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.863835 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.205767 | Akaike info criterion | | -0.336263 |
| Sum squared resid | 38.27542 | Schwarz criterion | | -0.267738 |
| Log likelihood | 166.6722 | Hannan-Quinn criter. | | -0.310105 |
| Durbin-Watson stat | 2.038818 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.44i | .54-.44i | .03-.62i |
|  | .03+.62i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 17:10 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 27 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(11) + C(12)\*RESID(-1)^2 + C(13)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI0(-1)\*T\_PREALLBSI(-1) | 0.038711 | 0.034175 | 1.132735 | 0.2573 |
| (1-D\_PREALLBSI0(-1))\*T\_PREALLBSI(-1) | 0.023243 | 0.021650 | 1.073602 | 0.2830 |
| DLNM1 | 16.75844 | 4.616521 | 3.630102 | 0.0003 |
| DLNIV | 99.06144 | 27.51502 | 3.600268 | 0.0003 |
| C | 18.63418 | 0.221754 | 84.03073 | 0.0000 |
| AR(1) | 0.584646 | 0.035425 | 16.50385 | 0.0000 |
| AR(2) | 0.170703 | 0.043779 | 3.899210 | 0.0001 |
| AR(3) | 0.101230 | 0.037101 | 2.728485 | 0.0064 |
| AR(6) | 0.061246 | 0.033748 | 1.814783 | 0.0696 |
| AR(8) | 0.054348 | 0.028460 | 1.909645 | 0.0562 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033475 | 0.002100 | 15.94275 | 0.0000 |
| RESID(-1)^2 | 0.098884 | 0.030004 | 3.295683 | 0.0010 |
| RESID(-2)^2 | 0.097310 | 0.030169 | 3.225496 | 0.0013 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865559 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.864220 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.205476 | Akaike info criterion | | -0.337876 |
| Sum squared resid | 38.16709 | Schwarz criterion | | -0.269351 |
| Log likelihood | 167.4091 | Hannan-Quinn criter. | | -0.311718 |
| Durbin-Watson stat | 2.035350 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.44i | .54-.44i | .02-.61i |
|  | .02+.61i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 17:11 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 30 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(11) + C(12)\*RESID(-1)^2 + C(13)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI0\*T\_PREALLBSI | 0.189706 | 0.037762 | 5.023674 | 0.0000 |
| (1-D\_PREALLBSI0)\*T\_PREALLBSI | 0.073489 | 0.019743 | 3.722281 | 0.0002 |
| DLNM1 | 12.75566 | 4.458774 | 2.860799 | 0.0042 |
| DLNIV | -26.85802 | 33.94128 | -0.791308 | 0.4288 |
| C | 18.70856 | 0.213376 | 87.67879 | 0.0000 |
| AR(1) | 0.579996 | 0.035303 | 16.42928 | 0.0000 |
| AR(2) | 0.168773 | 0.044204 | 3.818064 | 0.0001 |
| AR(3) | 0.106827 | 0.037054 | 2.883053 | 0.0039 |
| AR(6) | 0.067168 | 0.034137 | 1.967588 | 0.0491 |
| AR(8) | 0.048931 | 0.028712 | 1.704213 | 0.0883 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.032373 | 0.001892 | 17.10911 | 0.0000 |
| RESID(-1)^2 | 0.088607 | 0.027120 | 3.267256 | 0.0011 |
| RESID(-2)^2 | 0.101375 | 0.025952 | 3.906306 | 0.0001 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.870583 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.869294 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.201600 | Akaike info criterion | | -0.377744 |
| Sum squared resid | 36.74085 | Schwarz criterion | | -0.309219 |
| Log likelihood | 185.6288 | Hannan-Quinn criter. | | -0.351586 |
| Durbin-Watson stat | 2.042557 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .52+.44i | .52-.44i | .02-.60i |
|  | .02+.60i | -.41-.52i | -.41+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

