# ANALISIS RISIKO
# INVESTASI SAHAM SYARI'AH
# DENGAN MODEL *VALUE AT RISK-THRESHOLD AUTOREGRESSIVE CONDITIONAL HETEROCEDASTICITY* (VaR-TARCH)

**(Studi Kasus: Indeks Harga Saham JII Periode 4 Maret 2013 Sampai 27 Februari 2015)**

Skripsi
untuk memenuhi sebagian persyaratan mencapai derajat Sarjana S-1
Program Studi Matematika


Disusun oleh

**TAUFAN WAHYUDI**

**11610015**

**PROGRAM STUDI MATEMATIKA**
**FAKULTAS SAINS DAN TEKNOLOGI**
**UIN SUNAN KALIJAGA**
**YOGYAKARTA**


**2015**

# SURAT PERSETUJUAN SKRIPSI/TUGAS AKHIR

Hal :
Lamp :

Kepada
Yth. Dekan Fakultas Sains dan Teknologi
UIN Sunan Kalijaga Yogyakarta
di Yogyakarta

*Assalamu'alaikum wr. wb.*

Setelah membaca, meneliti, memberikan petunjuk dan mengoreksi serta mengadakan perbaikan seperlunya, maka kami selaku pembimbing berpendapat bahwa skripsi Saudara:

Nama : Taufan Wahyudi
NIM : 11610015
Judul Skripsi : Analisis Risiko Investasi Saham Syari'ah dengan Model *Value at Rsk – Threshold Autoregressive Conditional Heterocedastidity* (VaR-TARCH) (Studi kasus : Indeks Saham JII periode 4 Maret 2013 sampai 27 Februari 2015)

sudah dapat diajukan kembali kepada Program Studi Matematika Fakultas Sains dan Teknologi UIN Sunan Kalijaga Yogyakarta sebagai salah satu syarat untuk memperoleh gelar Sarjana Strata Satu dalam bidang Matematika

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Yogyakarta, 11 Mei 2015
Pembimbing

M. Farhan Qudratullah, M.Sc
NIP. 19790922 200801 1 011

Universitas Islam Negeri Sunan Kalijaga FM-UINSK-BM-05-07/R0

**PENGESAHAN SKRIPSI/TUGAS AKHIR**

Nomor : UIN.02/D.ST/PP.01.1/1712/2015

Skripsi/Tugas Akhir dengan judul : Risiko Investasi Saham Syari'ah dengan Model *Value at Risk - Threshold Autoregressive Conditional Heterocedasticity* (VaR - TARCH) (Studi Kasus : Indeks Saham JII Periode 4 Maret 2013 sampai 27 Februari 2015)

Yang dipersiapkan dan disusun oleh :
Nama : Taufan Wahyudi
NIM : 11610015
Telah dimunaqasyahkan pada : 8 Juni 2015
Nilai Munaqasyah : A
Dan dinyatakan telah diterima oleh Fakultas Sains dan Teknologi UIN Sunan Kalijaga

**TIM MUNAQASYAH :**

Ketua Sidang

Moh. Farhan Qudratullah, M.Si
NIP. 19790922 200801 1 011

Penguji I

Palupi Sri Wijayanti, M.Pd

Penguji II

Much. Abrori, S.Si., M.Kom
NIP.19720423 199903 1 003

Yogyakarta, 17 Juni 2015
UIN Sunan Kalijaga
Fakultas Sains dan Teknologi
Dekan

Dr. Maizer Said Nahdi, M.Si
NIP. 19550427 198403 2 001

## SURAT PERNYATAAN KEASLIAN SKRIPSI

Yang bertanda tangan dibawah ini saya:

Nama : Taufan Wahyudi

NIM : 11610015

Prodi / Smt : Matematika / VIII

Fakultas : Sains dan Teknologi

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Yogyakarta, 11 Mei 2015

Yang menyatakan


Taufan Wahyudi

NIM. 11610015

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Karya kecil ini kupersembahkan untuk

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UIN Sunan Kalijaga

# MOTTO

**Hidup Adalah Suatu Pilihan,**

**dan Setiap Pilihan Pasti Ada Risiko**

*******

**"Membaca menjadikan seseorang berisi,**

**Berunding menjadikan seseorang siap,**

**Menulis menjadikan seseorang seksama" (Bacon)**

*******

**Sesungguhnya waktu adalah hidup, dan hidup sendiri adalah menjalani waktu. Sejauh mana Anda menghargai waktu, berarti sejauh itulah Anda menghargai hidup Anda**

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Taufan Wahyudi
NIM. 11610015

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## DAFTAR LAMBANG

$R_t$ : *log return* pada periode t

$r_t$ : *simple net return* pada periode t

$P_t$ : nilai *asset* pada periode t

$P_{t-1}$ : nilai *asset* pada periode t-1

$\hat{\phi}$ : estimasi kuadrat terkecil

$SE(\hat{\phi})$ : estimasi standar *error*

$s_{x_t}$ : deviasi standar $X_t$

$r_k$ : koefisien autokorelasi sampai *lag* k

n : jumlah data

$X_t$ : nilai *X* orde t

$\bar{X}$ : nilai rata-rata

$Y_t$ : deret waktu stasioner

$\phi$ : koefisien parameter *Autoregressive*

$\theta$ : koefisien parameter *Moving Average*

$\varepsilon_{t-1}$ : *error* residual

$\sigma_{t-1}$ : variansi *error*

$d_{t-m}$ : variabel *dummy*

$\alpha_0$ : konstanta model TARCH (p,q)

$\alpha$ : parameter model TARCH (p,q)

$\beta$ : parameter model TARCH (p,q)

$\gamma$ : parameter model TARCH (p,q)

$P_0$ : nilai investasi awal

$\psi_k$ : kovariansi pada *lag* k

# ABSTRAK


**ANALISIS RISIKO**
**INVESTASI SAHAM SYARI'AH**
**DENGAN MODEL *VALUE AT RISK-THRESHOLD***
***AUTOREGRESSIVE CONDITIONAL HETEROCEDASTICITY***
***(VaR-TARCH)***
**(Studi Kasus : Indeks Harga Saham *Jakarta Islamic Index* (JII) Periode 4 Maret 2013 sampai 27 Februari 2015)**

**Oleh :**

**Taufan Wahyudi**
**11610015**

Kegiatan dalam berinvestasi perlu memperhatikan besar risiko yang akan diperoleh pada waktu yang akan datang. Karena dengan mengetahui besar risikonya maka bisa untuk bahan pertimbangan dalam membeli suatu saham. Dalam menghitung risiko diperlukan nilai volatilitas suatu saham, dengan cara didekati dengan nilai standar deviasi. Permasalahannya adalah setiap hari perubahan volatilitas saham tidak *konstan* serta data saham tidak simetris (asimetris). Oleh karena itu, diperlukan alat yang dapat memprediksi nilai volatilitas. Dalam ilmu statistika, alat untuk memprediksi nilai volatilitas yaitu dengan pemodelan peramalan. Salah satu alat dalam peramalan adalah model TARCH (p,q). Kemudian pemodelan TARCH (p,q) tersebut dikombinasikan dengan model VaR untuk memprediksi besar risiko. Penelitian ini menggunakan data indeks harga saham harian *Jakarta Islamic Index* (JII) periode 4 Maret 2013 sampai 27 Februari 2015.

Penelitian ini membahas tentang analisis risiko saham dengan model VaR-TARCH (p,q) pada indeks saham JII. Langkah-langkah pada analisis risiko dengan model VaR-TARCH (p,q) ini adalah 1) Menguji kestasioneran data; 2) Identifikasi model ARIMA (p,d,q); 3) Mengestimasi model ARIMA (p,d,q); 4) Menguji diagnosa model ARIMA (p,d,q). 5) Menguji efek ARCH. 6) Identifikasi model GARCH (p,q); 7) Mengestimasi model GARCH (p,q); 8) Menguji diagnosa model GARCH (p,q); 9) Identifikasi volatilitas data; 10) Mengidentifikasi model TARCH (p,q); 11) Mengestimasi model TARCH (p,q); 12) Mendiagnosa model TARCH (p,q); 13) Menghitung VaR-TARCH (p,q); 14) Menguji Validitas model VaR-TARCH (p,q).

Hasil penelitian ini menunjukan bahwa model TARCH (3,0,0) dengan *threshold* 1 adalah model terbaik untuk memodelkan volatilitas. Perhitungan VaR-TARCH (3,0,0) *threshold* 1 diperoleh bahwa jika dimisalkan dana investasi awal Rp.10.000.000,00, model valid untuk meramalkan risiko 1 hari kedepan dan 6 hari kedepan dengan besar risiko berturut-turut Rp.260.093,00 dan Rp. 637.096,00.



**Kata kunci** : Asimetris, *Heterokedasticity*, *Jakarta Islamic Index* (JII), *Return*, Risiko, TARCH (p,q), *Value at Risk* (VaR), Volatilitas.

# BAB I

# PENDAHULUAN

## 1.1. Latar Belakang Masalah

Investasi adalah kegiatan mengalokasikan atau menanamkan sumber daya sekarang, dengan harapan mendapatkan manfaat di kemudian hari (masa datang). Secara umum investasi dibagi menjadi 2 (dua), yaitu investasi sektor *real* dan investasi sektor *financial*. Investasi sektor real adalah investasi pada *asset* atau faktor produksi untuk melakukan usaha, misalnya investasi perkebunan, perikanan dan jenis usaha lainnya. Investasi sektor *financial* adalah investasi bukan pada *asset* atau faktor produksi, tetapi pada *asset* keuangan, misalnya deposito, saham, obligasi, reksadana dan sebagainya (Fahmi dan Lavianti Hadi, 2011: 7).

Bentuk investasi sektor *financial* yang baru-baru ini *trend* adalah investasi saham di pasar modal. Di Indonesia, PT. Bursa Efek Jakarta (BEJ) telah menerbitkan daftar reksadana, saham, dan obligasi syariah dalam *Jakarta Islamic Index* (JII). *Jakarta Islamic Index* (JII) merupakan indek saham yang berisi 30 saham perusahaan yang memenuhi kriteria investasi berdasarkan investasi syariah. Sejak saat itu perkembangan pasar modal syariah cukup signifikan.

Saham syariah merupakan deretan observasi variabel random yang dapat dinyatakan sebagai data runtun waktu. Data runtun waktu mempunyai dua sifat penting yaitu adanya heterokesdasitias dan pengelompokan volatilitas. Heterokesdastisitas adalah perubahan variansi dari eror yang terjadi setiap waktu sedangkan volatilitas didefinisikan sebagai sekumpulan sejumlah eror dengan

besar yang *relative* sama dalam beberapa waktu yang berdekatan (Hestiningtyas dan Sulandri, 2009).

Analisis *time series* atau runtun waktu dapat diklasifikasikan menjadi dua yaitu: model univariat dan model multivariat. Model univariat hanya mengamati satu variabel runtun waktu, sedangkan model multivariat lebih dari satu variabel runtun waktu. Model *time series* yang paling populer dan banyak digunakan dalam peramalan data *time serie*s univariat adalah model *Autoregressive Integrated Moving Average* atau dikenal dengan model ARIMA (p,d,q) (Makridakis,1998: 381).

Praktek pemodelan ARIMA pada suatu data ekonomi seringkali memberikan residual dengan variansi yang tidak *konstan* (*heterogen*) atau heterokedastisitas, Engle (1982) memperkenalkan model *Autoregressive Conditional Heteroscedasticity* (ARCH) untuk memodelkan inflasi di Inggris yang mengandung variansi yang tidak *konstan*. Kemudian model ARCH disempurnakan menjadi *Generalized Autoregressive Conditional Heteroscedasticity* (GARCH) oleh Bolerslev (1986). Kedua model ini memiliki karakteristik respons volatilitas yang simetris terhadap goncangan, baik goncangan positif (*good news*) maupun negatif (*bad news*). Akan tetapi pada prakteknya asumsi tersebut sering dilanggar, tidak semua data runtun waktu mempunyai pergerakan volatilitas yang simetris. Terutama untuk data *finansial* cenderung memiliki sifat volatilitas yang asimetris, yakni pergerakan volatilitas yang berbeda terhadap kenaikan atau penurunan harga suatu *asset* (Ariefianto,2012:102).

Terdapat model yang dapat digunakan untuk mengatasi masalah asimetris, salah satunya yaitu model *Threshold Autoregressive Conditional Heteroskedastic* (TARCH). Model ini diperkenalkan oleh Zakoian pada tahun 1990. Model TARCH ini mempunyai kelebihan mengukur volatilitas harga saham dengan ada perbedaan efek *good news* dan *bad news* (Widarjono, 2013: 298-299).

Selain *return*, pengukuran risiko merupakan hal yang sangat penting. Guna untuk mengetahui risiko jika berinvestasi. Salah satu alat yang dapat digunakan untuk mengestimasi risiko adalah *Value at Risk* (VaR). Sehingga dari latar belakang di atas maka peneliti mengambil judul tentang **"Analisis Risiko Investasi Saham Syari'ah dengan Model *Value at Risk-Threshold Autoregressive Conditional Heterokedasticity* (VaR-TARCH)".**

## 1.2. Batasan Masalah

Pembatasan masalah perlu dilakukan dengan tujuan agar pokok permasalahan yang diteliti tidak terlalu melebar dari yang sudah ditentukan. Peneliti dalam hal ini membatasi masalah sebagai berikut :

1. Estimasi parameter menggunakan metode *Maximum Likelihood*.
2. Menggunakan bantuan *software* E-Views 5, Matlab, Ms. Excel.

## 1.3. Rumusan Masalah

Berdasarkan latar belakang yang telah diuraikan, maka masalah yang akan dikaji pada penelitian ini adalah

1. Bagaimana langkah-langkah analisis risiko investasi dengan menggunakan VaR-TARCH?

2. Bagaimana bentuk model terbaik VaR-TARCH untuk mengukur besar risiko investasi pada indeks harga saham *Jakarta Islamic Index* (JII) periode 4 Maret 2013 sampai 27 Februari 2015?
3. Berapa besar risiko investasi pada indeks harga saham *Jakarta Islamic Index* (JII) periode 4 Maret 2013 sampai 27 Februari 2015?

## 1.4. Tujuan Penelitian

Berdasarkan rumusan masalah diatas, maka tujuan dari penelitian ini adalah:

1. Untuk mengetahui langkah-langkah analisis risiko pada indeks harga saham JII dengan menggunakan model VaR-TARCH.
2. Untuk mengetahui model terbaik VaR-TARCH dalam mengukur besar risiko investasi pada indeks harga saham JII periode 4 Maret 2013 sampai 27 Februari 2015.
3. Untuk mengetahui besar risiko investasi pada indeks harga saham JII periode 4 Maret 2013 sampai 27 Februari 2015 dengan menggunakan model VaR-TARCH.

## 1.5. Manfaat Penelitian

Manfaat penelitian ini ada dua yaitu manfaat bagi investor dan manfaat bagi peneliti, lebih jelasnya seperti dibawah ini:

1. Bagi investor

   Hasil dari penelitian ini diharapkan dapat dijadikan masukan terhadap investor dalam mengambil keputusan investasi dalam saham-saham JII di pasar modal.

2. Bagi peneliti

Menambah pengetahuan mengenai analisis risiko saham dengan VaR-TARCH.

## 1.6. Tinjauan Pustaka

Tinjauan pustaka yang digunakan oleh peneliti adalah beberapa penelitian sebelumnya yang relevan dengan tema yang diambil peneliti, antara lain disajikan pada tabel berikut:

**Tabel 1.1**: Kajian Pustaka

| No | Nama Peneliti | Judul Penelitian | Model | Objek |
|---|---|---|---|---|
| **1.** | Vivi Arumavani | Model *Threshold* GARCH Pada Nilai Tukar Dolar Australia Terhadap Rupiah | TGARCH | Kurs |
| **2.** | Retno Hestiningtyas | Perbandingan Ramalan Model TARCH dan EGARCH pada Nilai Tukar Kurs Uero Terhadap Rupiah | TARCH dan EGARCH | Kurs |
| **3.** | Nurhasanah | Penerapan Model *Exponensial Generalized Autoregressive Conditional Heterocedasticity* (EGARCH) pada Analisis Resiko dengan Value at Rsk (VaR). | VaR-EGARCH | Saham JII |

Terdapat kesamaan dan perbedaan antara tiga penelitian di atas dengan penelitian yang sekarang, baik dari segi objek yang diteliti maupun model yang digunakan. Pada penelitian yang dilakukan oleh Vivi Arumavani, objek yang diteliti berbeda, model yang digunakan sama yaitu model TGARCH, akan tetapi digunakan untuk peramalan bukan mencari besar risiko. Pada penelitian Retno Hestiningtyas, objek yang diteliti berbeda dan membandingkan dua model yaitu TARCH dan EGARCH. Sedangkan penelitian yang dilakukan oleh Nurkhasanah, objek yang diteliti adalah dari sumber yang sama yaitu indeks harga saham JII, tetapi model yang digunakan berbeda yaitu VaR-EGARCH.

