抓台股大盤 美元匯率日資料

2010/01/01-2020/6/6

先不取差分

比較時序資料

殘差resid series生成殘差

美元匯率日資料:USD

時間:2010/01/04-2020/04/30



台股大盤收盤價：close

時間:2010/01/04-2020/06/09



走勢呈現發散

影響美元匯率的歷史事件

2010-2011年 美國推出QE2導致美元貶值

迴歸

USD=c+USD(-1)+ut

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: USD | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 06/15/20 Time: 08:50 | | |  |  |
| Sample (adjusted): 1/05/2010 4/30/2020 | | | |  |
| Included observations: 2556 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| USD(-1) | 0.997872 | 0.001306 | 764.3512 | 0.0000 |
| C | 0.064524 | 0.040029 | 1.611944 | 0.1071 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.995647 | Mean dependent var | | 30.64146 |
| Adjusted R-squared | 0.995646 | S.D. dependent var | | 1.078971 |
| S.E. of regression | 0.071198 | Akaike info criterion | | -2.445935 |
| Sum squared resid | 12.94646 | Schwarz criterion | | -2.441360 |
| Log likelihood | 3127.905 | Hannan-Quinn criter. | | -2.444276 |
| F-statistic | 584232.8 | Durbin-Watson stat | | 1.942093 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Q-stat

Close=c+ut

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Date: 06/15/20 Time: 08:47 | | | |  |  |  |
| Sample: 1/04/2010 4/30/2020 | | |  |  |  |  |
| Included observations: 2567 | | |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Autocorrelation | Partial Correlation |  | AC | PAC | Q-Stat | Prob |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| |\*\*\*\*\*\*\* | |\*\*\*\*\*\*\* | 1 | 0.993 | 0.993 | 2536.1 | 0.000 |
| |\*\*\*\*\*\*\* | |\*\* | | 2 | 0.991 | 0.293 | 5059.3 | 0.000 |
| |\*\*\*\*\*\*\* | |\* | | 3 | 0.988 | 0.099 | 7570.0 | 0.000 |
| |\*\*\*\*\*\*\* | | | | 4 | 0.986 | 0.054 | 10069. | 0.000 |
| |\*\*\*\*\*\*\* | | | | 5 | 0.983 | 0.001 | 12556. | 0.000 |
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|  |  |  |  |  |  |  |

ACF不變，PACF自第一期後下降，因此對USD的影響只到前一期後結束

因此USD是MA(1)的process

USDt = ut + θut−1

resid02=ut-1前一期的殘差

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: USD | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 06/15/20 Time: 23:30 | | |  |  |
| Sample (adjusted): 1/05/2010 4/30/2020 | | | |  |
| Included observations: 2556 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| RESID02 | 0.951498 | 0.562000 | 1.693057 | 0.0906 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | -805.901532 | Mean dependent var | | 30.64146 |
| Adjusted R-squared | -805.901532 | S.D. dependent var | | 1.078971 |
| S.E. of regression | 30.64926 | Akaike info criterion | | 9.683485 |
| Sum squared resid | 2400109. | Schwarz criterion | | 9.685773 |
| Log likelihood | -12374.49 | Hannan-Quinn criter. | | 9.684315 |
| Durbin-Watson stat | 1.00E-05 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Q-stat

大盤

Close =close(-1)+c+ut

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: CLOSE | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 06/15/20 Time: 08:44 | | |  |  |
| Sample (adjusted): 1/05/2010 6/09/2020 | | | |  |
| Included observations: 2544 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| CLOSE(-1) | 0.998393 | 0.001351 | 739.0446 | 0.0000 |
| C | 15.87402 | 12.37357 | 1.282898 | 0.1996 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.995367 | Mean dependent var | | 9074.347 |
| Adjusted R-squared | 0.995366 | S.D. dependent var | | 1255.391 |
| S.E. of regression | 85.46202 | Akaike info criterion | | 11.73481 |
| Sum squared resid | 18566151 | Schwarz criterion | | 11.73940 |
| Log likelihood | -14924.67 | Hannan-Quinn criter. | | 11.73647 |
| F-statistic | 546186.8 | Durbin-Watson stat | | 1.929190 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Close=c+ut

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: CLOSE | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 06/15/20 Time: 08:45 | | |  |  |
| Sample: 1/04/2010 6/09/2020 | | |  |  |
| Included observations: 2554 | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 9073.113 | 24.81671 | 365.6050 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.000000 | Mean dependent var | | 9073.113 |
| Adjusted R-squared | 0.000000 | S.D. dependent var | | 1254.165 |
| S.E. of regression | 1254.165 | Akaike info criterion | | 17.10672 |
| Sum squared resid | 4.02E+09 | Schwarz criterion | | 17.10901 |
| Log likelihood | -21844.28 | Hannan-Quinn criter. | | 17.10755 |
| Durbin-Watson stat | 0.004643 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Q-stat

Close=c+ut

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Date: 06/15/20 Time: 08:43 | | | |  |  |  |
| Sample: 1/04/2010 6/09/2020 | | |  |  |  |  |
| Included observations: 2554 | | |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Autocorrelation | Partial Correlation |  | AC | PAC | Q-Stat | Prob |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| |\*\*\*\*\*\*\* | |\*\*\*\*\*\*\* | 1 | 0.995 | 0.995 | 2531.5 | 0.000 |
| |\*\*\*\*\*\*\* | |\* | | 2 | 0.992 | 0.162 | 5047.0 | 0.000 |
| |\*\*\*\*\*\*\* | | | | 3 | 0.988 | 0.013 | 7545.8 | 0.000 |
| |\*\*\*\*\*\*\* | | | | 4 | 0.985 | -0.004 | 10028. | 0.000 |
| |\*\*\*\*\*\*\* | | | | 5 | 0.981 | 0.013 | 12494. | 0.000 |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |

ACF不變，PACF自第一期後下降，因此對大盤收盤價的影響只到前一期後結束

因此大盤收盤價是MA(1)的process

**Solution**

USD

1. 先丟一堆自己，
2. 然後把顯著的(不reject的)丟掉，
3. 最後看PCAF那個的P值

最後配的模型:

USD = C(1) + C(2)\*USD(-1) + C(3)\*USD(-4) + C(4)\*USD(-7) + C(5)\*USD(-8) + C(6)\*USD(-10)

Forecast

1. 在參考樣本內的樣本不能選全部(會導致沒有可以對照的樣本，模型預測效果太好)

Graph





Mean abs. percent error => 預測後的誤差比沒預測的少(多)出百分之幾

觀察誤差項的組成

Bias proportion + Variance proportion + Covariance proportion = 100%