1. 相对大正向、中性、大负向的非对称效应
2. 开盘收益率

0：小于等于-sigma，1:(-sigma, sigma), 2:(sigmam, +)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:34 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 18 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(8) + C(9)\*RESID(-1)^2 + C(10)\*RESID(-2)^2 + C(11)\*GARCH( | | | | |
| -1) + C(12)\*T\_PREALLARGS | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI0\*T\_PREBSI | 0.007399 | 0.001503 | 4.923583 | 0.0000 |
| D\_PREBSI1\*T\_PREBSI | -0.001279 | 0.001777 | -0.719920 | 0.4716 |
| D\_PREBSI2\*T\_PREBSI | 0.003355 | 0.001408 | 2.382287 | 0.0172 |
| DLNCPI | -2.947433 | 1.355627 | -2.174221 | 0.0297 |
| DLNIV | 3.400873 | 1.777107 | 1.913714 | 0.0557 |
| DLNM1 | -0.439525 | 0.306187 | -1.435477 | 0.1512 |
| C | -0.000941 | 0.000786 | -1.197037 | 0.2313 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.51E-05 | 3.43E-06 | 10.24232 | 0.0000 |
| RESID(-1)^2 | 0.167233 | 0.032393 | 5.162607 | 0.0000 |
| RESID(-2)^2 | 0.120849 | 0.062027 | 1.948322 | 0.0514 |
| GARCH(-1) | 0.470487 | 0.072017 | 6.532988 | 0.0000 |
| T\_PREALLARGS | -0.000257 | 4.03E-07 | -639.1606 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.111334 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.105455 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007344 | Akaike info criterion | | -7.394857 |
| Sum squared resid | 0.048924 | Schwarz criterion | | -7.331603 |
| Log likelihood | 3391.450 | Hannan-Quinn criter. | | -7.370712 |
| Durbin-Watson stat | 2.012501 |  |  |  |
|  |  |  |  |  |
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|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 21:12 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 24 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI0\*T\_PREBSI | 0.006382 | 0.000910 | 7.016238 | 0.0000 |
| D\_PREBSI2\*T\_PREBSI | 0.002638 | 0.000933 | 2.827172 | 0.0047 |
| DLNCPI | -1.114292 | 0.913207 | -1.220197 | 0.2224 |
| DLNIV | 3.437092 | 1.232829 | 2.787971 | 0.0053 |
| DLNM1 | 0.110301 | 0.193904 | 0.568843 | 0.5695 |
| C | -0.001652 | 0.000472 | -3.503656 | 0.0005 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 1.08E-05 | 1.75E-06 | 6.148917 | 0.0000 |
| RESID(-1)^2 | 0.158592 | 0.030193 | 5.252696 | 0.0000 |
| RESID(-2)^2 | -0.002082 | 0.041274 | -0.050438 | 0.9598 |
| GARCH(-1) | 0.790929 | 0.028113 | 28.13388 | 0.0000 |
| T\_PREALLARGS | -0.000109 | 1.53E-05 | -7.117404 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.106515 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.101595 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007360 | Akaike info criterion | | -7.590769 |
| Sum squared resid | 0.049189 | Schwarz criterion | | -7.532787 |
| Log likelihood | 3479.982 | Hannan-Quinn criter. | | -7.568636 |
| Durbin-Watson stat | 2.004203 |  |  |  |
|  |  |  |  |  |
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| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:50 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 33 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*GARCH(-1) + C(10) | | | | |
| \*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI0\*T\_PREBSI | 0.007072 | 0.000834 | 8.481023 | 0.0000 |
| D\_PREBSI2\*T\_PREBSI | 0.002366 | 0.000701 | 3.374930 | 0.0007 |
| DLNCPI | -3.037535 | 0.632547 | -4.802071 | 0.0000 |
| DLNIV | 3.589349 | 0.533940 | 6.722382 | 0.0000 |
| DLNM1 | -0.436064 | 0.137952 | -3.160970 | 0.0016 |
| C | -0.001063 | 0.000422 | -2.519509 | 0.0118 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 1.10E-05 | 1.57E-06 | 7.021727 | 0.0000 |
| RESID(-1)^2 | 0.217108 | 0.020786 | 10.44484 | 0.0000 |
| GARCH(-1) | 0.738114 | 0.026406 | 27.95253 | 0.0000 |
| T\_PREALLARGS | -0.000108 | 1.36E-05 | -7.922035 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.113915 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.109036 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007330 | Akaike info criterion | | -7.640104 |
| Sum squared resid | 0.048782 | Schwarz criterion | | -7.587393 |
| Log likelihood | 3501.528 | Hannan-Quinn criter. | | -7.619983 |
| Durbin-Watson stat | 2.007513 |  |  |  |
|  |  |  |  |  |
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| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:40 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 98 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(8) + C(9)\*RESID(-1)^2 + C(10)\*RESID(-2)^2 + C(11)\*GARCH( | | | | |
| -1) + C(12)\*T\_PREALLARGS | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI0(-1)\*T\_INTBSI(-1) | 0.002088 | 0.000388 | 5.379140 | 0.0000 |
| D\_INTBSI1(-1)\*T\_INTBSI(-1) | 0.002478 | 0.000468 | 5.294637 | 0.0000 |
| D\_INTBSI2(-1)\*T\_INTBSI(-1) | 0.001775 | 0.002126 | 0.834698 | 0.4039 |
| DLNCPI | -1.265132 | 0.489547 | -2.584290 | 0.0098 |
| DLNIV | 3.085653 | 0.534440 | 5.773622 | 0.0000 |
| DLNM1 | -0.168002 | 0.102138 | -1.644855 | 0.1000 |
| C | -0.000287 | 0.000321 | -0.893963 | 0.3713 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.26E-07 | 8.34E-08 | 3.913667 | 0.0001 |
| RESID(-1)^2 | 0.304941 | 0.023012 | 13.25142 | 0.0000 |
| RESID(-2)^2 | -0.264416 | 0.023390 | -11.30470 | 0.0000 |
| GARCH(-1) | 0.955594 | 0.002691 | 355.0458 | 0.0000 |
| T\_PREALLARGS | -3.94E-06 | 1.28E-06 | -3.073846 | 0.0021 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.039045 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.032688 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007637 | Akaike info criterion | | -7.812082 |
| Sum squared resid | 0.052903 | Schwarz criterion | | -7.748829 |
| Log likelihood | 3582.122 | Hannan-Quinn criter. | | -7.787937 |
| Durbin-Watson stat | 1.994740 |  |  |  |
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| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 21:00 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 124 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
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|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI0(-1)\*T\_INTBSI(-1) | 0.002017 | 0.000383 | 5.265674 | 0.0000 |
| D\_INTBSI1(-1)\*T\_INTBSI(-1) | 0.002364 | 0.000454 | 5.209157 | 0.0000 |
| DLNCPI | -1.262841 | 0.487343 | -2.591279 | 0.0096 |
| DLNIV | 3.046490 | 0.524455 | 5.808865 | 0.0000 |
| DLNM1 | -0.168815 | 0.102411 | -1.648409 | 0.0993 |
| C | -0.000346 | 0.000317 | -1.092345 | 0.2747 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.25E-07 | 8.31E-08 | 3.905321 | 0.0001 |
| RESID(-1)^2 | 0.298113 | 0.020836 | 14.30740 | 0.0000 |
| RESID(-2)^2 | -0.257809 | 0.021395 | -12.04991 | 0.0000 |
| GARCH(-1) | 0.955681 | 0.002667 | 358.3711 | 0.0000 |
| T\_PREALLARGS | -3.93E-06 | 1.28E-06 | -3.073433 | 0.0021 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.038158 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.032862 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007637 | Akaike info criterion | | -7.813061 |
| Sum squared resid | 0.052952 | Schwarz criterion | | -7.755078 |
| Log likelihood | 3581.569 | Hannan-Quinn criter. | | -7.790927 |
| Durbin-Watson stat | 1.993006 |  |  |  |
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| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:36 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 41 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(8) + C(9)\*RESID(-1)^2 + C(10)\*RESID(-2)^2 + C(11)\*GARCH( | | | | |
| -1) + C(12)\*T\_PREALLARGS | | | |  |
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|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI0\*T\_PREALLBSI | 0.001945 | 0.000482 | 4.035712 | 0.0001 |
| D\_PREALLBSI1\*T\_PREALLBSI | -0.000680 | 0.000882 | -0.771244 | 0.4406 |
| D\_PREALLBSI2\*T\_PREALLBSI | 0.006239 | 0.001249 | 4.997169 | 0.0000 |
| DLNCPI | -2.922123 | 0.730969 | -3.997600 | 0.0001 |
| DLNIV | 1.208856 | 1.284547 | 0.941076 | 0.3467 |
| DLNM1 | -0.258395 | 0.147210 | -1.755280 | 0.0792 |
| C | -0.001687 | 0.000406 | -4.158390 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.05E-05 | 3.36E-07 | 61.01132 | 0.0000 |
| RESID(-1)^2 | 0.339864 | 0.042098 | 8.073195 | 0.0000 |
| RESID(-2)^2 | 0.084859 | 0.046939 | 1.807857 | 0.0706 |
| GARCH(-1) | 0.433189 | 0.031044 | 13.95411 | 0.0000 |
| T\_PREALLARGS | -0.000178 | 6.44E-06 | -27.68806 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.070056 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.063904 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007513 | Akaike info criterion | | -7.578764 |
| Sum squared resid | 0.051196 | Schwarz criterion | | -7.515510 |
| Log likelihood | 3475.495 | Hannan-Quinn criter. | | -7.554619 |
| Durbin-Watson stat | 1.989909 |  |  |  |
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| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 20:49 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 19 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
| + C(11)\*T\_PREALLARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI0\*T\_PREALLBSI | 0.002562 | 0.000533 | 4.810270 | 0.0000 |
| D\_PREALLBSI2\*T\_PREALLBSI | 0.004615 | 0.001666 | 2.769425 | 0.0056 |
| DLNCPI | -3.062476 | 0.921199 | -3.324447 | 0.0009 |
| DLNIV | 1.898912 | 1.377349 | 1.378672 | 0.1680 |
| DLNM1 | -0.371010 | 0.196244 | -1.890552 | 0.0587 |
| C | -0.001382 | 0.000399 | -3.463183 | 0.0005 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 1.61E-05 | 2.66E-06 | 6.066146 | 0.0000 |
| RESID(-1)^2 | 0.189412 | 0.034106 | 5.553647 | 0.0000 |
| RESID(-2)^2 | 0.055742 | 0.048315 | 1.153728 | 0.2486 |
| GARCH(-1) | 0.678385 | 0.043526 | 15.58560 | 0.0000 |
| T\_PREALLARGS | -0.000152 | 2.22E-05 | -6.823345 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.075347 | Mean dependent var | | -0.001110 |
| Adjusted R-squared | 0.070255 | S.D. dependent var | | 0.007765 |
| S.E. of regression | 0.007487 | Akaike info criterion | | -7.533070 |
| Sum squared resid | 0.050905 | Schwarz criterion | | -7.475087 |
| Log likelihood | 3453.613 | Hannan-Quinn criter. | | -7.510937 |
| Durbin-Watson stat | 1.996429 |  |  |  |
|  |  |  |  |  |
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1. 日内收益率

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| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 20:54 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 25 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*T\_INTARGS | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI0\*T\_INTBSI | 0.017073 | 0.000730 | 23.40329 | 0.0000 |
| D\_INTBSI1\*T\_INTBSI | 0.013078 | 0.000849 | 15.40176 | 0.0000 |
| D\_INTBSI2\*T\_INTBSI | 0.006611 | 0.003271 | 2.020982 | 0.0433 |
| DLNIV | -2.107646 | 0.965909 | -2.182033 | 0.0291 |
| C | 0.008831 | 0.000536 | 16.47791 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.21E-06 | 1.21E-06 | 1.816495 | 0.0693 |
| RESID(-1)^2 | 0.063795 | 0.010526 | 6.060664 | 0.0000 |
| GARCH(-1) | 0.929274 | 0.009647 | 96.32864 | 0.0000 |
| T\_INTARGS | -1.68E-05 | 1.08E-05 | -1.547296 | 0.1218 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.305492 | Mean dependent var | | 0.001047 |
| Adjusted R-squared | 0.302436 | S.D. dependent var | | 0.014283 |
| S.E. of regression | 0.011930 | Akaike info criterion | | -6.580672 |
| Sum squared resid | 0.129363 | Schwarz criterion | | -6.533231 |
| Log likelihood | 3016.367 | Hannan-Quinn criter. | | -6.562562 |
| Durbin-Watson stat | 1.939817 |  |  |  |
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|  |  |  |  |  |