### 1.7. Sistematika Penulisan

Secara garis besar gambaran mengenai analisis risiko dengan model VaR-TARCH pada skripsi ini terdiri dari:

BAB I : PENDAHULUAN

Berisi latar belakang masalah, batasan masalah, rumusan masalah, tujuan penelitian, manfaat penelitian, tinjauan pustaka, dan sistematika penulisan.

BAB II : LANDASAN TEORI

Berisi tentang teori penunjang yang digunakan dalam pembahasan yaitu analisis risiko investasi dengan VaR- TARCH.

BAB III : METODE PENELITIAN

Berisi tentang penjelasan mengenai proses pelaksanaan penelitian ini, mulai jenis dan sumber data, metode pengumpulan data, variabel penelitian, metodologi penelitian, metode analisis data, dan alat pengolahan data.

BAB IV : PEMBAHASAN

Berisi tentang pembahasan mengenai model analisis resiko investasi dengan VaR-TARCH.

BAB V : STUDI KASUS

Berisi tentang penerapan dan aplikasi analisis risiko investasi dengan VaR-TARCH pada data indeks saham syariah JII dan memberikan intepretasi terhadap hasil yang diperoleh.

BAB VI : KESIMPULAN DAN SARAN

Berisi tentang kesimpulan yang diambil dari pembahasan permasalahan dan pemecahan masalah yang ada dan saran-saran yang berkaitan dengan penelitian sejenis untuk penelitian berikutnya.

# BAB VI

# PENUTUP

## 6.1. Kesimpulan

Berdasarkan pada pembahasan mengenai analisis risiko saham syari'ah dengan model *Value at Risk–Threshold Autoregressive Conditional Heterocedasticity* (VaR-TARCH) pada *return* indeks saham harian *Jakarta Islamic Index* (JII) dapat diambil kesimpulan sebagai berikut:

1. Ada beberapa langkah dalam melakukan analisis risiko investasi saham dengan model VaR-TARCH yaitu sebagai berikut:
   a. Mengumpulkan data indeks saham JII
   b. Menentukan nilai *return* indeks saham JII
   c. Statistik diskriptif
   d. Menguji kestasioneran data
   e. Menguji kenormalan data, karena data tidak normal maka nilai α yang digunakan dikoreksi menggunakan *Cornish fisher Expansion*
   f. Menentukan model *mean* (ARIMA)
   g. Menguji ada tidak efek ARCH
   h. Menentukan model GARCH (p,q)
   i. Identifikasi volatolitas
   j. Menentukan model TARCH (p,q)
   k. Menghitung VaR-TARCH (p,q)

l. Menguji validitas VaR-TARCH (p,q)

2. Berdasarkan pemeriksaan diagnosa model, diperoleh model terbaik yaitu model TARCH (0,3) dengan *threshold* 1, model tersebut cukup baik untuk digunakan karena nilai probabilitas parameter–parameter model TARCH (0,3) dengan *threshold* 1 yang kurang dari 0,05 dan memenuhi asumsi model klasik. Jadi persamaan model TARCH (0,3) dengan *threshold* 1 sebagai berikut:

   a. Persamaan ARIMA (3,0,0) :

   $$Y_t = -0.128433 Y_{t-3}$$

   b. Persamaan TARCH (0,3) dengan *threshold* 1 :

   $$\sigma_t^2 = 0.0000434 + 0.156233\varepsilon_{t-1}^2 d_{t-1} + 1.227601\sigma_{t-1}^2 - 1.192077\sigma_{t-2}^2 + 0.866248\sigma_{t-3}^2$$

3. Pengukuran besar risiko investasi dengan menggunakan VaR-TARCH (0,3) dengan *threshold* 1, dengan nilai investasi awal diasumsikan sebesar Rp. 10.000.000,- menghasilkan besar nilai risiko untuk indeks harga saham harian JII dengan tingkat kepercayaan 95% sebagai berikut:

   a. Dalam periode waktu 1 hari kedepan sebesar Rp. 260.093,00

   b. Dalam periode waktu 6 hari kedepan sebesar Rp. 637.096,00

## 6.2. Saran

Adapun saran-saran yang dapat peneliti sampaikan antara lain adalah:

1. Berdasarkan hasil penelitian ini, disarankan bagi investor yang akan berinvestasi untuk mengukur risiko harga saham dengan

*Value at Risk* terlebih dahulu, sehingga dapat meminimalisir terjadi risiko.

2. Untuk penelitian selanjutnya dapat dilakukan dengan model lain seperti GARCH-M, VGARCH, IGARCH, APARCH atau membandingkan dua metode dalam menentukan VaR.

Demikian saran dari peneliti semoga dapat menjadi masukan para peneliti selanjutnya khususnya bidang statistik.

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**LAMPIRAN 1** : Data *return i*ndeks saham JII

| Date | Open | Residual | Close | Return |
|---|---|---|---|---|
| 3/4/2013 | 652.28 | 0.0027672 | 646.86 | 0 |
| 3/5/2013 | 647.03 | 0.0164573 | 648.65 | 0.00276721 |
| 3/6/2013 | 651.66 | -0.016441 | 661.12 | 0.01922454 |
| 3/7/2013 | 660.63 | 0.005513 | 662.96 | 0.00278316 |
| 3/8/2013 | 664.47 | -0.020488 | 668.46 | 0.00829613 |
| 3/11/2013 | 668.85 | 0.005983 | 660.31 | -0.0121922 |
| 3/13/2013 | 660.58 | -0.010295 | 656.21 | -0.0062092 |
| 3/14/2013 | 655.01 | 0.0215552 | 645.38 | -0.0165039 |
| 3/15/2013 | 649.39 | -0.001428 | 648.64 | 0.00505129 |
| 3/18/2013 | 648.02 | -0.005113 | 650.99 | 0.00362297 |
| 3/19/2013 | 653.12 | -0.00451 | 650.02 | -0.0014900 |
| 3/21/2013 | 651.12 | -0.018005 | 646.12 | -0.0059998 |
| 3/22/2013 | 644.63 | 0.0545625 | 630.61 | -0.0240048 |
| 3/26/2013 | 641.8 | -0.014478 | 649.88 | 0.03055771 |
| 3/27/2013 | 652.69 | -0.016065 | 660.33 | 0.01607989 |
| 3/28/2013 | 658.38 | -0.003483 | 660.34 | 0.0000151 |
| 4/1/2013 | 658.56 | 0.0096984 | 658.05 | -0.0034679 |
| 4/2/2013 | 657.77 | 0.0052925 | 662.15 | 0.00623053 |
| 4/3/2013 | 663.65 | -0.02711 | 669.78 | 0.01152307 |
| 4/4/2013 | 666.49 | 0.0113405 | 659.34 | -0.0155872 |
| 4/5/2013 | 660.8 | 0.0023732 | 656.54 | -0.0042467 |
| 4/8/2013 | 657.01 | 0.0043761 | 655.31 | -0.0018735 |
| 4/9/2013 | 657.11 | -0.007937 | 656.95 | 0.00250263 |
| 4/10/2013 | 658.32 | 0.0157039 | 653.38 | -0.0054342 |
| 4/11/2013 | 655.06 | -0.009346 | 660.09 | 0.01026968 |
| 4/12/2013 | 659.82 | -0.008446 | 660.7 | 0.00092412 |
| 4/15/2013 | 658.54 | 0.0260665 | 655.73 | -0.0075223 |
| 4/16/2013 | 652.55 | -0.010893 | 667.89 | 0.01854422 |
| 4/17/2013 | 668.91 | -0.006135 | 673 | 0.00765096 |
| 4/18/2013 | 669.8 | -0.003934 | 674.02 | 0.0015156 |
| 4/19/2013 | 670.96 | 0.0053779 | 672.39 | -0.0024183 |
| 4/22/2013 | 674.88 | -0.004279 | 674.38 | 0.00295959 |
| 4/23/2013 | 675.76 | 0.0094267 | 673.49 | -0.0013197 |

| Date | Open | Residual | Close | Return |
|---|---|---|---|---|
| 4/24/2013 | 677.14 | -0.018564 | 678.95 | 0.00810703 |
| 4/25/2013 | 676.95 | -0.000274 | 671.85 | -0.0104573 |
| 4/26/2013 | 669.89 | 0.0202104 | 664.64 | -0.0107316 |
| 4/29/2013 | 666.14 | 0.0082724 | 670.94 | 0.00947882 |
| 5/1/2013 | 678.79 | -0.029306 | 682.85 | 0.01775122 |
| 5/2/2013 | 679.84 | -0.002595 | 674.96 | -0.0115545 |
| 5/3/2013 | 674.11 | 0.0263821 | 665.41 | -0.0141490 |
| 5/6/2013 | 666.2 | -0.007052 | 673.55 | 0.01223306 |
| 5/7/2013 | 671.1 | 0.0046111 | 677.04 | 0.0051815 |
| 5/8/2013 | 677.47 | -0.008081 | 683.67 | 0.00979263 |
| 5/10/2013 | 683.1 | -0.009772 | 684.84 | 0.00171135 |
| 5/13/2013 | 684.2 | 0.0123146 | 679.32 | -0.0080603 |
| 5/14/2013 | 678.02 | -0.004987 | 682.21 | 0.00425425 |
| 5/15/2013 | 682.21 | 0.0004102 | 681.71 | -0.0007329 |
| 5/16/2013 | 682.96 | 0.0224654 | 681.49 | -0.0003227 |
| 5/17/2013 | 681.25 | -0.012467 | 696.58 | 0.02214266 |
| 5/21/2013 | 710.63 | -0.00288 | 703.32 | 0.00967585 |
| 5/22/2013 | 702.87 | -0.025593 | 708.1 | 0.00679634 |
| 5/23/2013 | 704.76 | 0.0280946 | 694.79 | -0.0187968 |
| 5/24/2013 | 698.51 | -0.031972 | 701.25 | 0.00929777 |
| 5/27/2013 | 697.45 | 0.0527606 | 685.35 | -0.0226738 |
| 5/29/2013 | 704.87 | -0.052708 | 705.97 | 0.03008682 |
| 5/30/2013 | 700.14 | 0.0031721 | 690 | -0.0226214 |
| 5/31/2013 | 691.9 | 0.0032649 | 676.58 | -0.0194493 |
| 6/3/2013 | 672.56 | 0.0337917 | 665.63 | -0.0161843 |
| 6/4/2013 | 666.08 | -0.021963 | 677.35 | 0.01760738 |
| 6/5/2013 | 673.18 | -0.035858 | 674.4 | -0.0043552 |
| 6/7/2013 | 670.42 | 0.0201449 | 647.28 | -0.0402135 |
| 6/10/2013 | 654.82 | -0.019992 | 634.29 | -0.0200686 |
| 6/11/2013 | 636.32 | 0.0831232 | 608.88 | -0.0400605 |
| 6/12/2013 | 604.26 | -0.06909 | 635.1 | 0.04306267 |
| 6/13/2013 | 622.39 | 0.0610275 | 618.57 | -0.0260274 |
| 6/14/2013 | 624.16 | -0.030986 | 640.22 | 0.03500008 |
| 6/17/2013 | 638.93 | 0.0061913 | 642.79 | 0.00401425 |

| Date | Open | Residual | Close | Return |
|---|---|---|---|---|
| 6/18/2013 | 646.91 | -0.020878 | 649.35 | 0.01020551 |
| 6/19/2013 | 650.52 | -0.026733 | 642.42 | -0.0106722 |
| 6/20/2013 | 630.79 | 0.002282 | 618.39 | -0.0374054 |
| 6/21/2013 | 600.75 | 0.0128834 | 596.67 | -0.0351234 |
| 6/25/2013 | 591.72 | 0.1094358 | 583.4 | -0.0222401 |
| 6/27/2013 | 629.65 | -0.046377 | 634.27 | 0.08719575 |
| 6/28/2013 | 643.57 | -0.05886 | 660.16 | 0.04081858 |
| 7/1/2013 | 641.63 | 0.0068108 | 648.25 | -0.0180410 |
| 7/2/2013 | 654.55 | -0.023639 | 640.97 | -0.0112302 |
| 7/3/2013 | 637.91 | 0.0357581 | 618.62 | -0.0348690 |
| 7/4/2013 | 623.32 | 0.0110301 | 619.17 | 0.00088908 |
| 7/5/2013 | 627.52 | -0.052347 | 626.55 | 0.01191918 |
| 7/8/2013 | 621.36 | 0.034573 | 601.22 | -0.0404277 |
| 7/9/2013 | 606 | 0.0332598 | 597.7 | -0.0058547 |
| 7/10/2013 | 600.57 | 0.0034541 | 614.08 | 0.02740505 |
| 7/11/2013 | 617.95 | -0.024635 | 633.03 | 0.03085917 |
| 7/12/2013 | 633.41 | -0.005078 | 636.97 | 0.00622403 |
| 7/15/2013 | 637.37 | -0.001444 | 637.7 | 0.00114605 |
| 7/16/2013 | 636.32 | 0.0072312 | 637.51 | -0.0002979 |
| 7/17/2013 | 639.27 | 0.0004196 | 641.93 | 0.00693323 |
| 7/19/2013 | 643.61 | -0.022276 | 646.65 | 0.00735283 |
| 7/22/2013 | 648.87 | 0.0384082 | 637 | -0.0149230 |
| 7/23/2013 | 640.56 | -0.038133 | 651.96 | 0.02348509 |
| 7/24/2013 | 648.49 | 0.0033936 | 642.41 | -0.0146481 |
| 7/25/2013 | 643.77 | 0.0030206 | 635.18 | -0.0112545 |
| 7/26/2013 | 636.51 | 0.0037573 | 629.95 | -0.0082338 |
| 7/30/2013 | 622.93 | -0.000913 | 627.13 | -0.0044765 |
| 7/31/2013 | 629.36 | 0.0169007 | 623.75 | -0.0053896 |
| 8/1/2013 | 627.81 | -0.012731 | 630.93 | 0.01151102 |
| 8/2/2013 | 634.68 | -0.010221 | 630.16 | -0.0012204 |
| 8/12/2013 | 629.41 | 0.0281845 | 622.95 | -0.0114415 |
| 8/13/2013 | 625.09 | -0.006307 | 633.38 | 0.01674292 |
| 8/14/2013 | 634.99 | -0.018905 | 639.99 | 0.01043607 |
| 8/15/2013 | 634.31 | -0.014917 | 634.57 | -0.0084688 |

| Date | Open | Residual | Close | Return |
|---|---|---|---|---|
| 8/16/2013 | 628.34 | -0.040513 | 619.73 | -0.0233859 |
| 8/19/2013 | 611.45 | 0.031544 | 580.13 | -0.0638988 |
| 8/20/2013 | 567.61 | 0.0524311 | 561.36 | -0.0323548 |
| 8/21/2013 | 564.07 | -0.021386 | 572.63 | 0.02007624 |
| 8/22/2013 | 561.48 | 0.0025688 | 571.88 | -0.0013097 |
| 8/23/2013 | 575.49 | -0.018025 | 572.6 | 0.00125901 |
| 8/26/2013 | 574.79 | -0.022257 | 563 | -0.0167656 |
| 8/27/2013 | 559.41 | 0.059521 | 541.03 | -0.0390230 |
| 8/28/2013 | 528.27 | 0.0099302 | 552.12 | 0.02049794 |
| 8/29/2013 | 555.99 | 0.0101399 | 568.92 | 0.03042817 |
| 8/30/2013 | 568.19 | -0.069977 | 592 | 0.04056809 |
| 9/2/2013 | 591.35 | 0.0475783 | 574.59 | -0.0294087 |
| 9/3/2013 | 576.54 | -0.046647 | 585.03 | 0.01816948 |
| 9/4/2013 | 579.79 | 0.0183429 | 568.37 | -0.0284771 |
| 9/5/2013 | 571.1 | 0.0220253 | 562.61 | -0.0101342 |
| 9/6/2013 | 564.89 | 0.0198673 | 569.3 | 0.01189101 |
| 9/9/2013 | 575.94 | 0.0085393 | 587.38 | 0.0317583 |
| 9/10/2013 | 593.74 | -0.04884 | 611.05 | 0.04029759 |
| 9/11/2013 | 615.06 | 0.000108 | 605.83 | -0.0085426 |
| 9/12/2013 | 601.65 | 0.0083015 | 600.72 | -0.0084347 |
| 9/13/2013 | 597.68 | 0.0441196 | 600.64 | -0.0001331 |
| 9/16/2013 | 606.81 | -0.045709 | 627.06 | 0.04398641 |
| 9/17/2013 | 625.05 | -0.010706 | 625.98 | -0.0017223 |
| 9/18/2013 | 623.64 | 0.0637388 | 618.2 | -0.0124285 |
| 9/19/2013 | 638.97 | -0.072867 | 649.92 | 0.05131026 |
| 9/20/2013 | 646.67 | 0.0174993 | 635.91 | -0.0215565 |
| 9/23/2013 | 626.1 | -0.02719 | 633.33 | -0.0040571 |
| 9/24/2013 | 628.95 | 0.0143782 | 613.54 | -0.0312475 |
| 9/25/2013 | 599.21 | 0.015228 | 603.19 | -0.0168693 |
| 9/26/2013 | 602.62 | 0.0085991 | 602.2 | -0.0016412 |
| 9/27/2013 | 607.58 | -0.041259 | 606.39 | 0.00695782 |
| 9/30/2013 | 599.35 | 0.0470919 | 585.59 | -0.0343013 |
| 10/1/2013 | 586.7 | -6.04E-05 | 593.08 | 0.01279052 |
| 10/2/2013 | 597.68 | -0.004555 | 600.63 | 0.01273015 |

| Date | Open | Residual | Close | Return |
|---|---|---|---|---|
| 10/3/2013 | 602.58 | -0.016498 | 605.54 | 0.00817475 |
| 10/4/2013 | 604.21 | 0.006075 | 600.5 | -0.0083231 |
| 10/7/2013 | 600.66 | 0.0145322 | 599.15 | -0.0022481 |
| 10/8/2013 | 594.86 | -0.00066 | 606.51 | 0.01228407 |
| 10/9/2013 | 605.98 | -0.004322 | 613.56 | 0.01162388 |
| 10/10/2013 | 619.46 | 0.0087815 | 618.04 | 0.00730165 |
| 10/11/2013 | 626.31 | -0.025526 | 627.98 | 0.0160831 |
| 10/16/2013 | 627.64 | 0.0180757 | 622.05 | -0.0094429 |
| 10/17/2013 | 630.04 | 0.0017271 | 627.42 | 0.00863275 |
| 10/18/2013 | 627.33 | -0.003072 | 633.92 | 0.01035989 |
| 10/21/2013 | 636.54 | -0.031296 | 638.54 | 0.00728799 |
| 10/22/2013 | 632.3 | 0.0301856 | 623.21 | -0.0240078 |
| 10/23/2013 | 627.37 | 0.0021628 | 627.06 | 0.00617769 |
| 10/24/2013 | 624.1 | -0.016011 | 632.29 | 0.00834051 |
| 10/25/2013 | 629.28 | 0.0115753 | 627.44 | -0.0076705 |
| 10/28/2013 | 630.81 | -0.008763 | 629.89 | 0.00390476 |
| 10/29/2013 | 629.68 | 0.0073786 | 626.83 | -0.0048579 |
| 10/30/2013 | 626.98 | -0.02273 | 628.41 | 0.00252062 |
| 10/31/2013 | 618.83 | 0.0003952 | 615.71 | -0.0202097 |
| 11/1/2013 | 608.61 | 0.0204939 | 603.51 | -0.0198145 |
| 11/4/2013 | 602.55 | 0.0087093 | 603.92 | 0.00067936 |
| 11/6/2013 | 602.73 | 0.0013071 | 609.59 | 0.00938866 |
| 11/7/2013 | 610.83 | -0.011475 | 616.11 | 0.01069571 |
| 11/8/2013 | 611.68 | -0.007554 | 615.63 | -0.0007790 |
| 11/11/2013 | 613.42 | -0.001413 | 610.5 | -0.0083329 |
| 11/12/2013 | 612.73 | -0.012783 | 604.55 | -0.0097461 |
| 11/13/2013 | 600.44 | 0.0368625 | 590.93 | -0.0225291 |
| 11/14/2013 | 595.37 | -0.028798 | 599.4 | 0.01433334 |
| 11/15/2013 | 602.69 | 0.0396198 | 590.73 | -0.0144644 |
| 11/18/2013 | 595.74 | -0.020763 | 605.59 | 0.02515532 |
| 11/19/2013 | 605.15 | -0.021721 | 608.25 | 0.00439241 |
| 11/20/2013 | 610.46 | 0.0130119 | 597.71 | -0.0173284 |
| 11/21/2013 | 594.04 | 0.0005526 | 595.13 | -0.0043164 |
| 11/22/2013 | 600.02 | 0.0034772 | 592.89 | -0.0037638 |
| 11/25/2013 | 592.58 | -0.032022 | 592.72 | -0.0002867 |

| Date | Open | Residual | Close | Return |
|---|---|---|---|---|
| 11/26/2013 | 591.63 | 0.0438679 | 573.57 | -0.0323086 |
| 11/27/2013 | 579.65 | -0.013783 | 580.2 | 0.01155918 |
| 11/28/2013 | 582.94 | 0.0038817 | 578.91 | -0.0022233 |
| 11/29/2013 | 575.35 | 0.0191222 | 579.87 | 0.00165829 |
| 12/2/2013 | 582.06 | -0.032961 | 591.92 | 0.02078052 |
| 12/3/2013 | 590.82 | -0.000338 | 584.71 | -0.0121807 |
| 12/4/2013 | 580.15 | 0.0064399 | 577.39 | -0.0125190 |
| 12/5/2013 | 576.64 | -0.002424 | 573.88 | -0.0060790 |
| 12/6/2013 | 570.63 | 0.02121 | 569 | -0.0085035 |
| 12/9/2013 | 574.02 | 0.0068864 | 576.23 | 0.0127065 |
| 12/10/2013 | 579.98 | -0.021993 | 587.52 | 0.01959287 |
| 12/11/2013 | 587.18 | -0.01543 | 586.11 | -0.0023999 |
| 12/12/2013 | 578.36 | 0.0047835 | 575.66 | -0.0178294 |
| 12/13/2013 | 577.12 | 2.117E-05 | 568.15 | -0.0130459 |
| 12/16/2013 | 564.7 | 0.02508 | 560.75 | -0.0130247 |
| 12/17/2013 | 565.42 | -0.003932 | 567.51 | 0.01205528 |
| 12/18/2013 | 570.3 | 0.0044616 | 572.12 | 0.00812321 |
| 12/19/2013 | 578.32 | -0.018661 | 579.32 | 0.01258477 |
| 12/20/2013 | 579.51 | 0.0005012 | 575.8 | -0.0060761 |
| 12/23/2013 | 576.86 | 0.0152677 | 572.59 | -0.0055748 |
| 12/24/2013 | 573.94 | -0.008828 | 578.14 | 0.0096928 |
| 12/27/2013 | 579.6 | 0.0103165 | 578.64 | 0.00086484 |
| 12/30/2013 | 584.34 | 0.0076869 | 585.11 | 0.01118139 |
| 1/2/2014 | 589.45 | -0.036498 | 596.15 | 0.01886825 |
| 1/3/2014 | 589.73 | 0.0078798 | 585.64 | -0.0176297 |
| 1/6/2014 | 588.11 | -0.003424 | 579.93 | -0.0097500 |
| 1/7/2014 | 580.22 | 0.0203732 | 572.29 | -0.013174 |
| 1/8/2014 | 573.87 | -0.010894 | 576.41 | 0.00719915 |
| 1/9/2014 | 576.17 | 0.0177999 | 574.28 | -0.0036952 |
| 1/10/2014 | 572.7 | 0.0192585 | 582.38 | 0.01410462 |
| 1/13/2014 | 589.55 | -0.01992 | 601.81 | 0.0333631 |
| 1/15/2014 | 603.1 | -0.018493 | 609.9 | 0.01344278 |
| 1/16/2014 | 612.87 | -0.001146 | 606.82 | -0.0050500 |
| 1/17/2014 | 605.48 | 0.0149184 | 603.06 | -0.0061962 |
| 1/20/2014 | 608.32 | -0.007424 | 608.32 | 0.00872218 |

| Date | Open | Residual | Close | Return |
|---|---|---|---|---|
| 1/21/2014 | 611.6 | 0.0074026 | 609.11 | 0.00129866 |
| 1/22/2014 | 607.33 | -0.00779 | 614.41 | 0.00870122 |
| 1/23/2014 | 616.21 | -0.018148 | 614.97 | 0.00091144 |
| 1/24/2014 | 610.78 | -0.016666 | 604.37 | -0.0172366 |
| 1/27/2014 | 589.78 | 0.0414217 | 583.88 | -0.0339030 |
| 1/28/2014 | 582.86 | 0.015039 | 588.27 | 0.00751867 |
| 1/29/2014 | 591.29 | -0.020347 | 601.54 | 0.02255767 |
| 1/30/2014 | 592.88 | -0.014237 | 602.87 | 0.00221099 |
| 2/3/2014 | 598.28 | -0.001624 | 595.62 | -0.0120258 |
| 2/4/2014 | 584.99 | 0.0255818 | 587.49 | -0.0136496 |
| 2/5/2014 | 592.87 | -0.000898 | 594.5 | 0.01193212 |
| 2/6/2014 | 595.68 | -0.00245 | 601.06 | 0.01103448 |
| 2/7/2014 | 604.05 | -0.013352 | 606.22 | 0.00858483 |
| 2/10/2014 | 610.28 | 0.007038 | 603.33 | -0.0047672 |
| 2/11/2014 | 602.26 | 0.0049725 | 604.7 | 0.00227073 |
| 2/12/2014 | 607.72 | -0.010297 | 609.08 | 0.00724326 |
| 2/13/2014 | 607.74 | 0.0059358 | 607.22 | -0.0030537 |
| 2/14/2014 | 609.62 | 0.0080217 | 608.97 | 0.00288199 |
| 2/17/2014 | 611.85 | -0.011732 | 615.61 | 0.01090366 |
| 2/18/2014 | 616.38 | 0.0116072 | 615.1 | -0.0008284 |
| 2/19/2014 | 615.82 | -0.010087 | 621.73 | 0.01077874 |
| 2/20/2014 | 619.53 | 0.0070395 | 622.16 | 0.00069162 |
| 2/21/2014 | 625.16 | -0.015754 | 626.97 | 0.00773113 |
| 2/24/2014 | 627.5 | -0.003972 | 621.94 | -0.0080227 |
| 2/25/2014 | 623.01 | -0.0017567 | 614.48 | -0.0119947 |
| 2/26/2014 | 610.65 | 0.0249885 | 606.03 | -0.0137514 |
| 2/27/2014 | 606.84 | 0.01164 | 612.84 | 0.01123707 |
| 2/28/2014 | 615.57 | -0.035448 | 626.86 | 0.0228771 |
| 3/3/2014 | 619.14 | 0.0142992 | 618.98 | -0.0125705 |
| 3/4/2014 | 618.2 | 0.0110929 | 620.05 | 0.00172865 |
| 3/5/2014 | 624.02 | -0.008044 | 628 | 0.01282155 |
| 3/6/2014 | 629.44 | -0.003604 | 631 | 0.00477707 |
| 3/7/2014 | 633.77 | 0.0006793 | 631.74 | 0.00117274 |
| 3/10/2014 | 626.81 | 0.0020032 | 632.91 | 0.00185203 |
| 3/11/2014 | 631.91 | -0.007286 | 635.35 | 0.00385521 |

| Date | Open | Residual | Close | Return |
|---|---|---|---|---|
| 3/12/2014 | 630.1 | 0.0162871 | 633.17 | -0.0034312 |
| 3/13/2014 | 635.18 | 0.0190007 | 641.31 | 0.01285595 |
| 3/14/2014 | 635.1 | -0.028653 | 661.74 | 0.03185667 |
| 3/17/2014 | 665.13 | -0.022093 | 663.86 | 0.00320368 |
| 3/18/2014 | 664.25 | 0.0252305 | 651.32 | -0.0188895 |
| 3/19/2014 | 653.84 | -0.038807 | 655.45 | 0.00634097 |
| 3/20/2014 | 652.72 | 0.0362192 | 634.17 | -0.0324662 |
| 3/21/2014 | 636.65 | -0.001805 | 636.55 | 0.00375294 |
| 3/24/2014 | 638 | -0.010336 | 637.79 | 0.001948 |
| 3/25/2014 | 633.66 | 0.0147763 | 632.44 | -0.0083883 |
| 3/26/2014 | 632.59 | -0.008682 | 636.48 | 0.00638796 |
| 3/27/2014 | 634.27 | 0.0107818 | 635.02 | -0.0022938 |
| 3/28/2014 | 636.84 | 0.0175579 | 640.41 | 0.00848792 |
| 4/1/2014 | 645.36 | -0.028816 | 657.09 | 0.02604581 |
| 4/2/2014 | 658.39 | 0.0077448 | 655.27 | -0.0027697 |
| 4/3/2014 | 657 | -0.012963 | 658.53 | 0.00497505 |
| 4/4/2014 | 659.07 | 0.0293416 | 653.27 | -0.0079874 |
| 4/7/2014 | 652.95 | -0.022403 | 667.22 | 0.02135411 |
| 4/8/2014 | 666.37 | 0.0010491 | 666.52 | -0.0010491 |
| 4/9/2014 | 666.37 | -0.035063 | 666.52 | 0 |
| 4/10/2014 | 652.72 | 0.0508133 | 643.15 | -0.0350627 |
| 4/11/2014 | 636.66 | -0.005908 | 653.28 | 0.0157506 |
| 4/14/2014 | 652.68 | -0.0097365 | 659.71 | 0.00984264 |
| 4/15/2014 | 662 | -0.003016 | 659.78 | 0.00010611 |
| 4/16/2014 | 662.82 | 0.0116201 | 657.86 | -0.0029101 |
| 4/17/2014 | 662.91 | -0.008816 | 663.59 | 0.00871006 |
| 4/21/2014 | 666.93 | 0.0010248 | 663.52 | -0.0001054 |
| 4/22/2014 | 664.25 | -0.000904 | 664.13 | 0.00091934 |
| 4/23/2014 | 663.95 | -0.001461 | 664.14 | 1.51E-05 |
| 4/24/2014 | 663.54 | 0.0014907 | 663.18 | -0.0014454 |
| 4/25/2014 | 664.87 | -0.019481 | 663.21 | 4.52E-05 |
| 4/28/2014 | 661.1 | 0.0116396 | 650.32 | -0.0194357 |
| 4/29/2014 | 646.01 | 0.0115466 | 645.25 | -0.0077961 |
| 4/30/2014 | 648.63 | -0.005943 | 647.67 | 0.00375048 |
| 5/2/2014 | 646.05 | 0.0052873 | 646.25 | -0.0021924 |