1. 日间收盘收益率

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| --- | --- | --- | --- | --- |
| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 21:09 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 38 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(8) + C(9)\*RESID(-1)^2 + C(10)\*GARCH(-1) + C(11) | | | | |
| \*T\_INTARGS | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI0\*T\_INTBSI | 0.019466 | 0.000776 | 25.07690 | 0.0000 |
| D\_INTBSI1\*T\_INTBSI | 0.015186 | 0.000876 | 17.33283 | 0.0000 |
| D\_INTBSI2\*T\_INTBSI | 0.010630 | 0.003286 | 3.234952 | 0.0012 |
| DLNCPI | 0.647210 | 1.187660 | 0.544946 | 0.5858 |
| DLNIV | -0.134745 | 1.085563 | -0.124124 | 0.9012 |
| DLNM1 | -0.078524 | 0.205438 | -0.382225 | 0.7023 |
| C | 0.008690 | 0.000548 | 15.86380 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.89E-06 | 1.23E-06 | 2.354677 | 0.0185 |
| RESID(-1)^2 | 0.055801 | 0.008880 | 6.284060 | 0.0000 |
| GARCH(-1) | 0.936805 | 0.008003 | 117.0499 | 0.0000 |
| T\_INTARGS | -2.30E-05 | 1.09E-05 | -2.110749 | 0.0348 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.321998 | Mean dependent var | | -6.27E-05 |
| Adjusted R-squared | 0.317513 | S.D. dependent var | | 0.016180 |
| S.E. of regression | 0.013366 | Akaike info criterion | | -6.391639 |
| Sum squared resid | 0.162044 | Schwarz criterion | | -6.333657 |
| Log likelihood | 2931.979 | Hannan-Quinn criter. | | -6.369506 |
| Durbin-Watson stat | 1.929547 |  |  |  |
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1. 交易量

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| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution | | | |  |
| Date: 02/22/19 Time: 21:23 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 25 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(12) + C(13)\*RESID(-1)^2 + C(14)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI0\*T\_INTBSI | 0.038174 | 0.019950 | 1.913478 | 0.0557 |
| D\_INTBSI1\*T\_INTBSI | 0.123511 | 0.024186 | 5.106743 | 0.0000 |
| D\_INTBSI2\*T\_INTBSI | 0.148920 | 0.087714 | 1.697792 | 0.0895 |
| DLNIV | 76.21087 | 27.76258 | 2.745094 | 0.0060 |
| DLNM1 | 15.27332 | 4.967805 | 3.074461 | 0.0021 |
| C | 18.67378 | 0.217064 | 86.02906 | 0.0000 |
| AR(1) | 0.590599 | 0.034924 | 16.91121 | 0.0000 |
| AR(2) | 0.166405 | 0.043856 | 3.794355 | 0.0001 |
| AR(3) | 0.108516 | 0.038085 | 2.849332 | 0.0044 |
| AR(6) | 0.055227 | 0.033599 | 1.643691 | 0.1002 |
| AR(8) | 0.050708 | 0.028435 | 1.783327 | 0.0745 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.032469 | 0.002182 | 14.88241 | 0.0000 |
| RESID(-1)^2 | 0.089254 | 0.028665 | 3.113693 | 0.0018 |
| RESID(-2)^2 | 0.112614 | 0.028726 | 3.920240 | 0.0001 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.868612 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.867157 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.203241 | Akaike info criterion | | -0.358933 |
| Sum squared resid | 37.30018 | Schwarz criterion | | -0.285137 |
| Log likelihood | 178.0324 | Hannan-Quinn criter. | | -0.330763 |
| Durbin-Watson stat | 2.038664 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .53+.43i | .53-.43i | .02-.61i |
|  | .02+.61i | -.42+.51i | -.42-.51i | -.67 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 21:32 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 25 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(12) + C(13)\*RESID(-1)^2 + C(14)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI0\*T\_PREALLBSI | 0.066192 | 0.019741 | 3.353080 | 0.0008 |
| D\_PREALLBSI1\*T\_PREALLBSI | 0.145426 | 0.030855 | 4.713158 | 0.0000 |
| D\_PREALLBSI2\*T\_PREALLBSI | 0.171585 | 0.038318 | 4.477957 | 0.0000 |
| DLNIV | -26.69198 | 33.98029 | -0.785514 | 0.4322 |
| DLNM1 | 12.65113 | 4.540969 | 2.785997 | 0.0053 |
| C | 18.70944 | 0.213289 | 87.71856 | 0.0000 |
| AR(1) | 0.580072 | 0.035504 | 16.33806 | 0.0000 |
| AR(2) | 0.165975 | 0.044498 | 3.729911 | 0.0002 |
| AR(3) | 0.110180 | 0.037483 | 2.939454 | 0.0033 |
| AR(6) | 0.071870 | 0.033898 | 2.120174 | 0.0340 |
| AR(8) | 0.043603 | 0.029053 | 1.500811 | 0.1334 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.032140 | 0.001910 | 16.82857 | 0.0000 |
| RESID(-1)^2 | 0.096492 | 0.029928 | 3.224186 | 0.0013 |
| RESID(-2)^2 | 0.094858 | 0.026610 | 3.564799 | 0.0004 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.871380 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.869955 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.201090 | Akaike info criterion | | -0.381347 |
| Sum squared resid | 36.51461 | Schwarz criterion | | -0.307551 |
| Log likelihood | 188.2757 | Hannan-Quinn criter. | | -0.353178 |
| Durbin-Watson stat | 2.041798 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .51+.44i | .51-.44i | .02-.58i |
|  | .02+.58i | -.40-.52i | -.40+.52i | -.67 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 21:33 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 30 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(12) + C(13)\*RESID(-1)^2 + C(14)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREBSI0\*T\_PREBSI | -0.080464 | 0.036102 | -2.228831 | 0.0258 |
| D\_PREBSI1\*T\_PREBSI | 0.155495 | 0.027113 | 5.735147 | 0.0000 |
| D\_PREBSI2\*T\_PREBSI | 0.166627 | 0.023501 | 7.090164 | 0.0000 |
| DLNIV | 51.91224 | 27.46032 | 1.890445 | 0.0587 |
| DLNM1 | 13.89775 | 4.228805 | 3.286449 | 0.0010 |
| C | 18.60403 | 0.212993 | 87.34566 | 0.0000 |
| AR(1) | 0.578852 | 0.035844 | 16.14910 | 0.0000 |
| AR(2) | 0.168237 | 0.043270 | 3.888071 | 0.0001 |
| AR(3) | 0.100965 | 0.036885 | 2.737288 | 0.0062 |
| AR(6) | 0.074358 | 0.033526 | 2.217947 | 0.0266 |
| AR(8) | 0.049553 | 0.029205 | 1.696708 | 0.0898 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.032302 | 0.001888 | 17.11113 | 0.0000 |
| RESID(-1)^2 | 0.090406 | 0.029794 | 3.034361 | 0.0024 |
| RESID(-2)^2 | 0.075084 | 0.028063 | 2.675496 | 0.0075 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.874577 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.873188 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.198574 | Akaike info criterion | | -0.401741 |
| Sum squared resid | 35.60687 | Schwarz criterion | | -0.327945 |
| Log likelihood | 197.5956 | Hannan-Quinn criter. | | -0.373571 |
| Durbin-Watson stat | 2.027015 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .53+.45i | .53-.45i | .02-.59i |
|  | .02+.59i | -.41-.52i | -.41+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 21:34 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 26 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(12) + C(13)\*RESID(-1)^2 + C(14)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_INTBSI0(-1)\*T\_INTBSI(-1) | 0.074355 | 0.022169 | 3.354069 | 0.0008 |
| D\_INTBSI1(-1)\*T\_INTBSI(-1) | 0.112969 | 0.028400 | 3.977811 | 0.0001 |
| D\_INTBSI2(-1)\*T\_INTBSI(-1) | 0.129111 | 0.112893 | 1.143661 | 0.2528 |
| DLNIV | 89.15472 | 26.96619 | 3.306167 | 0.0009 |
| DLNM1 | 16.68588 | 4.768007 | 3.499550 | 0.0005 |
| C | 18.69752 | 0.216626 | 86.31258 | 0.0000 |
| AR(1) | 0.579935 | 0.036103 | 16.06316 | 0.0000 |
| AR(2) | 0.176740 | 0.044597 | 3.963033 | 0.0001 |
| AR(3) | 0.102450 | 0.037264 | 2.749340 | 0.0060 |
| AR(6) | 0.065558 | 0.033861 | 1.936093 | 0.0529 |
| AR(8) | 0.046847 | 0.028840 | 1.624362 | 0.1043 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.032869 | 0.002015 | 16.31016 | 0.0000 |
| RESID(-1)^2 | 0.097271 | 0.030062 | 3.235684 | 0.0012 |
| RESID(-2)^2 | 0.101853 | 0.027945 | 3.644762 | 0.0003 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.867390 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.865922 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.204184 | Akaike info criterion | | -0.350953 |
| Sum squared resid | 37.64717 | Schwarz criterion | | -0.277157 |
| Log likelihood | 174.3857 | Hannan-Quinn criter. | | -0.322784 |
| Durbin-Watson stat | 2.046326 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .52+.44i | .52-.44i | .02-.59i |
|  | .02+.59i | -.41-.52i | -.41+.52i | -.67 |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LNVOLUME | | |  |  |
| Method: ML ARCH - Normal distribution (Marquardt / EViews legacy) | | | | |
| Date: 02/22/19 Time: 21:36 | | |  |  |
| Sample (adjusted): 2 915 | | |  |  |
| Included observations: 914 after adjustments | | | |  |
| Convergence achieved after 29 iterations | | | |  |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(12) + C(13)\*RESID(-1)^2 + C(14)\*RESID(-2)^2 | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D\_PREALLBSI0(-1)\*T\_PREALLBSI(-1) | 0.022640 | 0.022415 | 1.010048 | 0.3125 |
| D\_PREALLBSI1(-1)\*T\_PREALLBSI(-1) | 0.007605 | 0.029353 | 0.259098 | 0.7956 |
| D\_PREALLBSI2(-1)\*T\_PREALLBSI(-1) | 0.050802 | 0.036521 | 1.391014 | 0.1642 |
| DLNIV | 98.44381 | 27.52671 | 3.576301 | 0.0003 |
| DLNM1 | 16.56721 | 4.733127 | 3.500268 | 0.0005 |
| C | 18.63601 | 0.221006 | 84.32357 | 0.0000 |
| AR(1) | 0.584866 | 0.035504 | 16.47331 | 0.0000 |
| AR(2) | 0.172095 | 0.044694 | 3.850515 | 0.0001 |
| AR(3) | 0.100414 | 0.037398 | 2.685027 | 0.0073 |
| AR(6) | 0.060939 | 0.033870 | 1.799199 | 0.0720 |
| AR(8) | 0.053781 | 0.028490 | 1.887733 | 0.0591 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.033383 | 0.002090 | 15.97153 | 0.0000 |
| RESID(-1)^2 | 0.097380 | 0.029516 | 3.299279 | 0.0010 |
| RESID(-2)^2 | 0.100846 | 0.030511 | 3.305242 | 0.0009 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.865651 | Mean dependent var | | 18.67446 |
| Adjusted R-squared | 0.864163 | S.D. dependent var | | 0.557626 |
| S.E. of regression | 0.205519 | Akaike info criterion | | -0.336498 |
| Sum squared resid | 38.14088 | Schwarz criterion | | -0.262702 |
| Log likelihood | 167.7795 | Hannan-Quinn criter. | | -0.308328 |
| Durbin-Watson stat | 2.036377 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .99 | .54+.44i | .54-.44i | .02-.61i |
|  | .02+.61i | -.42-.52i | -.42+.52i | -.68 |
|  |  |  |  |  |
|  |  |  |  |  |