| Date | Open | Residual | Close | Return |
|---|---|---|---|---|
| 5/5/2014 | 647.2 | -0.004961 | 648.25 | 0.00309478 |
| 5/6/2014 | 649.72 | 0.009115 | 647.04 | -0.0018665 |
| 5/7/2014 | 647.27 | -0.005607 | 651.73 | 0.00724839 |
| 5/8/2014 | 654.38 | 0.0031836 | 652.8 | 0.00164178 |
| 5/9/2014 | 653.28 | 0.0051144 | 655.95 | 0.00482537 |
| 5/12/2014 | 658 | -0.012083 | 662.47 | 0.00993978 |
| 5/13/2014 | 666.66 | 0.0196157 | 661.05 | -0.0021434 |
| 5/14/2014 | 664.45 | -0.005533 | 672.6 | 0.0174722 |
| 5/16/2014 | 671.16 | -0.015685 | 680.63 | 0.01193875 |
| 5/19/2014 | 683.85 | -0.022799 | 678.08 | -0.0037465 |
| 5/20/2014 | 677.01 | 0.0336659 | 660.08 | -0.0265455 |
| 5/21/2014 | 658.13 | 0.0045076 | 664.78 | 0.00712035 |
| 5/22/2014 | 668.67 | -0.012223 | 672.51 | 0.01162791 |
| 5/23/2014 | 673.63 | 0.0001633 | 672.11 | -0.0005947 |
| 5/26/2014 | 674.64 | 0.0036169 | 671.82 | -0.0004314 |
| 5/28/2014 | 671.35 | -0.028602 | 673.96 | 0.00318538 |
| 5/30/2014 | 676.41 | 0.0285684 | 656.83 | -0.0254169 |
| 6/2/2014 | 655.78 | 0.0024791 | 658.9 | 0.0031515 |
| 6/3/2014 | 660.85 | -0.007125 | 662.61 | 0.0056306 |
| 6/4/2014 | 661.38 | 0.0036252 | 661.62 | -0.0014940 |
| 6/5/2014 | 662.09 | 0.0029516 | 663.03 | 0.00213113 |
| 6/6/2014 | 663.56 | -0.016202 | 666.4 | 0.00508273 |
| 6/9/2014 | 668.29 | 0.0265825 | 658.99 | -0.0111194 |
| 6/10/2014 | 660.6 | -0.00977 | 669.18 | 0.01546306 |
| 6/11/2014 | 669.96 | -0.015114 | 672.99 | 0.00569354 |
| 6/12/2014 | 670.77 | 0.0073506 | 666.65 | -0.0094206 |
| 6/13/2014 | 665.11 | -0.012014 | 665.27 | -0.0020701 |
| 6/16/2014 | 664.66 | 0.0226376 | 655.9 | -0.0140845 |
| 6/17/2014 | 656.93 | -0.013784 | 661.51 | 0.00855313 |
| 6/18/2014 | 661.43 | -0.000377 | 658.05 | -0.0052305 |
| 6/19/2014 | 660.05 | 0.0034833 | 654.36 | -0.0056075 |
| 6/20/2014 | 655.7 | 0.002844 | 652.97 | -0.0021242 |
| 6/23/2014 | 654.37 | 0.001132 | 653.44 | 0.00071979 |
| 6/24/2014 | 654.86 | -0.006465 | 654.65 | 0.00185174 |
| 6/25/2014 | 654.45 | 0.0123783 | 651.63 | -0.0046132 |

| Date | Open | Residual | Close | Return |
|---|---|---|---|---|
| 6/26/2014 | 651.6 | -0.015075 | 656.69 | 0.00776514 |
| 6/27/2014 | 656.02 | 0.0120801 | 651.89 | -0.0073094 |
| 6/30/2014 | 652.51 | -0.00271 | 655 | 0.00477074 |
| 7/1/2014 | 655.62 | 0.009381 | 656.35 | 0.00206107 |
| 7/2/2014 | 656.57 | -0.01456 | 663.86 | 0.01144207 |
| 7/3/2014 | 663.39 | 0.0058985 | 661.79 | -0.0031181 |
| 7/4/2014 | 660.35 | 0.020998 | 663.63 | 0.00278034 |
| 7/7/2014 | 665.83 | -0.018067 | 679.41 | 0.02377831 |
| 7/8/2014 | 682.79 | 0.0082803 | 683.29 | 0.00571084 |
| 7/10/2014 | 694.85 | -0.032754 | 692.85 | 0.01399113 |
| 7/11/2014 | 687.68 | 0.0185572 | 679.85 | -0.0187631 |
| 7/14/2014 | 681.41 | 0.0126965 | 679.71 | -0.0002059 |
| 7/15/2014 | 682.31 | -0.003351 | 688.2 | 0.01249062 |
| 7/16/2014 | 688.25 | -0.021465 | 694.49 | 0.00913979 |
| 7/17/2014 | 697.31 | 0.017953 | 685.93 | -0.0123256 |
| 7/18/2014 | 681.78 | 0.0049845 | 689.79 | 0.0056274 |
| 7/21/2014 | 694.12 | -0.017469 | 697.11 | 0.01061193 |
| 7/22/2014 | 699.93 | 0.0065824 | 692.33 | -0.0068568 |
| 7/23/2014 | 696.24 | 0.0007368 | 692.14 | -0.0002744 |
| 7/24/2014 | 696.21 | -0.003437 | 692.46 | 0.00046233 |
| 7/25/2014 | 694.37 | 0.0186615 | 690.4 | -0.0029749 |
| 8/4/2014 | 683.62 | -0.021505 | 701.23 | 0.01568656 |
| 8/5/2014 | 702.17 | -0.007479 | 697.15 | -0.0058183 |
| 8/6/2014 | 693.8 | 0.0169459 | 687.88 | -0.013297 |
| 8/7/2014 | 687.2 | -0.00895 | 690.39 | 0.00364889 |
| 8/8/2014 | 690.09 | 0.0207659 | 686.73 | -0.0053013 |
| 8/11/2014 | 693.79 | -0.011392 | 697.35 | 0.0154645 |
| 8/12/2014 | 700.13 | 0.0061961 | 700.19 | 0.00407256 |
| 8/13/2014 | 702.52 | -0.015315 | 707.38 | 0.01026864 |
| 8/14/2014 | 706.88 | 0.0016794 | 703.81 | -0.0050467 |
| 8/15/2014 | 703.63 | 0.0048358 | 701.44 | -0.0033673 |
| 8/18/2014 | 702.62 | -0.003034 | 702.47 | 0.00146841 |
| 8/19/2014 | 704.65 | 0.0084809 | 701.37 | -0.0015659 |
| 8/20/2014 | 701.27 | -0.005188 | 706.22 | 0.00691504 |
| 8/21/2014 | 705.27 | -0.006293 | 707.44 | 0.00172751 |

| Date | Open | Residual | Close | Return |
|---|---|---|---|---|
| 8/22/2014 | 709.35 | 0.0001353 | 704.21 | -0.0045657 |
| 8/25/2014 | 703.24 | -0.00283 | 701.09 | -0.0044305 |
| 8/26/2014 | 703.31 | 0.0114412 | 696 | -0.0072601 |
| 8/27/2014 | 695.68 | -0.000447 | 698.91 | 0.00418103 |
| 8/28/2014 | 699.99 | -0.018545 | 701.52 | 0.00373439 |
| 8/29/2014 | 699.51 | 0.0269213 | 691.13 | -0.0148107 |
| 9/1/2014 | 693.75 | -0.007036 | 699.5 | 0.0121106 |
| 9/2/2014 | 699.32 | 0.0008562 | 703.05 | 0.00507505 |
| 9/3/2014 | 703.61 | -0.012987 | 707.22 | 0.0059313 |
| 9/4/2014 | 707.02 | 0.0079387 | 702.23 | -0.0070558 |
| 9/5/2014 | 699.29 | 0.006416 | 702.85 | 0.0008829 |
| 9/8/2014 | 706.17 | -0.021099 | 707.98 | 0.00729886 |
| 9/9/2014 | 708.38 | 0.0001077 | 698.21 | -0.0137998 |
| 9/10/2014 | 695.75 | 0.0059524 | 688.65 | -0.0136921 |
| 9/11/2014 | 689.87 | 0.0155838 | 683.32 | -0.0077397 |
| 9/12/2014 | 686.21 | -0.003604 | 688.68 | 0.00784406 |
| 9/15/2014 | 686.03 | -0.0051075 | 691.6 | 0.00424 |
| 9/16/2014 | 694.34 | 0.0125752 | 691 | -0.0008675 |
| 9/17/2014 | 696.45 | -0.006515 | 699.09 | 0.01170767 |
| 9/18/2014 | 701.36 | -0.002361 | 702.72 | 0.00519246 |
| 9/19/2014 | 703.92 | -0.006081 | 704.71 | 0.00283185 |
| 9/22/2014 | 702.66 | -0.00562 | 702.42 | -0.0032495 |
| 9/23/2014 | 699.13 | 0.0036122 | 696.19 | -0.0088693 |
| 9/24/2014 | 697.63 | 0.0088238 | 692.53 | -0.0052571 |
| 9/25/2014 | 697.55 | -0.014171 | 695 | 0.00356663 |
| 9/26/2014 | 685.36 | 0.0132947 | 687.63 | -0.0106043 |
| 9/29/2014 | 685.84 | -0.005388 | 689.48 | 0.0026904 |
| 9/30/2014 | 685.38 | -0.004908 | 687.62 | -0.0026976 |
| 10/1/2014 | 686.43 | -0.022714 | 682.39 | -0.0076059 |
| 10/2/2014 | 676.51 | 0.0262244 | 661.7 | -0.0303199 |
| 10/3/2014 | 664.51 | 0.0133976 | 658.99 | -0.0040955 |
| 10/6/2014 | 665.05 | -0.000447 | 665.12 | 0.00930211 |
| 10/7/2014 | 667.07 | -0.026232 | 671.01 | 0.00885555 |
| 10/8/2014 | 662.84 | 0.0226395 | 659.35 | -0.0173767 |
| 10/9/2014 | 665.05 | -0.015567 | 662.82 | 0.00526276 |

| Date | Open | Residual | Close | Return |
|---|---|---|---|---|
| 10/10/2014 | 654.96 | -0.003034 | 655.99 | -0.0103044 |
| 10/13/2014 | 651.64 | 0.0181282 | 647.24 | -0.0133386 |
| 10/14/2014 | 645.71 | -0.001053 | 650.34 | 0.00478957 |
| 10/15/2014 | 654.32 | -0.004947 | 652.77 | 0.00373651 |
| 10/16/2014 | 646.84 | 0.0189868 | 651.98 | -0.0012102 |
| 10/17/2014 | 653.35 | -0.019208 | 663.57 | 0.01777662 |
| 10/20/2014 | 670.18 | 0.0003149 | 662.62 | -0.0014316 |
| 10/21/2014 | 667.31 | 0.0105596 | 661.88 | -0.0011167 |
| 10/22/2014 | 667.11 | -0.005042 | 668.13 | 0.0094428 |
| 10/23/2014 | 668.1 | -0.011344 | 671.07 | 0.00440034 |
| 10/24/2014 | 669.81 | -0.004625 | 666.41 | -0.0069441 |
| 10/27/2014 | 668.28 | 0.0023392 | 658.7 | -0.0115694 |
| 10/28/2014 | 658.05 | 0.0324904 | 652.62 | -0.0092303 |
| 10/29/2014 | 656.24 | -0.024743 | 667.8 | 0.02326009 |
| 10/30/2014 | 668.58 | 0.0069263 | 666.81 | -0.0014824 |
| 10/31/2014 | 669.78 | -0.005817 | 670.44 | 0.00544383 |
| 11/3/2014 | 672.89 | -0.008192 | 670.19 | -0.0003728 |
| 11/4/2014 | 669.46 | 0.0100396 | 664.45 | -0.0085647 |
| 11/5/2014 | 665.88 | -0.006419 | 665.43 | 0.0014749 |
| 11/6/2014 | 665.81 | -0.007319 | 662.14 | -0.0049441 |
| 11/7/2014 | 661.58 | 0.0055815 | 654.02 | -0.0122632 |
| 11/10/2014 | 655.07 | 0.0251994 | 649.65 | -0.0066817 |
| 11/11/2014 | 650.85 | -0.015132 | 661.68 | 0.01851766 |
| 11/12/2014 | 664.74 | -0.000704 | 663.92 | 0.00338532 |
| 11/13/2014 | 663.63 | -0.002471 | 665.7 | 0.00268105 |
| 11/14/2014 | 666.07 | 0.0037997 | 665.84 | 0.00021031 |
| 11/17/2014 | 662.1 | 0.006835 | 668.51 | 0.00400997 |
| 11/18/2014 | 672.06 | -0.006583 | 675.76 | 0.01084501 |
| 11/19/2014 | 677.63 | -0.013177 | 678.64 | 0.00426187 |
| 11/20/2014 | 678.09 | 0.0162448 | 672.59 | -0.0089148 |
| 11/21/2014 | 671.9 | 0.0059096 | 677.52 | 0.00732987 |
| 11/24/2014 | 681.71 | -0.022548 | 686.49 | 0.01323946 |
| 11/25/2014 | 684.17 | 0.0115138 | 680.1 | -0.0093082 |
| 11/26/2014 | 681.19 | 0.0023572 | 681.6 | 0.00220556 |
| 11/27/2014 | 684.71 | -0.007031 | 684.71 | 0.00456279 |

| Date | Open | Residual | Close | Return |
|---|---|---|---|---|
| 11/28/2014 | 682.72 | 0.0059527 | 683.02 | -0.0024682 |
| 12/1/2014 | 682.37 | -0.002726 | 685.4 | 0.00348453 |
| 12/2/2014 | 686.05 | -0.006853 | 685.92 | 0.00075868 |
| 12/3/2014 | 687.72 | 0.0133548 | 681.74 | -0.0060940 |
| 12/4/2014 | 686.69 | -0.004945 | 686.69 | 0.00726083 |
| 12/5/2014 | 687.83 | -0.013227 | 688.28 | 0.00231546 |
| 12/8/2014 | 691.93 | 0.0078853 | 680.77 | -0.0109112 |
| 12/9/2014 | 678.46 | 0.0089343 | 678.71 | -0.0030259 |
| 12/10/2014 | 682.72 | -0.01039 | 682.72 | 0.00590827 |
| 12/11/2014 | 678.93 | 0.0055561 | 679.66 | -0.0044820 |
| 12/12/2014 | 679.67 | -0.010054 | 680.39 | 0.00107407 |
| 12/15/2014 | 675.11 | -0.00717 | 674.28 | -0.0089801 |
| 12/16/2014 | 666.53 | 0.0134523 | 663.39 | -0.0161505 |
| 12/17/2014 | 661.6 | 0.0236928 | 661.6 | -0.0026982 |
| 12/18/2014 | 675.49 | -0.015532 | 675.49 | 0.02099456 |
| 12/19/2014 | 681.05 | 0.0043432 | 679.18 | 0.0054627 |
| 12/29/2014 | 684.32 | -0.002224 | 685.84 | 0.00980594 |
| 12/30/2014 | 685.57 | -0.007582 | 691.04 | 0.00758194 |
| 12/31/2014 | 685.57 | 0.0049635 | 691.04 | 0 |
| 1/2/2015 | 693.37 | -0.01271 | 694.47 | 0.00496353 |
| 1/5/2015 | 692.67 | -0.003892 | 689.09 | -0.0077469 |
| 1/6/2015 | 681.86 | 0.0210942 | 681.07 | -0.0116385 |
| 1/7/2015 | 682.22 | -0.008539 | 687.51 | 0.00945571 |
| 1/8/2015 | 689.99 | 0.0002607 | 688.14 | 0.00091635 |
| 1/9/2015 | 690.24 | -0.008681 | 688.95 | 0.00117709 |
| 1/12/2015 | 687.46 | 0.019745 | 683.78 | -0.0075041 |
| 1/13/2015 | 686.95 | -0.027396 | 692.15 | 0.01224078 |
| 1/14/2015 | 692.12 | 0.0238257 | 681.66 | -0.0151556 |
| 1/15/2015 | 685.71 | -0.017222 | 687.57 | 0.00867001 |
| 1/16/2015 | 686.9 | 0.0084786 | 681.69 | -0.0085518 |
| 1/19/2015 | 682.89 | 0.0103133 | 681.64 | -7.33E-05 |
| 1/20/2015 | 682.95 | 0.0093354 | 688.62 | 0.01024001 |
| 1/21/2015 | 690.41 | -0.009976 | 702.1 | 0.01957538 |
| 1/22/2015 | 701.01 | 0.0015311 | 708.84 | 0.00959977 |
| 1/23/2015 | 713.74 | -0.026897 | 716.73 | 0.01113086 |

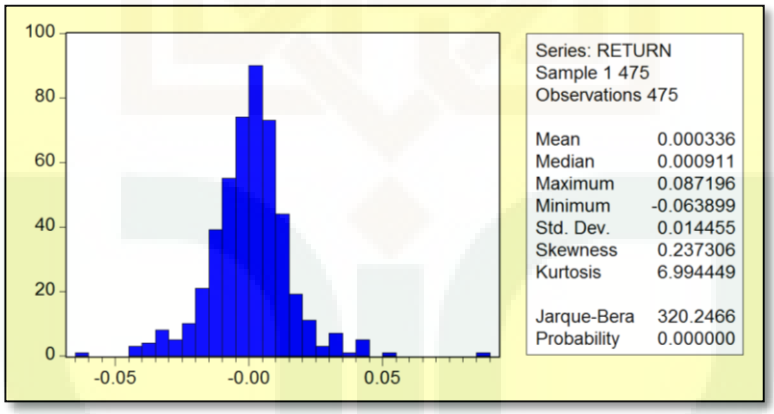
| Date | Open | Residual | Close | Return |
|---|---|---|---|---|
| 1/26/2015 | 714.64 | 0.0189981 | 705.43 | -0.0157660 |
| 1/27/2015 | 704.14 | -0.005521 | 707.71 | 0.00323207 |
| 1/28/2015 | 705.96 | -0.001946 | 706.09 | -0.0022890 |
| 1/29/2015 | 704.25 | 0.0093263 | 703.1 | -0.0042345 |
| 1/30/2015 | 708.16 | -0.012422 | 706.68 | 0.00509174 |
| 2/2/2015 | 703.97 | 0.0118062 | 701.5 | -0.0073300 |
| 2/3/2015 | 703.37 | 0.0013141 | 704.64 | 0.00447612 |
| 2/4/2015 | 709.52 | -0.01753 | 708.72 | 0.00579019 |
| 2/5/2015 | 706.71 | 0.0276161 | 700.4 | -0.0117394 |
| 2/6/2015 | 702.88 | -0.016762 | 711.52 | 0.01587664 |
| 2/9/2015 | 710.89 | -0.0045725 | 710.89 | -0.0008854 |
| 2/10/2015 | 707.01 | 0.0127139 | 707.01 | -0.0054579 |
| 2/11/2015 | 712.14 | -0.004672 | 712.14 | 0.00725591 |
| 2/12/2015 | 713.98 | 0.0079908 | 713.98 | 0.00258376 |
| 2/13/2015 | 716.72 | -0.027109 | 721.53 | 0.01057453 |
| 2/16/2015 | 709.6 | 0.0232141 | 709.6 | -0.0165343 |
| 2/17/2015 | 714.34 | -0.000604 | 714.34 | 0.00667982 |
| 2/18/2015 | 719.11 | -0.006076 | 718.68 | 0.00607554 |
| 2/19/2015 | 719.11 | -0.00462 | 718.68 | 0 |
| 2/20/2015 | 717.32 | 0.0088552 | 715.36 | -0.0046195 |
| 2/23/2015 | 718.39 | -0.001396 | 718.39 | 0.00423563 |
| 2/24/2015 | 720.43 | 0.0068906 | 720.43 | 0.00283968 |
| 2/25/2015 | 727.44 | -0.009827 | 727.44 | 0.0097303 |
| 2/26/2015 | 727.37 | -0.007149 | 727.37 | -9.62E-05 |
| 2/27/2015 | 727.17 | 0.0072453 | 722.1 | -0.0072452 |

**LAMPIRAN 2**: Diskriptif , Uji normalitas dan Uji stasioneritas data

1. Diskriptif data return indeks saham JII

| | RETURN |
|---|---|
| Mean | 0.000336 |
| Median | 0.000911 |
| Maximum | 0.087196 |
| Minimum | -0.063899 |
| Std. Dev. | 0.014455 |
| Skewness | 0.237306 |
| Kurtosis | 6.994449 |
| | |
| Jarque-Bera | 320.2466 |
| Probability | 0.000000 |
| | |
| Sum | 0.159469 |
| Sum Sq. Dev. | 0.099038 |
| | |
| Observations | 475 |
| | |

2. Uji normalitas data return indeks saham JII




3. Uji Stasioner dengan uji akar unit

| | | t-Statistic | Prob.* |
|---|---|---|---|
| Augmented Dickey-Fuller test statistic | | -16.34227 | 0.0000 |
| Test critical values: | 1% level | -3.443979 | |
| | 5% level | -2.867444 | |
| | 10% level | -2.569977 | |

**LAMPIRAN 3** : Etimasi Model ARIMA

1. Model ARIMA (1,0,0) Tanpa Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/15/15 Time: 11:04
Sample (adjusted): 2 475
Included observations: 474 after adjustments
Convergence achieved after 2 iterations

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| AR(1) | 0.034300 | 0.045965 | 0.746214 | 0.4559 |

| | | | |
|---|---|---|---|
| R-squared | 0.000635 | Mean dependent var | 0.000336 |
| Adjusted R-squared | 0.000635 | S.D. dependent var | 0.014470 |
| S.E. of regression | 0.014465 | Akaike info criterion | -5.631999 |
| Sum squared resid | 0.098975 | Schwarz criterion | -5.623220 |
| Log likelihood | 1335.784 | Durbin-Watson stat | 1.991684 |

| | |
|---|---|
| Inverted AR Roots | .03 |

2. Model ARIMA(1,0,0) Dengan Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/15/15 Time: 11:06
Sample (adjusted): 2 475
Included observations: 474 after adjustments
Convergence achieved after 3 iterations

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000336 | 0.000688 | 0.488092 | 0.6257 |
| AR(1) | 0.033754 | 0.046016 | 0.733519 | 0.4636 |

| | | | |
|---|---|---|---|
| R-squared | 0.001139 | Mean dependent var | 0.000336 |
| Adjusted R-squared | -0.000978 | S.D. dependent var | 0.014470 |
| S.E. of regression | 0.014477 | Akaike info criterion | -5.628284 |
| Sum squared resid | 0.098925 | Schwarz criterion | -5.610726 |
| Log likelihood | 1335.903 | F-statistic | 0.538050 |
| Durbin-Watson stat | 1.991720 | Prob(F-statistic) | 0.463606 |

| | |
|---|---|
| Inverted AR Roots | .03 |

3. Model ARIMA(2,0,0) Tanpa Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/15/15 Time: 14:51
Sample (adjusted): 3 475
Included observations: 473 after adjustments
Convergence achieved after 3 iterations

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| AR(2) | -0.111117 | 0.045754 | -2.428570 | 0.0155 |

| | | | |
|---|---|---|---|
| R-squared | 0.011824 | Mean dependent var | 0.000331 |
| Adjusted R-squared | 0.011824 | S.D. dependent var | 0.014485 |
| S.E. of regression | 0.014399 | Akaike info criterion | -5.641197 |
| Sum squared resid | 0.097861 | Schwarz criterion | -5.632404 |
| Log likelihood | 1335.143 | Durbin-Watson stat | 1.965354 |

4. Model ARIMA(2,0,0) Dengan Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/15/15 Time: 14:53
Sample (adjusted): 3 475
Included observations: 473 after adjustments
Convergence achieved after 3 iterations

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000333 | 0.000596 | 0.559503 | 0.5761 |
| AR(2) | -0.111742 | 0.045801 | -2.439713 | 0.0151 |

| | | | |
|---|---|---|---|
| R-squared | 0.012480 | Mean dependent var | 0.000331 |
| Adjusted R-squared | 0.010383 | S.D. dependent var | 0.014485 |
| S.E. of regression | 0.014410 | Akaike info criterion | -5.637633 |
| Sum squared resid | 0.097796 | Schwarz criterion | -5.620047 |
| Log likelihood | 1335.300 | F-statistic | 5.952198 |
| Durbin-Watson stat | 1.966869 | Prob(F-statistic) | 0.015067 |

5. Model ARIMA (3,0,0) Tanpa Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/17/15 Time: 18:37
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 3 iterations

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.210959 | 0.045858 | -4.600219 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.044358 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.044358 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014343 | Akaike info criterion | -5.648968 |
| Sum squared resid | 0.093186 | Schwarz criterion | -5.639897 |
| Log likelihood | 1283.316 | Durbin-Watson stat | 1.989711 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .30-.52i | .30+.52i | -.60 |

6. Model ARIMA(3,0,0) Dengan Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/17/15 Time: 18:38
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 3 iterations

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000255 | 0.000556 | 0.458857 | 0.6466 |
| AR(3) | -0.211377 | 0.045908 | -4.604403 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.044802 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.042689 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014355 | Akaike info criterion | -5.645028 |
| Sum squared resid | 0.093143 | Schwarz criterion | -5.626886 |
| Log likelihood | 1283.421 | F-statistic | 21.20052 |
| Durbin-Watson stat | 1.990770 | Prob(F-statistic) | 0.000005 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .30-.52i | .30+.52i | -.60 |

7. Model ARIMA(0,0,1) Tanpa Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/15/15 Time: 11:08
Sample: 1 475
Included observations: 475
Convergence achieved after 8 iterations
Backcast: 0

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| MA(1) | 0.042750 | 0.045902 | 0.931351 | 0.3521 |

| | | | |
|---|---|---|---|
| R-squared | 0.000942 | Mean dependent var | 0.000336 |
| Adjusted R-squared | 0.000942 | S.D. dependent var | 0.014455 |
| S.E. of regression | 0.014448 | Akaike info criterion | -5.634421 |
| Sum squared resid | 0.098945 | Schwarz criterion | -5.625656 |
| Log likelihood | 1339.175 | Durbin-Watson stat | 2.007500 |

| | |
|---|---|
| Inverted MA Roots | -.04 |

8. Model ARIMA(0,0,1) Dengan Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/15/15 Time: 11:09
Sample: 1 475
Included observations: 475
Convergence achieved after 8 iterations
Backcast: 0

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000335 | 0.000691 | 0.484580 | 0.6282 |
| MA(1) | 0.042148 | 0.045952 | 0.917214 | 0.3595 |

| | | | |
|---|---|---|---|
| R-squared | 0.001437 | Mean dependent var | 0.000336 |
| Adjusted R-squared | -0.000674 | S.D. dependent var | 0.014455 |
| S.E. of regression | 0.014460 | Akaike info criterion | -5.630707 |
| Sum squared resid | 0.098896 | Schwarz criterion | -5.613177 |
| Log likelihood | 1339.293 | F-statistic | 0.680648 |
| Durbin-Watson stat | 2.007405 | Prob(F-statistic) | 0.409780 |

| | |
|---|---|
| Inverted MA Roots | -.04 |

9. Model ARIMA (0,0,2) Tanpa Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/15/15 Time: 11:11
Sample: 1 475
Included observations: 475
Convergence achieved after 7 iterations
Backcast: -1 0

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| MA(2) | -0.126250 | 0.045569 | -2.770544 | 0.0058 |

| | | | |
|---|---|---|---|
| R-squared | 0.013509 | Mean dependent var | 0.000336 |
| Adjusted R-squared | 0.013509 | S.D. dependent var | 0.014455 |
| S.E. of regression | 0.014357 | Akaike info criterion | -5.647080 |
| Sum squared resid | 0.097700 | Schwarz criterion | -5.638315 |
| Log likelihood | 1342.181 | Durbin-Watson stat | 1.977873 |

| | | |
|---|---|---|
| Inverted MA Roots | .36 | -.36 |

10. Model ARIMA(0,0,2) Dengan Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/15/15 Time: 11:12
Sample: 1 475
Included observations: 475
Convergence achieved after 7 iterations
Backcast: -1 0

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000336 | 0.000576 | 0.583701 | 0.5597 |
| MA(2) | -0.127137 | 0.045613 | -2.787319 | 0.0055 |

| | | | |
|---|---|---|---|
| R-squared | 0.014218 | Mean dependent var | 0.000336 |
| Adjusted R-squared | 0.012134 | S.D. dependent var | 0.014455 |
| S.E. of regression | 0.014367 | Akaike info criterion | -5.643589 |
| Sum squared resid | 0.097630 | Schwarz criterion | -5.626059 |
| Log likelihood | 1342.352 | F-statistic | 6.822050 |
| Durbin-Watson stat | 1.979646 | Prob(F-statistic) | 0.009290 |

| | | |
|---|---|---|
| Inverted MA Roots | .36 | -.36 |

11. Model ARIMA (0,0,3) Tanpa Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/17/15 Time: 18:20
Sample: 1 457
Included observations: 457
Convergence achieved after 8 iterations
Backcast: -2 0

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| MA(3) | -0.194455 | 0.045950 | -4.231908 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.041491 | Mean dependent var | 0.000294 |
| Adjusted R-squared | 0.041491 | S.D. dependent var | 0.014651 |
| S.E. of regression | 0.014344 | Akaike info criterion | -5.648846 |
| Sum squared resid | 0.093816 | Schwarz criterion | -5.639820 |
| Log likelihood | 1291.761 | Durbin-Watson stat | 1.981583 |

| | | | |
|---|---|---|---|
| Inverted MA Roots | .58 | -.29-.50i | -.29+.50i |

12. Model ARIMA (0,0,3) Dengan Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/17/15 Time: 18:22
Sample: 1 457
Included observations: 457
Convergence achieved after 8 iterations
Backcast: -2 0

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000284 | 0.000542 | 0.524106 | 0.6005 |
| MA(3) | -0.194955 | 0.045996 | -4.238559 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.042069 | Mean dependent var | 0.000294 |
| Adjusted R-squared | 0.039964 | S.D. dependent var | 0.014651 |
| S.E. of regression | 0.014355 | Akaike info criterion | -5.645072 |
| Sum squared resid | 0.093760 | Schwarz criterion | -5.627021 |
| Log likelihood | 1291.899 | F-statistic | 19.98195 |
| Durbin-Watson stat | 1.982970 | Prob(F-statistic) | 0.000010 |

| | | | |
|---|---|---|---|
| Inverted MA Roots | .58 | -.29-.50i | -.29+.50i |

13. Model ARIMA (1,0,1) Tanpa Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/15/15 Time: 11:15
Sample (adjusted): 2 475
Included observations: 474 after adjustments
Convergence achieved after 18 iterations
Backcast: 1

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| AR(1) | -0.246351 | 0.844760 | -0.291623 | 0.7707 |
| MA(1) | 0.294404 | 0.832940 | 0.353452 | 0.7239 |

| | | | |
|---|---|---|---|
| R-squared | 0.001924 | Mean dependent var | 0.000336 |
| Adjusted R-squared | -0.000190 | S.D. dependent var | 0.014470 |
| S.E. of regression | 0.014471 | Akaike info criterion | -5.629071 |
| Sum squared resid | 0.098847 | Schwarz criterion | -5.611513 |
| Log likelihood | 1336.090 | Durbin-Watson stat | 2.021156 |

| | |
|---|---|
| Inverted AR Roots | -.25 |
| Inverted MA Roots | -.29 |

14. Model ARIMA (1,0,1) Dengan Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/15/15 Time: 11:17
Sample (adjusted): 2 475
Included observations: 474 after adjustments
Convergence achieved after 18 iterations
Backcast: 1

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000335 | 0.000690 | 0.484949 | 0.6279 |
| AR(1) | -0.247835 | 0.853139 | -0.290497 | 0.7716 |
| MA(1) | 0.295478 | 0.841230 | 0.351245 | 0.7256 |

| | | | |
|---|---|---|---|
| R-squared | 0.002422 | Mean dependent var | 0.000336 |
| Adjusted R-squared | -0.001814 | S.D. dependent var | 0.014470 |
| S.E. of regression | 0.014483 | Akaike info criterion | -5.625350 |
| Sum squared resid | 0.098798 | Schwarz criterion | -5.599013 |
| Log likelihood | 1336.208 | F-statistic | 0.571800 |
| Durbin-Watson stat | 2.021437 | Prob(F-statistic) | 0.564900 |

| | |
|---|---|
| Inverted AR Roots | -.25 |
| Inverted MA Roots | -.30 |

15. Model ARIMA (1,0,2) Tanpa Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/15/15 Time: 11:19
Sample (adjusted): 2 475
Included observations: 474 after adjustments
Convergence achieved after 9 iterations
Backcast: 0 1