1. 沪深300收益率预测

预测模型要基于过去的信息，而非同期信息进行预测。因此前面分析所用的模型不能用做预测（需要剔除同期的控制变量），需要重新构建。本文选择以75%的样本（约为686条）进行拟合，以25%的样本作为预测样本，观察比较预测误差。

1. 开盘收益率

首先，首先观察收益率的自相关函数、偏相关函数图

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Date: 02/26/19 Time: 23:49 | | | |  |  |  |
| Sample: 1 915 | |  |  |  |  |  |
| Included observations: 914 | | |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Autocorrelation | Partial Correlation |  | AC | PAC | Q-Stat | Prob |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| .| | | .| | | 1 | 0.023 | 0.023 | 0.4817 | 0.488 |
| \*| | | \*| | | 2 | -0.092 | -0.092 | 8.1879 | 0.017 |
| .| | | .| | | 3 | -0.030 | -0.026 | 9.0147 | 0.029 |
| .| | | .| | | 4 | 0.043 | 0.037 | 10.745 | 0.030 |
| .|\* | | .|\* | | 5 | 0.101 | 0.095 | 20.203 | 0.001 |
| .| | | .| | | 6 | -0.021 | -0.019 | 20.608 | 0.002 |
| .| | | .|\* | | 7 | 0.064 | 0.085 | 24.331 | 0.001 |
| .|\* | | .|\* | | 8 | 0.094 | 0.093 | 32.478 | 0.000 |
| .|\* | | .|\* | | 9 | 0.082 | 0.086 | 38.680 | 0.000 |
| .| | | .| | | 10 | 0.041 | 0.053 | 40.211 | 0.000 |
| .| | | .| | | 11 | -0.046 | -0.028 | 42.142 | 0.000 |
| .| | | .| | | 12 | 0.028 | 0.021 | 42.846 | 0.000 |
| .| | | .| | | 13 | 0.060 | 0.036 | 46.234 | 0.000 |
| .|\* | | .|\* | | 14 | 0.107 | 0.090 | 56.838 | 0.000 |
| .| | | .| | | 15 | 0.025 | 0.017 | 57.423 | 0.000 |
| .| | | .| | | 16 | -0.019 | -0.011 | 57.748 | 0.000 |
| .| | | .| | | 17 | 0.055 | 0.037 | 60.604 | 0.000 |
| .| | | .| | | 18 | 0.018 | -0.006 | 60.919 | 0.000 |
| .| | | .| | | 19 | 0.037 | 0.025 | 62.221 | 0.000 |
| .| | | .| | | 20 | 0.031 | 0.028 | 63.122 | 0.000 |
| .| | | .| | | 21 | 0.009 | -0.008 | 63.193 | 0.000 |
| .| | | .| | | 22 | 0.015 | -0.019 | 63.411 | 0.000 |
| .| | | .| | | 23 | -0.011 | -0.031 | 63.532 | 0.000 |
| .| | | .| | | 24 | 0.032 | 0.012 | 64.475 | 0.000 |
| .| | | .| | | 25 | 0.003 | -0.011 | 64.482 | 0.000 |
| .| | | .| | | 26 | 0.015 | 0.002 | 64.701 | 0.000 |
| \*| | | \*| | | 27 | -0.081 | -0.112 | 70.854 | 0.000 |
| .| | | .| | | 28 | 0.039 | 0.026 | 72.267 | 0.000 |
| .| | | .| | | 29 | 0.049 | 0.014 | 74.507 | 0.000 |
| .| | | .| | | 30 | 0.051 | 0.057 | 77.011 | 0.000 |
| .| | | .| | | 31 | 0.008 | 0.012 | 77.079 | 0.000 |
| .| | | .| | | 32 | -0.022 | -0.003 | 77.540 | 0.000 |
| .|\* | | .| | | 33 | 0.082 | 0.073 | 83.996 | 0.000 |
| .|\* | | .| | | 34 | 0.074 | 0.072 | 89.203 | 0.000 |
| .| | | .| | | 35 | -0.002 | 0.021 | 89.205 | 0.000 |
| \*| | | \*| | | 36 | -0.111 | -0.098 | 100.96 | 0.000 |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

可以看出以上图中自相关系数和偏相关系数都呈现出不截尾的性质。因此，可以选择ARMA模型，同时根据其超出2倍标准差的阶数选择AR(2),MA(2),AR(5),MA(5)项。同时根据AIC准则和SC准则，选择了AR(8)项和GARCH(2,1)模型，其系数如下：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (OPG - BHHH / Marquardt steps) | | | | |
| Date: 02/27/19 Time: 01:00 | | |  |  |
| Sample (adjusted): 2 686 | | |  |  |
| Included observations: 685 after adjustments | | | |  |
| Failure to improve likelihood (non-zero gradients) after 92 iterations | | | | |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*RESID(-2)^2 + C(10)\*GARCH(-1) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.137906 | 0.326081 | 0.422918 | 0.6724 |
| AR(2) | 0.313843 | 7.34E-05 | 4273.812 | 0.0000 |
| AR(5) | 0.688508 | 0.000161 | 4263.740 | 0.0000 |
| AR(8) | -0.002386 | 0.000169 | -14.08702 | 0.0000 |
| MA(2) | -0.284629 | 0.019469 | -14.61990 | 0.0000 |
| MA(5) | -0.636101 | 0.021086 | -30.16731 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 6.38E-08 | 9.91E-09 | 6.437695 | 0.0000 |
| RESID(-1)^2 | 0.549272 | 0.054389 | 10.09900 | 0.0000 |
| RESID(-2)^2 | -0.535469 | 0.054096 | -9.898413 | 0.0000 |
| GARCH(-1) | 0.982215 | 0.001969 | 498.9039 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | -0.013476 | Mean dependent var | | -0.001120 |
| Adjusted R-squared | -0.020939 | S.D. dependent var | | 0.008418 |
| S.E. of regression | 0.008506 | Akaike info criterion | | -7.745857 |
| Sum squared resid | 0.049127 | Schwarz criterion | | -7.679734 |
| Log likelihood | 2662.956 | Hannan-Quinn criter. | | -7.720271 |
| Durbin-Watson stat | 1.926387 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | 1.00 | .30-.82i | .30+.82i | .15 |
|  | -.08-.13i | -.08+.13i | -.80+.50i | -.80-.50i |
| Inverted MA Roots | .98 | .30+.81i | .30-.81i | -.79-.50i |
|  | -.79+.50i | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

静态预测结果：



滚动预测结果：

|  |  |
| --- | --- |
| Mean | 0.052352 |
| Median | 0.053586 |
| Maximum | 0.055904 |
| Minimum | 0.046987 |
| Std. Dev. | 0.002787 |
| Skewness | -0.551951 |
| Kurtosis | 1.881001 |
|  |  |
| Jarque-Bera | 23.67812 |
| Probability | 0.000007 |
|  |  |
| Sum | 12.04095 |
| Sum Sq. Dev. | 0.001779 |
|  |  |
| Observations | 230 |

加入了盘前情绪后的模型：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (OPG - BHHH / Marquardt steps) | | | | |
| Date: 02/27/19 Time: 01:03 | | |  |  |
| Sample (adjusted): 2 686 | | |  |  |
| Included observations: 685 after adjustments | | | |  |
| Failure to improve likelihood (non-zero gradients) after 117 iterations | | | | |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(8) + C(9)\*RESID(-1)^2 + C(10)\*RESID(-2)^2 + C(11)\*GARCH( | | | | |
| -1) | |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | -0.327881 | 0.121311 | -2.702816 | 0.0069 |
| T\_PREBSI | 0.004025 | 0.000212 | 18.95450 | 0.0000 |
| AR(2) | 0.518627 | 0.000533 | 973.6097 | 0.0000 |
| AR(5) | 0.357065 | 0.000586 | 608.8372 | 0.0000 |
| AR(8) | 0.124293 | 7.74E-05 | 1606.761 | 0.0000 |
| MA(2) | -0.571276 | 0.020661 | -27.64972 | 0.0000 |
| MA(5) | -0.339900 | 0.018739 | -18.13827 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 3.23E-08 | 6.96E-09 | 4.632894 | 0.0000 |
| RESID(-1)^2 | 0.740867 | 0.054036 | 13.71050 | 0.0000 |
| RESID(-2)^2 | -0.719618 | 0.053721 | -13.39537 | 0.0000 |
| GARCH(-1) | 0.978592 | 0.002525 | 387.5077 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.090891 | Mean dependent var | | -0.001120 |
| Adjusted R-squared | 0.082845 | S.D. dependent var | | 0.008418 |
| S.E. of regression | 0.008062 | Akaike info criterion | | -8.002968 |
| Sum squared resid | 0.044068 | Schwarz criterion | | -7.930233 |
| Log likelihood | 2752.017 | Hannan-Quinn criter. | | -7.974823 |
| Durbin-Watson stat | 2.002090 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | 1.00 | .46-.51i | .46+.51i | .11+.71i |
|  | .11-.71i | -.71 | -.72-.46i | -.72+.46i |
| Inverted MA Roots | .97 | .27+.65i | .27-.65i | -.76+.36i |
|  | -.76-.36i | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

静态预测结果：

Forecast: OPEN\_RETURF

Actual: OPEN\_RETURN

Forecast sample: 686 915

Included observations: 230

Root Mean Squared Error 0.004956

Mean Absolute Error 0.003137

Mean Abs. Percent Error 226.6924

Theil Inequality Coefficient 0.636373

Bias Proportion 0.004353

Variance Proportion 0.494214

Covariance Proportion 0.501434

滚动预测：

|  |
| --- |
| 0.046783 |
| 0.047422 |
| 0.049564 |
| 0.043991 |
| 0.001888 |
| -0.341057 |
| 1.609380 |
|  |
| 22.99142 |
| 0.000010 |
|  |
| 10.76016 |
| 0.000816 |
|  |
| 230 |

加入前日情绪的回归结果：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: OPEN\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (OPG - BHHH / Marquardt steps) | | | | |
| Date: 02/27/19 Time: 01:16 | | |  |  |
| Sample (adjusted): 2 686 | | |  |  |
| Included observations: 685 after adjustments | | | |  |
| Failure to improve likelihood (non-zero gradients) after 119 iterations | | | | |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(8) + C(9)\*RESID(-1)^2 + C(10)\*RESID(-2)^2 + C(11)\*GARCH( | | | | |
| -1) | |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | -0.173314 | 0.226654 | -0.764661 | 0.4445 |
| T\_PREALLBSI | 0.003363 | 0.000200 | 16.82871 | 0.0000 |
| AR(2) | 0.418672 | 0.000177 | 2371.711 | 0.0000 |
| AR(5) | 0.540916 | 0.000228 | 2368.866 | 0.0000 |
| AR(8) | 0.040389 | 6.59E-05 | 612.9944 | 0.0000 |
| MA(2) | -0.439994 | 0.017987 | -24.46172 | 0.0000 |
| MA(5) | -0.497698 | 0.020847 | -23.87356 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.60E-08 | 8.08E-09 | 3.217303 | 0.0013 |
| RESID(-1)^2 | 0.762186 | 0.063705 | 11.96439 | 0.0000 |
| RESID(-2)^2 | -0.744221 | 0.063103 | -11.79379 | 0.0000 |
| GARCH(-1) | 0.981952 | 0.002137 | 459.5422 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.061304 | Mean dependent var | | -0.001120 |
| Adjusted R-squared | 0.052997 | S.D. dependent var | | 0.008418 |
| S.E. of regression | 0.008192 | Akaike info criterion | | -7.943017 |
| Sum squared resid | 0.045502 | Schwarz criterion | | -7.870281 |
| Log likelihood | 2731.483 | Hannan-Quinn criter. | | -7.914872 |
| Durbin-Watson stat | 1.964485 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | 1.00 | .27-.74i | .27+.74i | .22+.37i |
|  | .22-.37i | -.43 | -.78-.47i | -.78+.47i |
| Inverted MA Roots | .98 | .29+.74i | .29-.74i | -.78+.44i |
|  | -.78-.44i | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