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| AR(1) | 0.011154 | 0.046035 | 0.242291 | 0.8087 |
| MA(2) | -0.124904 | 0.045671 | -2.734881 | 0.0065 |

| | | | |
|---|---|---|---|
| R-squared | 0.013756 | Mean dependent var | 0.000336 |
| Adjusted R-squared | 0.011666 | S.D. dependent var | 0.014470 |
| S.E. of regression | 0.014385 | Akaike info criterion | -5.640996 |
| Sum squared resid | 0.097676 | Schwarz criterion | -5.623438 |
| Log likelihood | 1338.916 | Durbin-Watson stat | 1.999684 |

| | | |
|---|---|---|
| Inverted AR Roots | .01 | |
| Inverted MA Roots | .35 | -.35 |

16. Model ARIMA(1,0,2) Dengan Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/15/15 Time: 11:20
Sample (adjusted): 2 475
Included observations: 474 after adjustments
Convergence achieved after 9 iterations
Backcast: 0 1

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000331 | 0.000584 | 0.567159 | 0.5709 |
| AR(1) | 0.010232 | 0.046087 | 0.222026 | 0.8244 |
| MA(2) | -0.125867 | 0.045715 | -2.753271 | 0.0061 |

| | | | |
|---|---|---|---|
| R-squared | 0.014427 | Mean dependent var | 0.000336 |
| Adjusted R-squared | 0.010242 | S.D. dependent var | 0.014470 |
| S.E. of regression | 0.014396 | Akaike info criterion | -5.637458 |
| Sum squared resid | 0.097609 | Schwarz criterion | -5.611121 |
| Log likelihood | 1339.077 | F-statistic | 3.447402 |
| Durbin-Watson stat | 1.999630 | Prob(F-statistic) | 0.032634 |

| | | |
|---|---|---|
| Inverted AR Roots | .01 | |
| Inverted MA Roots | .35 | -.35 |

17. Model ARIMA (1,0,3) Tanpa Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/17/15 Time: 18:24
Sample (adjusted): 2 457
Included observations: 456 after adjustments
Convergence achieved after 8 iterations
Backcast: -1 1

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| AR(1) | 0.009354 | 0.047156 | 0.198362 | 0.8429 |
| MA(3) | -0.193206 | 0.046282 | -4.174553 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.041574 | Mean dependent var | 0.000295 |
| Adjusted R-squared | 0.039463 | S.D. dependent var | 0.014667 |
| S.E. of regression | 0.014374 | Akaike info criterion | -5.642347 |
| Sum squared resid | 0.093808 | Schwarz criterion | -5.624266 |
| Log likelihood | 1288.455 | Durbin-Watson stat | 1.997896 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .01 | | |
| Inverted MA Roots | .58 | -.29+.50i | -.29-.50i |

18. Model ARIMA (1,0,3) Dengan Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/17/15 Time: 18:25
Sample (adjusted): 2 457
Included observations: 456 after adjustments
Convergence achieved after 8 iterations
Backcast: -1 1

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000284 | 0.000549 | 0.517339 | 0.6052 |
| AR(1) | 0.008672 | 0.047210 | 0.183684 | 0.8543 |
| MA(3) | -0.193786 | 0.046331 | -4.182684 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.042139 | Mean dependent var | 0.000295 |
| Adjusted R-squared | 0.037910 | S.D. dependent var | 0.014667 |
| S.E. of regression | 0.014386 | Akaike info criterion | -5.638551 |
| Sum squared resid | 0.093753 | Schwarz criterion | -5.611429 |
| Log likelihood | 1288.590 | F-statistic | 9.964367 |
| Durbin-Watson stat | 1.998040 | Prob(F-statistic) | 0.000058 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .01 | | |
| Inverted MA Roots | .58 | -.29+.50i | -.29-.50i |

19. Model ARIMA (2,0,1) Tanpa Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/15/15 Time: 11:22
Sample (adjusted): 3 475
Included observations: 473 after adjustments
Convergence achieved after 8 iterations
Backcast: 2

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| AR(2) | -0.108240 | 0.045819 | -2.362358 | 0.0186 |
| MA(1) | 0.016032 | 0.046082 | 0.347902 | 0.7281 |

| | | | |
|---|---|---|---|
| R-squared | 0.012065 | Mean dependent var | 0.000331 |
| Adjusted R-squared | 0.009968 | S.D. dependent var | 0.014485 |
| S.E. of regression | 0.014413 | Akaike info criterion | -5.637213 |
| Sum squared resid | 0.097837 | Schwarz criterion | -5.619627 |
| Log likelihood | 1335.201 | Durbin-Watson stat | 1.996204 |

| | |
|---|---|
| Inverted MA Roots | -.02 |

20. Model ARIMA(2,0,1) Dengan Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/15/15 Time: 11:23
Sample (adjusted): 3 475
Included observations: 473 after adjustments
Convergence achieved after 8 iterations
Backcast: 2

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000334 | 0.000607 | 0.549703 | 0.5828 |
| AR(2) | -0.108990 | 0.045865 | -2.376293 | 0.0179 |
| MA(1) | 0.015289 | 0.046132 | 0.331424 | 0.7405 |

| | | | |
|---|---|---|---|
| R-squared | 0.012699 | Mean dependent var | 0.000331 |
| Adjusted R-squared | 0.008498 | S.D. dependent var | 0.014485 |
| S.E. of regression | 0.014423 | Akaike info criterion | -5.633627 |
| Sum squared resid | 0.097774 | Schwarz criterion | -5.607248 |
| Log likelihood | 1335.353 | F-statistic | 3.022685 |
| Durbin-Watson stat | 1.996278 | Prob(F-statistic) | 0.049618 |

| | |
|---|---|
| Inverted MA Roots | -.02 |

21. Model ARIMA (2,0,2) Tanpa Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/15/15 Time: 11:25
Sample (adjusted): 3 475
Included observations: 473 after adjustments
Convergence achieved after 11 iterations
Backcast: 1 2

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| AR(2) | 0.575083 | 0.188706 | 3.047506 | 0.0024 |
| MA(2) | -0.691723 | 0.166782 | -4.147458 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.021446 | Mean dependent var | 0.000331 |
| Adjusted R-squared | 0.019368 | S.D. dependent var | 0.014485 |
| S.E. of regression | 0.014344 | Akaike info criterion | -5.646753 |
| Sum squared resid | 0.096908 | Schwarz criterion | -5.629167 |
| Log likelihood | 1337.457 | Durbin-Watson stat | 1.980620 |

| | | |
|---|---|---|
| Inverted AR Roots | .76 | -.76 |
| Inverted MA Roots | .83 | -.83 |

22. Model ARIMA (2,0,2) Dengan Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/15/15 Time: 11:27
Sample (adjusted): 3 475
Included observations: 473 after adjustments
Convergence achieved after 11 iterations
Backcast: 1 2

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000302 | 0.000481 | 0.628387 | 0.5301 |
| AR(2) | 0.578322 | 0.186119 | 3.107272 | 0.0020 |
| MA(2) | -0.695874 | 0.164026 | -4.242447 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.022263 | Mean dependent var | 0.000331 |
| Adjusted R-squared | 0.018102 | S.D. dependent var | 0.014485 |
| S.E. of regression | 0.014353 | Akaike info criterion | -5.643360 |
| Sum squared resid | 0.096827 | Schwarz criterion | -5.616981 |
| Log likelihood | 1337.655 | F-statistic | 5.350845 |
| Durbin-Watson stat | 1.982843 | Prob(F-statistic) | 0.005038 |

| | | |
|---|---|---|
| Inverted AR Roots | .76 | -.76 |
| Inverted MA Roots | .83 | -.83 |

23. Model ARIMA (2,0,3) Tanpa Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/17/15 Time: 18:27
Sample (adjusted): 3 457
Included observations: 455 after adjustments
Convergence achieved after 7 iterations
Backcast: 0 2

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| AR(2) | -0.102902 | 0.046747 | -2.201250 | 0.0282 |
| MA(3) | -0.193043 | 0.046120 | -4.185694 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.051724 | Mean dependent var | 0.000289 |
| Adjusted R-squared | 0.049631 | S.D. dependent var | 0.014682 |
| S.E. of regression | 0.014313 | Akaike info criterion | -5.650842 |
| Sum squared resid | 0.092809 | Schwarz criterion | -5.632731 |
| Log likelihood | 1287.567 | Durbin-Watson stat | 1.979254 |

| | | | |
|---|---|---|---|
| Inverted MA Roots | .58 | -.29-.50i | -.29+.50i |

24. Model ARIMA (2,0,3) Dengan Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/17/15 Time: 18:29
Sample (adjusted): 3 457
Included observations: 455 after adjustments
Convergence achieved after 7 iterations
Backcast: 0 2

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000279 | 0.000492 | 0.567765 | 0.5705 |
| AR(2) | -0.103561 | 0.046797 | -2.212976 | 0.0274 |
| MA(3) | -0.193644 | 0.046166 | -4.194543 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.052399 | Mean dependent var | 0.000289 |
| Adjusted R-squared | 0.048206 | S.D. dependent var | 0.014682 |
| S.E. of regression | 0.014324 | Akaike info criterion | -5.647158 |
| Sum squared resid | 0.092743 | Schwarz criterion | -5.619992 |
| Log likelihood | 1287.729 | F-statistic | 12.49703 |
| Durbin-Watson stat | 1.980786 | Prob(F-statistic) | 0.000005 |

| | | | |
|---|---|---|---|
| Inverted MA Roots | .58 | -.29-.50i | -.29+.50i |

25. Model ARIMA(3,0,1) Tanpa Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/18/15 Time: 19:45
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 8 iterations
Backcast: 3

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.206564 | 0.045332 | -4.556708 | 0.0000 |
| MA(1) | 0.000386 | 0.046398 | 0.008321 | 0.9934 |

| | | | |
|---|---|---|---|
| R-squared | 0.042404 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.040367 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014179 | Akaike info criterion | -5.669889 |
| Sum squared resid | 0.094490 | Schwarz criterion | -5.652274 |
| Log likelihood | 1340.094 | Durbin-Watson stat | 1.999527 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .30+.51i | .30-.51i | -.59 |
| Inverted MA Roots | -.00 | | |

26. Model ARIMA(3,0,1) Dengan Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/18/15 Time: 19:48
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 8 iterations
Backcast: 3

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000298 | 0.000541 | 0.551911 | 0.5813 |
| AR(3) | -0.207286 | 0.045379 | -4.567882 | 0.0000 |
| MA(1) | -0.000593 | 0.046452 | -0.012758 | 0.9898 |

| | | | |
|---|---|---|---|
| R-squared | 0.043025 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.038944 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014189 | Akaike info criterion | -5.666299 |
| Sum squared resid | 0.094429 | Schwarz criterion | -5.639878 |
| Log likelihood | 1340.247 | F-statistic | 10.54295 |
| Durbin-Watson stat | 1.999297 | Prob(F-statistic) | 0.000033 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .30+.51i | .30-.51i | -.59 |
| Inverted MA Roots | .00 | | |

27. Model ARIMA (3,0,2) Tanpa Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/17/15 Time: 18:31
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 6 iterations
Backcast: 2 3

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.203817 | 0.045977 | -4.432982 | 0.0000 |
| MA(2) | -0.112668 | 0.046769 | -2.409009 | 0.0164 |

| | | | |
|---|---|---|---|
| R-squared | 0.055076 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.052985 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014278 | Akaike info criterion | -5.655841 |
| Sum squared resid | 0.092141 | Schwarz criterion | -5.637700 |
| Log likelihood | 1285.876 | Durbin-Watson stat | 1.986578 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .29+.51i | .29-.51i | -.59 |
| Inverted MA Roots | .34 | -.34 | |

28. Model ARIMA (3,0,2) Dengan Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/17/15 Time: 18:32
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 6 iterations
Backcast: 2 3

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000254 | 0.000494 | 0.513966 | 0.6075 |
| AR(3) | -0.204307 | 0.046027 | -4.438894 | 0.0000 |
| MA(2) | -0.113338 | 0.046818 | -2.420815 | 0.0159 |

| | | | |
|---|---|---|---|
| R-squared | 0.055628 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.051440 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014289 | Akaike info criterion | -5.652021 |
| Sum squared resid | 0.092087 | Schwarz criterion | -5.624809 |
| Log likelihood | 1286.009 | F-statistic | 13.28310 |
| Durbin-Watson stat | 1.987799 | Prob(F-statistic) | 0.000002 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .29+.51i | .29-.51i | -.59 |
| Inverted MA Roots | .34 | -.34 | |

29. Model ARIMA (3,0,3) Tanpa Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/17/15 Time: 18:34
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 19 iterations
Backcast: 1 3

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.198054 | 0.209410 | -0.945769 | 0.3448 |
| MA(3) | -0.013677 | 0.214056 | -0.063894 | 0.9491 |

| | | | |
|---|---|---|---|
| R-squared | 0.044375 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.042261 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014358 | Akaike info criterion | -5.644581 |
| Sum squared resid | 0.093185 | Schwarz criterion | -5.626439 |
| Log likelihood | 1283.320 | Durbin-Watson stat | 1.989734 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .29+.50i | .29-.50i | -.58 |
| Inverted MA Roots | .24 | -.12-.21i | -.12+.21i |

30. Model ARIMA (3,0,3) Dengan Konstanta

Dependent Variable: RETURN
Method: Least Squares
Date: 03/17/15 Time: 18:35
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 19 iterations
Backcast: 1 3

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000255 | 0.000555 | 0.458886 | 0.6465 |
| AR(3) | -0.198087 | 0.209531 | -0.945381 | 0.3450 |
| MA(3) | -0.014091 | 0.214167 | -0.065795 | 0.9476 |

| | | | |
|---|---|---|---|
| R-squared | 0.044821 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.040585 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014371 | Akaike info criterion | -5.640642 |
| Sum squared resid | 0.093141 | Schwarz criterion | -5.613430 |
| Log likelihood | 1283.426 | F-statistic | 10.58138 |
| Durbin-Watson stat | 1.990797 | Prob(F-statistic) | 0.000032 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .29+.50i | .29-.50i | -.58 |
| Inverted MA Roots | .24 | -.12-.21i | -.12+.21i |

**LAMPIRAN 4** : Uji ARCH-LM Model ARIMA

1. Model ARIMA(2,0,2) Tanpa konstanta

ARCH Test:

| | | | |
|---|---|---|---|
| F-statistic | 31.25174 | Probability | 0.000000 |
| Obs*R-squared | 29.42797 | Probability | 0.000000 |

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 03/15/15 Time: 11:34
Sample (adjusted): 4 475
Included observations: 472 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000154 | 2.33E-05 | 6.598387 | 0.0000 |
| RESID^2(-1) | 0.249730 | 0.044672 | 5.590325 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.062347 | Mean dependent var | 0.000205 |
| Adjusted R-squared | 0.060352 | S.D. dependent var | 0.000480 |
| S.E. of regression | 0.000465 | Akaike info criterion | -12.50397 |
| Sum squared resid | 0.000102 | Schwarz criterion | -12.48636 |
| Log likelihood | 2952.937 | F-statistic | 31.25174 |
| Durbin-Watson stat | 2.039715 | Prob(F-statistic) | 0.000000 |

2. Model ARIMA (0,0,2) Tanpa Konstanta

ARCH Test:

| | | | |
|---|---|---|---|
| F-statistic | 32.11916 | Probability | 0.000000 |
| Obs*R-squared | 30.20016 | Probability | 0.000000 |

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 03/15/15 Time: 11:37
Sample (adjusted): 2 475
Included observations: 474 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000154 | 2.39E-05 | 6.447865 | 0.0000 |
| RESID^2(-1) | 0.252401 | 0.044536 | 5.667377 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.063713 | Mean dependent var | 0.000206 |
| Adjusted R-squared | 0.061730 | S.D. dependent var | 0.000496 |
| S.E. of regression | 0.000480 | Akaike info criterion | -12.43932 |
| Sum squared resid | 0.000109 | Schwarz criterion | -12.42176 |
| Log likelihood | 2950.118 | F-statistic | 32.11916 |
| Durbin-Watson stat | 2.032278 | Prob(F-statistic) | 0.000000 |

3. Model ARIMA(3,0,0) Tanpa Konstanta

ARCH Test:

| | | | |
|---|---|---|---|
| F-statistic | 18.35282 | Probability | 0.000022 |
| Obs*R-squared | 17.71338 | Probability | 0.000026 |

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 03/17/15 Time: 19:17
Sample (adjusted): 5 457
Included observations: 453 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000165 | 2.41E-05 | 6.849425 | 0.0000 |
| RESID^2(-1) | 0.197741 | 0.046158 | 4.284019 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.039102 | Mean dependent var | 0.000206 |
| Adjusted R-squared | 0.036972 | S.D. dependent var | 0.000480 |
| S.E. of regression | 0.000471 | Akaike info criterion | -12.47778 |
| Sum squared resid | 0.000100 | Schwarz criterion | -12.45961 |
| Log likelihood | 2828.217 | F-statistic | 18.35282 |
| Durbin-Watson stat | 2.039944 | Prob(F-statistic) | 0.000022 |

4. Model ARIMA (0,0,3) Tanpa Konstanta

ARCH Test:

| | | | |
|---|---|---|---|
| F-statistic | 19.14484 | Probability | 0.000015 |
| Obs*R-squared | 18.45111 | Probability | 0.000017 |

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 03/17/15 Time: 20:03
Sample (adjusted): 2 457
Included observations: 456 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000164 | 2.41E-05 | 6.822512 | 0.0000 |
| RESID^2(-1) | 0.201150 | 0.045972 | 4.375482 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.040463 | Mean dependent var | 0.000206 |
| Adjusted R-squared | 0.038349 | S.D. dependent var | 0.000482 |
| S.E. of regression | 0.000473 | Akaike info criterion | -12.47000 |
| Sum squared resid | 0.000102 | Schwarz criterion | -12.45192 |
| Log likelihood | 2845.160 | F-statistic | 19.14484 |
| Durbin-Watson stat | 2.042393 | Prob(F-statistic) | 0.000015 |

5. Model ARIMA (2,0,3) Tanpa Konstanta

ARCH Test:

| | | | |
|---|---|---|---|
| F-statistic | 21.01263 | Probability | 0.000006 |
| Obs*R-squared | 20.16803 | Probability | 0.000007 |

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 03/17/15 Time: 20:08
Sample (adjusted): 4 457
Included observations: 454 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000161 | 2.38E-05 | 6.754014 | 0.0000 |
| RESID^2(-1) | 0.210784 | 0.045983 | 4.583954 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.044423 | Mean dependent var | 0.000204 |
| Adjusted R-squared | 0.042309 | S.D. dependent var | 0.000476 |
| S.E. of regression | 0.000465 | Akaike info criterion | -12.50324 |
| Sum squared resid | 9.79E-05 | Schwarz criterion | -12.48510 |
| Log likelihood | 2840.236 | F-statistic | 21.01263 |
| Durbin-Watson stat | 2.029891 | Prob(F-statistic) | 0.000006 |

6. Model ARIMA (3,0,2) Tanpa Konstanta

ARCH Test:

| | | | |
|---|---|---|---|
| F-statistic | 20.44800 | Probability | 0.000008 |
| Obs*R-squared | 19.64786 | Probability | 0.000009 |

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 03/17/15 Time: 20:11
Sample (adjusted): 5 457
Included observations: 453 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.000161 | 2.37E-05 | 6.804980 | 0.0000 |
| RESID^2(-1) | 0.208257 | 0.046055 | 4.521947 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.043373 | Mean dependent var | 0.000203 |
| Adjusted R-squared | 0.041252 | S.D. dependent var | 0.000472 |
| S.E. of regression | 0.000463 | Akaike info criterion | -12.51529 |
| Sum squared resid | 9.65E-05 | Schwarz criterion | -12.49712 |
| Log likelihood | 2836.713 | F-statistic | 20.44800 |
| Durbin-Watson stat | 2.030245 | Prob(F-statistic) | 0.000008 |

**LAMPIRAN 5** : Estimasi model GARCH

1. Model GARCH (1,0)

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/17/15 Time: 19:15
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 12 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.142691 | 0.028139 | -5.070871 | 0.0000 |
| Variance Equation | | | | |
| C | 0.000128 | 9.52E-06 | 13.44282 | 0.0000 |
| RESID(-1)^2 | 0.442720 | 0.064515 | 6.862281 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.039683 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.035424 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014409 | Akaike info criterion | -5.741123 |
| Sum squared resid | 0.093642 | Schwarz criterion | -5.713911 |
| Log likelihood | 1306.235 | Durbin-Watson stat | 1.967908 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .26+.45i | .26-.45i | -.52 |

2. Model GARCH (2,0)

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/17/15 Time: 19:21
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 13 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.124035 | 0.034027 | -3.645242 | 0.0003 |
| Variance Equation | | | | |
| C | 0.000123 | 9.36E-06 | 13.11687 | 0.0000 |
| RESID(-1)^2 | 0.387567 | 0.076742 | 5.050222 | 0.0000 |
| RESID(-2)^2 | 0.063361 | 0.045809 | 1.383148 | 0.1666 |

| | | | |
|---|---|---|---|
| R-squared | 0.036778 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.030357 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014447 | Akaike info criterion | -5.741943 |
| Sum squared resid | 0.093926 | Schwarz criterion | -5.705660 |
| Log likelihood | 1307.421 | Durbin-Watson stat | 1.961914 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .25-.43i | .25+.43i | -.50 |

3. Model GARCH (3,0)

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/17/15 Time: 19:23
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 13 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-3)^2

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.109241 | 0.044558 | -2.451661 | 0.0142 |
| Variance Equation | | | | |
| C | 0.000105 | 9.57E-06 | 11.01541 | 0.0000 |
| RESID(-1)^2 | 0.261159 | 0.063412 | 4.118433 | 0.0000 |
| RESID(-2)^2 | 0.043234 | 0.041230 | 1.048611 | 0.2944 |
| RESID(-3)^2 | 0.194788 | 0.050384 | 3.866070 | 0.0001 |

| | | | |
|---|---|---|---|
| R-squared | 0.033979 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.025373 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014484 | Akaike info criterion | -5.775205 |
| Sum squared resid | 0.094199 | Schwarz criterion | -5.729852 |
| Log likelihood | 1315.972 | Durbin-Watson stat | 1.957167 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .24-.41i | .24+.41i | -.48 |

4. Model GARCH (0,1)

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/17/15 Time: 19:25
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 25 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*GARCH(-1)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.214165 | 0.033031 | -6.483838 | 0.0000 |
| Variance Equation | | | | |
| C | 1.58E-05 | 1.26E-05 | 1.248867 | 0.2117 |
| GARCH(-1) | 0.924673 | 0.061197 | 15.10968 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.044347 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.040109 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014374 | Akaike info criterion | -5.646627 |
| Sum squared resid | 0.093187 | Schwarz criterion | -5.619415 |
| Log likelihood | 1284.784 | Durbin-Watson stat | 1.990723 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .30+.52i | .30-.52i | -.60 |

5. Model GARCH (0,2)

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/17/15 Time: 19:27
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 19 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*GARCH(-1) + C(4)*GARCH(-2)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.214051 | 0.033454 | -6.398294 | 0.0000 |
| Variance Equation | | | | |
| C | 1.01E-05 | 0.000105 | 0.095741 | 0.9237 |
| GARCH(-1) | 1.215829 | 8.522491 | 0.142661 | 0.8866 |
| GARCH(-2) | -0.263690 | 8.023465 | -0.032865 | 0.9738 |

| | | | |
|---|---|---|---|
| R-squared | 0.044348 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.037977 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014390 | Akaike info criterion | -5.642158 |
| Sum squared resid | 0.093187 | Schwarz criterion | -5.605876 |
| Log likelihood | 1284.770 | Durbin-Watson stat | 1.990687 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .30+.52i | .30-.52i | -.60 |

6. Model GARCH (0,3)

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/17/15 Time: 19:29
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence not achieved after 500 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*GARCH(-1) + C(4)*GARCH(-2) + C(5)*GARCH(-3)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.214594 | 0.033250 | -6.453864 | 0.0000 |
| Variance Equation | | | | |
| C | 7.16E-06 | 0.000203 | 0.035358 | 0.9718 |
| GARCH(-1) | 1.438906 | 42.90259 | 0.033539 | 0.9732 |
| GARCH(-2) | -0.413318 | 71.08409 | -0.005814 | 0.9954 |
| GARCH(-3) | -0.059785 | 29.18828 | -0.002048 | 0.9984 |

| | | | |
|---|---|---|---|
| R-squared | 0.044344 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.035831 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014406 | Akaike info criterion | -5.638080 |
| Sum squared resid | 0.093188 | Schwarz criterion | -5.592727 |
| Log likelihood | 1284.844 | Durbin-Watson stat | 1.990858 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .30+.52i | .30-.52i | -.60 |

7. Model GARCH (1,1)

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/17/15 Time: 19:30
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 14 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.138721 | 0.047796 | -2.902331 | 0.0037 |
| Variance Equation | | | | |
| C | 3.84E-06 | 1.52E-06 | 2.523930 | 0.0116 |
| RESID(-1)^2 | 0.075932 | 0.017396 | 4.364848 | 0.0000 |
| GARCH(-1) | 0.904501 | 0.018691 | 48.39285 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.039123 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.032717 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014430 | Akaike info criterion | -5.848881 |
| Sum squared resid | 0.093697 | Schwarz criterion | -5.812598 |
| Log likelihood | 1331.696 | Durbin-Watson stat | 1.966632 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .26+.45i | .26-.45i | -.52 |

8. Model GARCH(1,2)

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/17/15 Time: 19:33
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 17 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1) + C(5)
*GARCH(-2)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.136354 | 0.048643 | -2.803144 | 0.0051 |
| Variance Equation | | | | |
| C | 7.45E-06 | 3.26E-06 | 2.285963 | 0.0223 |
| RESID(-1)^2 | 0.140129 | 0.037423 | 3.744494 | 0.0002 |
| GARCH(-1) | 0.195180 | 0.170153 | 1.147084 | 0.2513 |
| GARCH(-2) | 0.627601 | 0.153352 | 4.092550 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.038774 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.030211 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014448 | Akaike info criterion | -5.849021 |
| Sum squared resid | 0.093731 | Schwarz criterion | -5.803667 |
| Log likelihood | 1332.728 | Durbin-Watson stat | 1.965872 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .26+.45i | .26-.45i | -.51 |

9. Model GARCH (1,3)

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/17/15 Time: 19:34
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence not achieved after 500 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1) + C(5)
*GARCH(-2) + C(6)*GARCH(-3)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.143824 | 0.046221 | -3.111633 | 0.0019 |
| Variance Equation | | | | |
| C | 1.23E-05 | 5.68E-06 | 2.157837 | 0.0309 |
| RESID(-1)^2 | 0.196456 | 0.052333 | 3.753947 | 0.0002 |
| GARCH(-1) | 0.032548 | 0.139864 | 0.232712 | 0.8160 |
| GARCH(-2) | 0.202678 | 0.158576 | 1.278113 | 0.2012 |
| GARCH(-3) | 0.505500 | 0.144509 | 3.498054 | 0.0005 |

| | | | |
|---|---|---|---|
| R-squared | 0.039836 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.029120 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014456 | Akaike info criterion | -5.851203 |
| Sum squared resid | 0.093627 | Schwarz criterion | -5.796778 |
| Log likelihood | 1334.223 | Durbin-Watson stat | 1.968272 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .26+.45i | .26-.45i | -.52 |

10. Model GARCH(2,1)

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/17/15 Time: 19:35
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 13 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*GARCH(-1)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.132259 | 0.046327 | -2.854883 | 0.0043 |
| Variance Equation | | | | |
| C | 2.96E-06 | 1.45E-06 | 2.043694 | 0.0410 |
| RESID(-1)^2 | 0.183740 | 0.072599 | 2.530885 | 0.0114 |
| RESID(-2)^2 | -0.120080 | 0.069527 | -1.727101 | 0.0841 |
| GARCH(-1) | 0.921807 | 0.019647 | 46.91766 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.038145 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.029576 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014453 | Akaike info criterion | -5.850825 |
| Sum squared resid | 0.093792 | Schwarz criterion | -5.805472 |
| Log likelihood | 1333.137 | Durbin-Watson stat | 1.964556 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .25+.44i | .25-.44i | -.51 |

11. Model GARCH (2,2)

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/17/15 Time: 19:38
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence not achieved after 500 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*GARCH(-1) + C(6)*GARCH(-2)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.134533 | 0.046741 | -2.878260 | 0.0040 |
| Variance Equation | | | | |
| C | 3.83E-06 | 2.54E-06 | 1.509383 | 0.1312 |
| RESID(-1)^2 | 0.188678 | 0.075309 | 2.505396 | 0.0122 |
| RESID(-2)^2 | -0.109737 | 0.078681 | -1.394711 | 0.1631 |
| GARCH(-1) | 0.764039 | 0.415833 | 1.837367 | 0.0662 |
| GARCH(-2) | 0.138255 | 0.370460 | 0.373198 | 0.7090 |

| | | | |
|---|---|---|---|
| R-squared | 0.038498 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.027767 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014467 | Akaike info criterion | -5.846756 |
| Sum squared resid | 0.093758 | Schwarz criterion | -5.792332 |
| Log likelihood | 1333.214 | Durbin-Watson stat | 1.965287 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .26-.44i | .26+.44i | -.51 |

12. Model GARCH (2,3)

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/17/15 Time: 19:40
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 39 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*GARCH(-1) + C(6)*GARCH(-2) + C(7)*GARCH(-3)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.123292 | 0.046175 | -2.670096 | 0.0076 |
| Variance Equation | | | | |
| C | 1.31E-05 | 5.60E-06 | 2.328877 | 0.0199 |
| RESID(-1)^2 | 0.121082 | 0.016766 | 7.221814 | 0.0000 |
| RESID(-2)^2 | 0.084051 | 0.017931 | 4.687380 | 0.0000 |
| GARCH(-1) | -0.476222 | 0.013880 | -34.30933 | 0.0000 |
| GARCH(-2) | 0.289110 | 0.018742 | 15.42577 | 0.0000 |
| GARCH(-3) | 0.909679 | 0.015350 | 59.26325 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.036648 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.023717 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014497 | Akaike info criterion | -5.880509 |
| Sum squared resid | 0.093938 | Schwarz criterion | -5.817014 |
| Log likelihood | 1341.875 | Durbin-Watson stat | 1.961675 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .25+.43i | .25-.43i | -.50 |

13. Model GARCH (3,1)

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/17/15 Time: 21:53
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 12 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-3)^2 + C(6)*GARCH(-1)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.135642 | 0.046957 | -2.888621 | 0.0039 |
| **Variance Equation** | | | | |
| C | 3.48E-06 | 1.69E-06 | 2.056726 | 0.0397 |
| RESID(-1)^2 | 0.189586 | 0.075572 | 2.508680 | 0.0121 |
| RESID(-2)^2 | -0.142572 | 0.088717 | -1.607034 | 0.1080 |
| RESID(-3)^2 | 0.023754 | 0.050888 | 0.466796 | 0.6406 |
| GARCH(-1) | 0.912196 | 0.024747 | 36.86127 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.038667 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.027938 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014465 | Akaike info criterion | -5.846837 |
| Sum squared resid | 0.093741 | Schwarz criterion | -5.792413 |
| Log likelihood | 1333.232 | Durbin-Watson stat | 1.965643 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .26-.44i | .26+.44i | -.51 |

14. Model GARCH(3,2)

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/17/15 Time: 19:41
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 33 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-3)^2 + C(6)*GARCH(-1) + C(7)*GARCH(-2)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.137932 | 0.046667 | -2.955651 | 0.0031 |
| **Variance Equation** | | | | |
| C | 2.09E-06 | 4.36E-06 | 0.480705 | 0.6307 |
| RESID(-1)^2 | 0.193974 | 0.076717 | 2.528432 | 0.0115 |
| RESID(-2)^2 | -0.244289 | 0.227140 | -1.075501 | 0.2822 |
| RESID(-3)^2 | 0.091188 | 0.134827 | 0.676334 | 0.4988 |
| GARCH(-1) | 1.389079 | 1.126793 | 1.232772 | 0.2177 |
| GARCH(-2) | -0.440168 | 1.022157 | -0.430626 | 0.6667 |

| | | | |
|---|---|---|---|
| R-squared | 0.039008 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.026109 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014479 | Akaike info criterion | -5.842688 |
| Sum squared resid | 0.093708 | Schwarz criterion | -5.779193 |
| Log likelihood | 1333.290 | Durbin-Watson stat | 1.966379 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .26+.45i | .26-.45i | -.52 |