静态预测：

Forecast: OPEN\_RETURF

Actual: OPEN\_RETURN

Forecast sample: 686 915

Included observations: 230

Root Mean Squared Error 0.005195

Mean Absolute Error 0.003320

Mean Abs. Percent Error 229.6270

Theil Inequality Coefficient 0.689181

Bias Proportion 0.004380

Variance Proportion 0.541085

Covariance Proportion 0.454535

滚动预测：

|  |
| --- |
| 0.048652 |
| 0.049529 |
| 0.051941 |
| 0.045485 |
| 0.002194 |
| -0.308483 |
| 1.498209 |
|  |
| 25.26191 |
| 0.000003 |
|  |
| 11.18994 |
| 0.001102 |
|  |
| 230 |

1. 日内收益率

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Date: 02/27/19 Time: 01:26 | | | |  |  |  |
| Sample: 1 915 | |  |  |  |  |  |
| Included observations: 915 | | |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Autocorrelation | Partial Correlation |  | AC | PAC | Q-Stat | Prob |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| .| | | .| | | 1 | 0.007 | 0.007 | 0.0392 | 0.843 |
| .| | | .| | | 2 | -0.034 | -0.034 | 1.0737 | 0.585 |
| .| | | .| | | 3 | -0.031 | -0.031 | 1.9716 | 0.578 |
| .| | | .| | | 4 | 0.018 | 0.017 | 2.2655 | 0.687 |
| .| | | .| | | 5 | -0.017 | -0.019 | 2.5167 | 0.774 |
| .| | | .| | | 6 | -0.052 | -0.052 | 5.0063 | 0.543 |
| .| | | .| | | 7 | 0.019 | 0.020 | 5.3373 | 0.619 |
| .| | | .| | | 8 | 0.018 | 0.013 | 5.6458 | 0.687 |
| .| | | .| | | 9 | -0.006 | -0.008 | 5.6829 | 0.771 |
| \*| | | \*| | | 10 | -0.095 | -0.092 | 14.112 | 0.168 |
| .| | | .| | | 11 | -0.062 | -0.064 | 17.703 | 0.089 |
| .| | | .| | | 12 | 0.010 | 0.001 | 17.794 | 0.122 |
| .|\* | | .|\* | | 13 | 0.089 | 0.084 | 25.198 | 0.022 |
| \*| | | \*| | | 14 | -0.131 | -0.135 | 41.236 | 0.000 |
| .| | | .| | | 15 | 0.007 | 0.011 | 41.280 | 0.000 |
| .| | | .| | | 16 | 0.042 | 0.029 | 42.941 | 0.000 |
| .| | | .| | | 17 | 0.023 | 0.011 | 43.435 | 0.000 |
| .| | | .| | | 18 | -0.031 | -0.019 | 44.339 | 0.001 |
| .| | | .| | | 19 | -0.063 | -0.059 | 48.037 | 0.000 |
| .|\* | | .|\* | | 20 | 0.147 | 0.128 | 68.242 | 0.000 |
| .| | | .| | | 21 | 0.064 | 0.054 | 72.041 | 0.000 |
| .| | | .| | | 22 | -0.052 | -0.051 | 74.599 | 0.000 |
| \*| | | \*| | | 23 | -0.096 | -0.077 | 83.304 | 0.000 |
| .| | | .| | | 24 | 0.008 | -0.007 | 83.365 | 0.000 |
| .| | | .| | | 25 | 0.055 | 0.042 | 86.203 | 0.000 |
| \*| | | .| | | 26 | -0.068 | -0.061 | 90.517 | 0.000 |
| .| | | .| | | 27 | -0.061 | -0.038 | 94.000 | 0.000 |
| .| | | .| | | 28 | 0.043 | 0.014 | 95.755 | 0.000 |
| .| | | .| | | 29 | 0.046 | 0.029 | 97.737 | 0.000 |
| .| | | .| | | 30 | -0.048 | -0.026 | 99.906 | 0.000 |
| .| | | .| | | 31 | -0.065 | -0.037 | 103.89 | 0.000 |
| .| | | .| | | 32 | -0.025 | -0.033 | 104.49 | 0.000 |
| .| | | .| | | 33 | 0.045 | -0.010 | 106.46 | 0.000 |
| .| | | .| | | 34 | 0.017 | 0.040 | 106.72 | 0.000 |
| .| | | .| | | 35 | -0.021 | 0.002 | 107.14 | 0.000 |
| .|\* | | .| | | 36 | 0.084 | 0.071 | 113.91 | 0.000 |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

观察其自相关和偏相关函数图，可以看出，也不是截尾的。根据上图，选择AR(10), MA(10),AR(13),MA(13)进行回归。得到如下方程：根据AIC和SC准则选择GARCH(1,2)模型。

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (OPG - BHHH / Marquardt steps) | | | | |
| Date: 02/27/19 Time: 01:43 | | |  |  |
| Sample: 1 686 | |  |  |  |
| Included observations: 686 | | |  |  |
| Convergence achieved after 193 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(6) + C(7)\*RESID(-1)^2 + C(8)\*GARCH(-1) + C(9)\*GARCH(-2) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.001185 | 0.000289 | 4.098833 | 0.0000 |
| AR(10) | -0.815914 | 0.038454 | -21.21798 | 0.0000 |
| AR(13) | -0.162783 | 0.033917 | -4.799443 | 0.0000 |
| MA(10) | 0.800729 | 0.028456 | 28.13917 | 0.0000 |
| MA(13) | 0.215451 | 0.032656 | 6.597609 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.46E-07 | 2.96E-07 | 0.830380 | 0.4063 |
| RESID(-1)^2 | 0.100636 | 0.017096 | 5.886605 | 0.0000 |
| GARCH(-1) | 0.058010 | 0.033300 | 1.742068 | 0.0815 |
| GARCH(-2) | 0.839934 | 0.035678 | 23.54211 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.037332 | Mean dependent var | | 0.001284 |
| Adjusted R-squared | 0.031677 | S.D. dependent var | | 0.015362 |
| S.E. of regression | 0.015117 | Akaike info criterion | | -6.180619 |
| Sum squared resid | 0.155627 | Schwarz criterion | | -6.121176 |
| Log likelihood | 2128.952 | Hannan-Quinn criter. | | -6.157620 |
| Durbin-Watson stat | 1.980244 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .95-.29i | .95+.29i | .57+.77i | .57-.77i |
|  | .29+.51i | .29-.51i | -.02+.98i | -.02-.98i |
|  | -.58-.81i | -.58+.81i | -.58 | -.92+.32i |
|  | -.92-.32i | |  |  |
| Inverted MA Roots | .95-.29i | .95+.29i | .57+.76i | .57-.76i |
|  | .32-.56i | .32+.56i | -.03+.98i | -.03-.98i |
|  | -.58-.81i | -.58+.81i | -.64 | -.91-.33i |
|  | -.91+.33i | |  |  |
|  | Estimated MA process is noninvertible | | | |
|  |  |  |  |  |
|  |  |  |  |  |

静态预测：

Forecast: TODAY\_RETUF

Actual: TODAY\_RETURN

Forecast sample: 686 915

Included observations: 230

Root Mean Squared Error 0.010501

Mean Absolute Error 0.007986

Mean Abs. Percent Error 120.9516

Theil Inequality Coefficient 0.884502

Bias Proportion 0.004826

Variance Proportion 0.822533

Covariance Proportion 0.172641

滚动预测：

0.083052

0.082432

0.090743

0.077765

0.003737

0.483956

2.178817

15.44063

0.000444

19.10192

0.003198

230

加入盘前情绪的日内收益率模型：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (OPG - BHHH / Marquardt steps) | | | | |
| Date: 02/27/19 Time: 02:05 | | |  |  |
| Sample: 1 686 | |  |  |  |
| Included observations: 686 | | |  |  |
| Convergence achieved after 46 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*GARCH(-1) + C(10)\*GARCH(-2) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.002189 | 0.000419 | 5.227574 | 0.0000 |
| T\_PREBSI | -0.002440 | 0.000785 | -3.109015 | 0.0019 |
| AR(10) | -0.814687 | 0.038249 | -21.29958 | 0.0000 |
| AR(13) | -0.163775 | 0.033181 | -4.935846 | 0.0000 |
| MA(10) | 0.804469 | 0.026995 | 29.80089 | 0.0000 |
| MA(13) | 0.213551 | 0.030623 | 6.973562 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.33E-07 | 2.80E-07 | 0.832227 | 0.4053 |
| RESID(-1)^2 | 0.098540 | 0.016990 | 5.799744 | 0.0000 |
| GARCH(-1) | 0.039241 | 0.026444 | 1.483904 | 0.1378 |
| GARCH(-2) | 0.860401 | 0.029568 | 29.09877 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.035862 | Mean dependent var | | 0.001284 |
| Adjusted R-squared | 0.028773 | S.D. dependent var | | 0.015362 |
| S.E. of regression | 0.015140 | Akaike info criterion | | -6.190325 |
| Sum squared resid | 0.155864 | Schwarz criterion | | -6.124277 |
| Log likelihood | 2133.282 | Hannan-Quinn criter. | | -6.164770 |
| Durbin-Watson stat | 1.893111 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .95+.29i | .95-.29i | .57-.77i | .57+.77i |
|  | .29+.51i | .29-.51i | -.02-.98i | -.02+.98i |
|  | -.58-.81i | -.58+.81i | -.58 | -.92-.32i |
|  | -.92+.32i | |  |  |
| Inverted MA Roots | .95+.29i | .95-.29i | .57-.76i | .57+.76i |
|  | .32+.56i | .32-.56i | -.03-.98i | -.03+.98i |
|  | -.58-.81i | -.58+.81i | -.64 | -.91+.33i |
|  | -.91-.33i | |  |  |
|  | Estimated MA process is noninvertible | | | |
|  |  |  |  |  |
|  |  |  |  |  |

静态预测：

Forecast: TODAY\_RETUF

Actual: TODAY\_RETURN

Forecast sample: 686 915

Included observations: 230

Root Mean Squared Error 0.010597

Mean Absolute Error 0.008093

Mean Abs. Percent Error 133.5586

Theil Inequality Coefficient 0.831458

Bias Proportion 0.019129

Variance Proportion 0.729520

Covariance Proportion 0.251351

加入前日情绪：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: TODAY\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (OPG - BHHH / Marquardt steps) | | | | |
| Date: 02/27/19 Time: 02:06 | | |  |  |
| Sample: 1 686 | |  |  |  |
| Included observations: 686 | | |  |  |
| Convergence achieved after 60 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(7) + C(8)\*RESID(-1)^2 + C(9)\*GARCH(-1) + C(10)\*GARCH(-2) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.001041 | 0.000283 | 3.674429 | 0.0002 |
| T\_PREALLBSI | -0.001634 | 0.000743 | -2.198201 | 0.0279 |
| AR(10) | -0.812104 | 0.039372 | -20.62632 | 0.0000 |
| AR(13) | -0.165552 | 0.034339 | -4.821036 | 0.0000 |
| MA(10) | 0.799413 | 0.029129 | 27.44344 | 0.0000 |
| MA(13) | 0.215873 | 0.032617 | 6.618420 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 2.44E-07 | 2.88E-07 | 0.846897 | 0.3971 |
| RESID(-1)^2 | 0.099877 | 0.017310 | 5.770067 | 0.0000 |
| GARCH(-1) | 0.045796 | 0.028803 | 1.589942 | 0.1118 |
| GARCH(-2) | 0.852446 | 0.031737 | 26.85955 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.032875 | Mean dependent var | | 0.001284 |
| Adjusted R-squared | 0.025764 | S.D. dependent var | | 0.015362 |
| S.E. of regression | 0.015163 | Akaike info criterion | | -6.184078 |
| Sum squared resid | 0.156347 | Schwarz criterion | | -6.118030 |
| Log likelihood | 2131.139 | Hannan-Quinn criter. | | -6.158523 |
| Durbin-Watson stat | 1.923748 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | .95+.29i | .95-.29i | .57-.77i | .57+.77i |
|  | .29+.51i | .29-.51i | -.02-.98i | -.02+.98i |
|  | -.58-.81i | -.58+.81i | -.59 | -.92-.32i |
|  | -.92+.32i | |  |  |
| Inverted MA Roots | .95-.29i | .95+.29i | .57+.76i | .57-.76i |
|  | .32-.56i | .32+.56i | -.03+.98i | -.03-.98i |
|  | -.58-.81i | -.58+.81i | -.64 | -.91-.33i |
|  | -.91+.33i | |  |  |
|  | Estimated MA process is noninvertible | | | |
|  |  |  |  |  |
|  |  |  |  |  |

Forecast: TODAY\_RETUF

Actual: TODAY\_RETURN

Forecast sample: 686 915

Included observations: 230

Root Mean Squared Error 0.010575

Mean Absolute Error 0.008078

Mean Abs. Percent Error 128.1909

Theil Inequality Coefficient 0.853615

Bias Proportion 0.012516

Variance Proportion 0.768145

Covariance Proportion 0.219339

（3） 日间收盘收益率

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Date: 02/27/19 Time: 02:08 | | | |  |  |  |
| Sample: 1 915 | |  |  |  |  |  |
| Included observations: 914 | | |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Autocorrelation | Partial Correlation |  | AC | PAC | Q-Stat | Prob |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| .| | | .| | | 1 | 0.055 | 0.055 | 2.8240 | 0.093 |
| \*| | | \*| | | 2 | -0.081 | -0.084 | 8.8625 | 0.012 |
| .| | | .| | | 3 | -0.015 | -0.006 | 9.0730 | 0.028 |
| .|\* | | .|\* | | 4 | 0.082 | 0.077 | 15.249 | 0.004 |
| .| | | .| | | 5 | 0.017 | 0.006 | 15.508 | 0.008 |
| \*| | | \*| | | 6 | -0.096 | -0.086 | 23.948 | 0.001 |
| .| | | .| | | 7 | 0.016 | 0.031 | 24.178 | 0.001 |
| .|\* | | .|\* | | 8 | 0.097 | 0.077 | 32.866 | 0.000 |
| .| | | .| | | 9 | 0.043 | 0.033 | 34.616 | 0.000 |
| \*| | | \*| | | 10 | -0.099 | -0.080 | 43.688 | 0.000 |
| \*| | | .| | | 11 | -0.070 | -0.055 | 48.228 | 0.000 |
| .| | | .| | | 12 | 0.031 | 0.008 | 49.133 | 0.000 |
| .|\* | | .|\* | | 13 | 0.135 | 0.124 | 66.014 | 0.000 |
| \*| | | \*| | | 14 | -0.136 | -0.132 | 83.257 | 0.000 |
| .| | | .| | | 15 | 0.003 | 0.050 | 83.264 | 0.000 |
| .| | | .| | | 16 | 0.059 | 0.020 | 86.471 | 0.000 |
| .| | | .| | | 17 | 0.026 | -0.006 | 87.108 | 0.000 |
| .| | | .| | | 18 | -0.028 | 0.006 | 87.835 | 0.000 |
| .| | | .| | | 19 | -0.044 | -0.006 | 89.638 | 0.000 |
| .|\* | | .|\* | | 20 | 0.138 | 0.110 | 107.55 | 0.000 |
| .|\* | | .| | | 21 | 0.094 | 0.058 | 115.79 | 0.000 |
| .| | | .| | | 22 | -0.044 | -0.032 | 117.63 | 0.000 |
| \*| | | .| | | 23 | -0.094 | -0.054 | 125.87 | 0.000 |
| .| | | .| | | 24 | 0.007 | -0.013 | 125.91 | 0.000 |
| .| | | .| | | 25 | 0.043 | 0.007 | 127.69 | 0.000 |
| \*| | | \*| | | 26 | -0.088 | -0.085 | 134.99 | 0.000 |
| \*| | | .| | | 27 | -0.092 | -0.028 | 143.00 | 0.000 |
| .|\* | | .|\* | | 28 | 0.112 | 0.074 | 154.85 | 0.000 |
| .| | | .| | | 29 | 0.069 | 0.018 | 159.32 | 0.000 |
| .| | | .| | | 30 | -0.057 | -0.027 | 162.45 | 0.000 |
| \*| | | .| | | 31 | -0.108 | -0.057 | 173.42 | 0.000 |
| .| | | .| | | 32 | -0.025 | -0.026 | 174.00 | 0.000 |
| .|\* | | .| | | 33 | 0.075 | 0.014 | 179.33 | 0.000 |
| .| | | .| | | 34 | 0.039 | 0.067 | 180.80 | 0.000 |
| .| | | .| | | 35 | -0.028 | 0.011 | 181.58 | 0.000 |
| .| | | .| | | 36 | 0.015 | 0.001 | 181.79 | 0.000 |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

观察自相关和偏相关图，选择AR(2)AR(4)MA(2)MA(4)这四个。建立GARCH模型后，除AR(2)系数显著外，其余变量不显著，删去。得到如下模型：

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (OPG - BHHH / Marquardt steps) | | | | |
| Date: 02/27/19 Time: 02:20 | | |  |  |
| Sample (adjusted): 2 686 | | |  |  |
| Included observations: 685 after adjustments | | | |  |
| Convergence achieved after 49 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(3) + C(4)\*RESID(-1)^2 + C(5)\*GARCH(-1) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.000751 | 0.000305 | 2.458072 | 0.0140 |
| AR(2) | -0.074453 | 0.037461 | -1.987475 | 0.0469 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 1.58E-07 | 1.90E-07 | 0.831711 | 0.4056 |
| RESID(-1)^2 | 0.054018 | 0.007461 | 7.240490 | 0.0000 |
| GARCH(-1) | 0.944755 | 0.005730 | 164.8865 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.008280 | Mean dependent var | | 0.000135 |
| Adjusted R-squared | 0.006828 | S.D. dependent var | | 0.017407 |
| S.E. of regression | 0.017347 | Akaike info criterion | | -5.964495 |
| Sum squared resid | 0.205538 | Schwarz criterion | | -5.931434 |
| Log likelihood | 2047.840 | Hannan-Quinn criter. | | -5.951702 |
| Durbin-Watson stat | 1.866279 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | -.00+.27i | -.00-.27i | |  |
|  |  |  |  |  |
|  |  |  |  |  |

静态预测：

Forecast: CLOSE\_RETUF

Actual: CLOSE\_RETURN

Forecast sample: 686 915

Included observations: 230

Root Mean Squared Error 0.011908

Mean Absolute Error 0.009099

Mean Abs. Percent Error 114.0717

Theil Inequality Coefficient 0.918135

Bias Proportion 0.015525

Variance Proportion 0.831757

Covariance Proportion 0.152718

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (OPG - BHHH / Marquardt steps) | | | | |
| Date: 02/27/19 Time: 02:26 | | |  |  |
| Sample (adjusted): 2 686 | | |  |  |
| Included observations: 685 after adjustments | | | |  |
| Convergence achieved after 51 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(4) + C(5)\*RESID(-1)^2 + C(6)\*GARCH(-1) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | -7.38E-05 | 0.000437 | -0.168790 | 0.8660 |
| T\_PREBSI | 0.002054 | 0.000788 | 2.605285 | 0.0092 |
| AR(2) | -0.081031 | 0.037687 | -2.150126 | 0.0315 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 1.25E-07 | 1.97E-07 | 0.633230 | 0.5266 |
| RESID(-1)^2 | 0.055877 | 0.007771 | 7.190326 | 0.0000 |
| GARCH(-1) | 0.943316 | 0.005900 | 159.8800 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.020506 | Mean dependent var | | 0.000135 |
| Adjusted R-squared | 0.017634 | S.D. dependent var | | 0.017407 |
| S.E. of regression | 0.017253 | Akaike info criterion | | -5.969408 |
| Sum squared resid | 0.203004 | Schwarz criterion | | -5.929734 |
| Log likelihood | 2050.522 | Hannan-Quinn criter. | | -5.954056 |
| Durbin-Watson stat | 1.933337 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | -.00+.28i | -.00-.28i | |  |
|  |  |  |  |  |
|  |  |  |  |  |

Forecast: CLOSE\_RETUF

Actual: CLOSE\_RETURN

Forecast sample: 686 915

Included observations: 230

Root Mean Squared Error 0.011757

Mean Absolute Error 0.008964

Mean Abs. Percent Error 121.9249

Theil Inequality Coefficient 0.904138

Bias Proportion 0.005046

Variance Proportion 0.797189

Covariance Proportion 0.197766

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (OPG - BHHH / Marquardt steps) | | | | |
| Date: 02/27/19 Time: 02:26 | | |  |  |
| Sample (adjusted): 2 686 | | |  |  |
| Included observations: 685 after adjustments | | | |  |
| Convergence achieved after 50 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(4) + C(5)\*RESID(-1)^2 + C(6)\*GARCH(-1) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.000982 | 0.000306 | 3.214338 | 0.0013 |
| T\_PREALLBSI | 0.002323 | 0.000751 | 3.094794 | 0.0020 |
| AR(2) | -0.088668 | 0.037439 | -2.368303 | 0.0179 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 1.09E-07 | 1.93E-07 | 0.567125 | 0.5706 |
| RESID(-1)^2 | 0.056099 | 0.007710 | 7.275666 | 0.0000 |
| GARCH(-1) | 0.943269 | 0.005781 | 163.1759 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.024025 | Mean dependent var | | 0.000135 |
| Adjusted R-squared | 0.021163 | S.D. dependent var | | 0.017407 |
| S.E. of regression | 0.017222 | Akaike info criterion | | -5.972473 |
| Sum squared resid | 0.202275 | Schwarz criterion | | -5.932799 |
| Log likelihood | 2051.572 | Hannan-Quinn criter. | | -5.957122 |
| Durbin-Watson stat | 1.942927 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | -.00+.30i | -.00-.30i | |  |
|  |  |  |  |  |
|  |  |  |  |  |

Forecast: CLOSE\_RETUF

Actual: CLOSE\_RETURN

Forecast sample: 686 915

Included observations: 230

Root Mean Squared Error 0.011682

Mean Absolute Error 0.008974

Mean Abs. Percent Error 128.3735

Theil Inequality Coefficient 0.910335

Bias Proportion 0.004145

Variance Proportion 0.832310

Covariance Proportion 0.163545

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: CLOSE\_RETURN | | | |  |
| Method: ML ARCH - Normal distribution (OPG - BHHH / Marquardt steps) | | | | |
| Date: 02/27/19 Time: 02:28 | | |  |  |
| Sample (adjusted): 2 686 | | |  |  |
| Included observations: 685 after adjustments | | | |  |
| Convergence achieved after 48 iterations | | | |  |
| Coefficient covariance computed using outer product of gradients | | | | |
| Presample variance: backcast (parameter = 0.7) | | | | |
| GARCH = C(4) + C(5)\*RESID(-1)^2 + C(6)\*GARCH(-1) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.001789 | 0.000641 | 2.791010 | 0.0053 |
| T\_INTBSI(-1) | 0.002109 | 0.001123 | 1.877334 | 0.0605 |
| AR(2) | -0.089693 | 0.037388 | -2.399007 | 0.0164 |
|  |  |  |  |  |
|  |  |  |  |  |
|  | Variance Equation | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 1.35E-07 | 1.91E-07 | 0.708093 | 0.4789 |
| RESID(-1)^2 | 0.054245 | 0.007565 | 7.170529 | 0.0000 |
| GARCH(-1) | 0.944617 | 0.005742 | 164.5003 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.020012 | Mean dependent var | | 0.000135 |
| Adjusted R-squared | 0.017139 | S.D. dependent var | | 0.017407 |
| S.E. of regression | 0.017257 | Akaike info criterion | | -5.966768 |
| Sum squared resid | 0.203106 | Schwarz criterion | | -5.927094 |
| Log likelihood | 2049.618 | Hannan-Quinn criter. | | -5.951417 |
| Durbin-Watson stat | 1.924736 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Inverted AR Roots | -.00+.30i | -.00-.30i | |  |
|  |  |  |  |  |
|  |  |  |  |  |

Forecast: CLOSE\_RETUF

Actual: CLOSE\_RETURN

Forecast sample: 686 915

Included observations: 230

Root Mean Squared Error 0.011850

Mean Absolute Error 0.009050

Mean Abs. Percent Error 124.8063

Theil Inequality Coefficient 0.910603

Bias Proportion 0.010094

Variance Proportion 0.800219

Covariance Proportion 0.189687