15. Model GARCH (3,3)

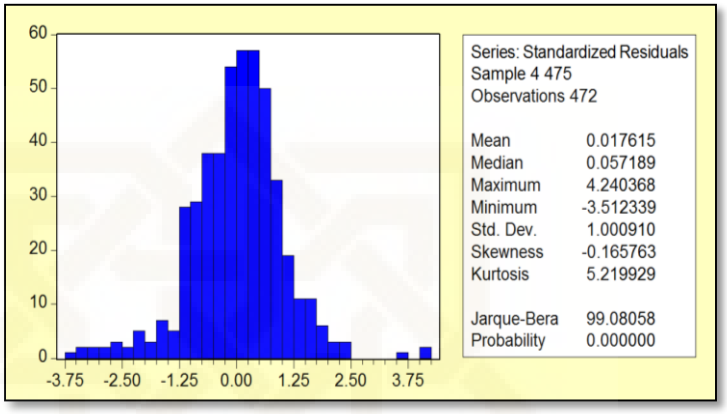
Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/17/15 Time: 19:42
Sample (adjusted): 4 457
Included observations: 454 after adjustments
Convergence achieved after 27 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-3)^2 + C(6)*GARCH(-1) + C(7)*GARCH(-2) + C(8)
*GARCH(-3)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.177898 | 0.047858 | -3.717223 | 0.0002 |
| Variance Equation | | | | |
| C | 1.02E-05 | 5.18E-06 | 1.969943 | 0.0488 |
| RESID(-1)^2 | 0.101418 | 0.023824 | 4.257024 | 0.0000 |
| RESID(-2)^2 | 0.024889 | 0.019580 | 1.271174 | 0.2037 |
| RESID(-3)^2 | 0.074537 | 0.021024 | 3.545386 | 0.0004 |
| GARCH(-1) | 0.172468 | 0.033339 | 5.173121 | 0.0000 |
| GARCH(-2) | -0.298088 | 0.025008 | -11.91994 | 0.0000 |
| GARCH(-3) | 0.870056 | 0.030925 | 28.13405 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.043261 | Mean dependent var | 0.000248 |
| Adjusted R-squared | 0.028245 | S.D. dependent var | 0.014672 |
| S.E. of regression | 0.014463 | Akaike info criterion | -5.864663 |
| Sum squared resid | 0.093293 | Schwarz criterion | -5.792097 |
| Log likelihood | 1339.279 | Durbin-Watson stat | 1.979199 |

**LAMPIRAN 6** : Uji diagnosa model GARCH

1. MODEL GARCH(1,0)
   a. Uji Normalitas




   b. Uji Heterokedastisitas

ARCH Test:

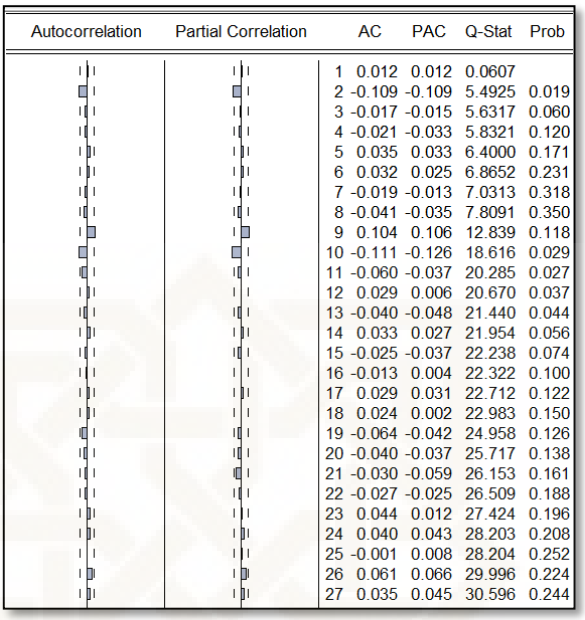
| | | | |
|---|---|---|---|
| F-statistic | 1.219150 | Probability | 0.270116 |
| Obs*R-squared | 1.221255 | Probability | 0.269114 |

Test Equation:
Dependent Variable: STD_RESID^2
Method: Least Squares
Date: 03/17/15 Time: 22:15
Sample (adjusted): 5 457
Included observations: 453 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 1.054156 | 0.107216 | 9.832124 | 0.0000 |
| STD_RESID^2(-1) | -0.051921 | 0.047024 | -1.104151 | 0.2701 |

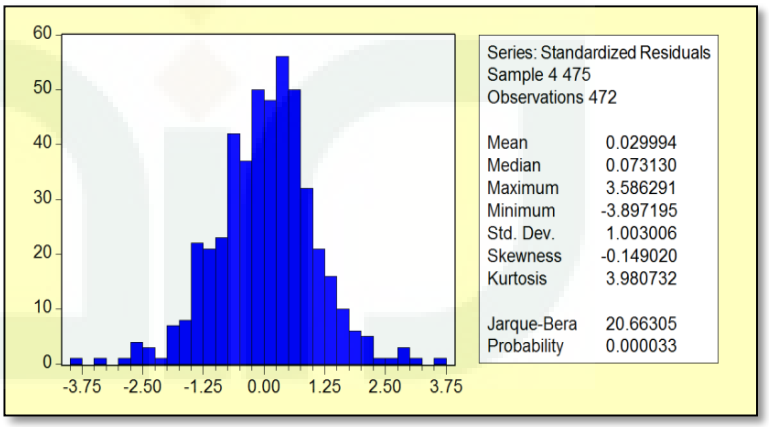
| | | | |
|---|---|---|---|
| R-squared | 0.002696 | Mean dependent var | 1.002130 |
| Adjusted R-squared | 0.000485 | S.D. dependent var | 2.050271 |
| S.E. of regression | 2.049774 | Akaike info criterion | 4.277742 |
| Sum squared resid | 1894.910 | Schwarz criterion | 4.295913 |
| Log likelihood | -966.9085 | F-statistic | 1.219150 |
| Durbin-Watson stat | 1.997777 | Prob(F-statistic) | 0.270116 |

c. Uji Autokorelasi



| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| | | 1 | 0.012 | 0.012 | 0.0607 | |
| | | 2 | -0.109 | -0.109 | 5.4925 | 0.019 |
| | | 3 | -0.017 | -0.015 | 5.6317 | 0.060 |
| | | 4 | -0.021 | -0.033 | 5.8321 | 0.120 |
| | | 5 | 0.035 | 0.033 | 6.4000 | 0.171 |
| | | 6 | 0.032 | 0.025 | 6.8652 | 0.231 |
| | | 7 | -0.019 | -0.013 | 7.0313 | 0.318 |
| | | 8 | -0.041 | -0.035 | 7.8091 | 0.350 |
| | | 9 | 0.104 | 0.106 | 12.839 | 0.118 |
| | | 10 | -0.111 | -0.126 | 18.616 | 0.029 |
| | | 11 | -0.060 | -0.037 | 20.285 | 0.027 |
| | | 12 | 0.029 | 0.006 | 20.670 | 0.037 |
| | | 13 | -0.040 | -0.048 | 21.440 | 0.044 |
| | | 14 | 0.033 | 0.027 | 21.954 | 0.056 |
| | | 15 | -0.025 | -0.037 | 22.238 | 0.074 |
| | | 16 | -0.013 | 0.004 | 22.322 | 0.100 |
| | | 17 | 0.029 | 0.031 | 22.712 | 0.122 |
| | | 18 | 0.024 | 0.002 | 22.983 | 0.150 |
| | | 19 | -0.064 | -0.042 | 24.958 | 0.126 |
| | | 20 | -0.040 | -0.037 | 25.717 | 0.138 |
| | | 21 | -0.030 | -0.059 | 26.153 | 0.161 |
| | | 22 | -0.027 | -0.025 | 26.509 | 0.188 |
| | | 23 | 0.044 | 0.012 | 27.424 | 0.196 |
| | | 24 | 0.040 | 0.043 | 28.203 | 0.208 |
| | | 25 | -0.001 | 0.008 | 28.204 | 0.252 |
| | | 26 | 0.061 | 0.066 | 29.996 | 0.224 |
| | | 27 | 0.035 | 0.045 | 30.596 | 0.244 |

2. MODEL GARCH(1,1)
   a. Uji Normalitas



b. Uji Heterokedastisitas

ARCH Test:

| | | | |
|---|---|---|---|
| F-statistic | 0.963693 | Probability | 0.326784 |
| Obs*R-squared | 0.965903 | Probability | 0.325704 |

Test Equation:
Dependent Variable: STD_RESID^2
Method: Least Squares
Date: 03/17/15 Time: 22:19
Sample (adjusted): 5 457
Included observations: 453 after adjustments

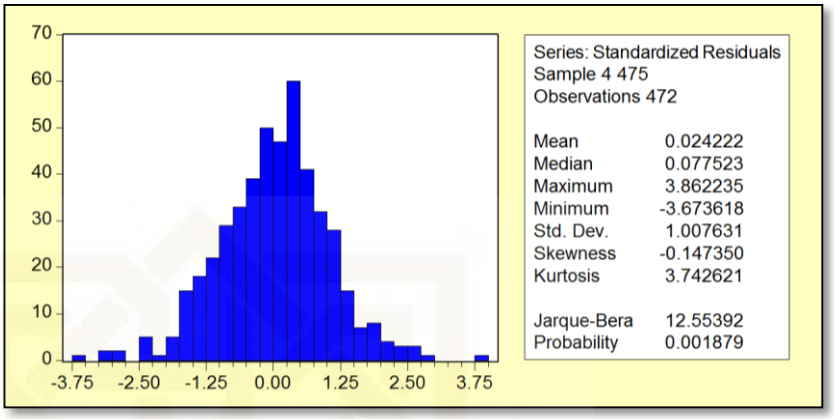
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.959737 | 0.094481 | 10.15796 | 0.0000 |
| STD_RESID^2(-1) | 0.046175 | 0.047037 | 0.981679 | 0.3268 |

| | | | |
|---|---|---|---|
| R-squared | 0.002132 | Mean dependent var | 1.006194 |
| Adjusted R-squared | -0.000080 | S.D. dependent var | 1.740408 |
| S.E. of regression | 1.740478 | Akaike info criterion | 3.950602 |
| Sum squared resid | 1366.198 | Schwarz criterion | 3.968774 |
| Log likelihood | -892.8113 | F-statistic | 0.963693 |
| Durbin-Watson stat | 1.997459 | Prob(F-statistic) | 0.326784 |

c. Uji Autokorelasi

| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| | | 1 | 0.046 | 0.046 | 0.9613 | |
| | | 2 | -0.019 | -0.021 | 1.1225 | 0.289 |
| | | 3 | -0.014 | -0.012 | 1.2141 | 0.545 |
| | | 4 | -0.015 | -0.014 | 1.3182 | 0.725 |
| | | 5 | -0.060 | -0.060 | 2.9971 | 0.558 |
| | | 6 | 0.011 | 0.015 | 3.0486 | 0.692 |
| | | 7 | 0.101 | 0.098 | 7.7973 | 0.253 |
| | | 8 | -0.021 | -0.032 | 7.9982 | 0.333 |
| | | 9 | 0.058 | 0.064 | 9.5555 | 0.298 |
| | | 10 | 0.010 | 0.003 | 9.6023 | 0.384 |
| | | 11 | 0.024 | 0.029 | 9.8678 | 0.452 |
| | | 12 | 0.014 | 0.025 | 9.9625 | 0.534 |
| | | 13 | -0.080 | -0.087 | 12.991 | 0.370 |
| | | 14 | 0.039 | 0.048 | 13.709 | 0.395 |
| | | 15 | -0.016 | -0.019 | 13.830 | 0.462 |
| | | 16 | 0.012 | 0.003 | 13.895 | 0.534 |
| | | 17 | -0.011 | -0.008 | 13.952 | 0.602 |
| | | 18 | -0.017 | -0.037 | 14.094 | 0.660 |
| | | 19 | 0.003 | 0.011 | 14.098 | 0.723 |
| | | 20 | -0.008 | 0.001 | 14.128 | 0.776 |
| | | 21 | -0.029 | -0.046 | 14.530 | 0.803 |
| | | 22 | -0.072 | -0.056 | 17.030 | 0.709 |
| | | 23 | 0.046 | 0.041 | 18.039 | 0.704 |
| | | 24 | 0.003 | 0.004 | 18.042 | 0.755 |
| | | 25 | -0.055 | -0.054 | 19.522 | 0.724 |
| | | 26 | -0.011 | -0.020 | 19.586 | 0.768 |
| | | 27 | -0.069 | -0.066 | 21.863 | 0.696 |

3. MODEL GARCH(2,3)
   a. Uji Normalitas




   b. Uji Heterokedastisitas

ARCH Test:

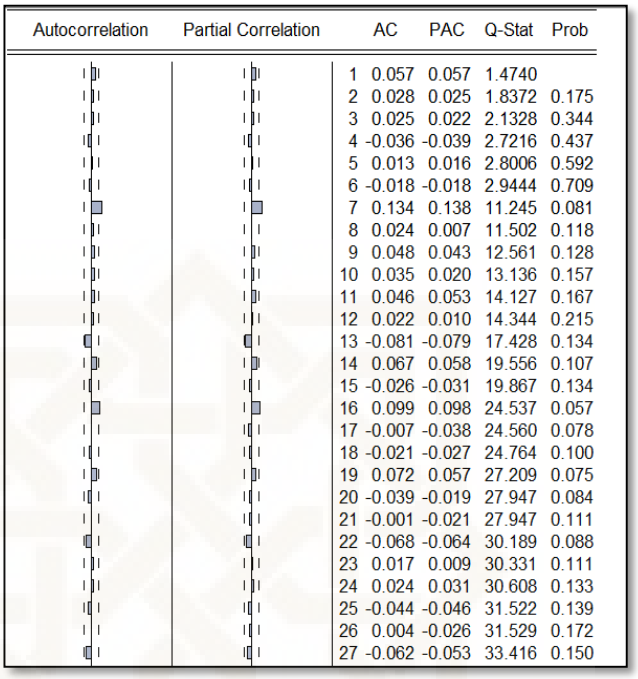
| | | | |
|---|---|---|---|
| F-statistic | 1.475300 | Probability | 0.225147 |
| Obs*R-squared | 1.477011 | Probability | 0.224243 |

Test Equation:
Dependent Variable: STD_RESID^2
Method: Least Squares
Date: 03/17/15 Time: 22:23
Sample (adjusted): 5 457
Included observations: 453 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.954347 | 0.092087 | 10.36355 | 0.0000 |
| STD_RESID^2(-1) | 0.057099 | 0.047010 | 1.214619 | 0.2251 |

| | | | |
|---|---|---|---|
| R-squared | 0.003261 | Mean dependent var | 1.012132 |
| Adjusted R-squared | 0.001050 | S.D. dependent var | 1.679016 |
| S.E. of regression | 1.678134 | Akaike info criterion | 3.877648 |
| Sum squared resid | 1270.077 | Schwarz criterion | 3.895819 |
| Log likelihood | -876.2872 | F-statistic | 1.475300 |
| Durbin-Watson stat | 2.002164 | Prob(F-statistic) | 0.225147 |

c. Uji Autokorelasi



| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| | | 1 | 0.057 | 0.057 | 1.4740 | |
| | | 2 | 0.028 | 0.025 | 1.8372 | 0.175 |
| | | 3 | 0.025 | 0.022 | 2.1328 | 0.344 |
| | | 4 | -0.036 | -0.039 | 2.7216 | 0.437 |
| | | 5 | 0.013 | 0.016 | 2.8006 | 0.592 |
| | | 6 | -0.018 | -0.018 | 2.9444 | 0.709 |
| | | 7 | 0.134 | 0.138 | 11.245 | 0.081 |
| | | 8 | 0.024 | 0.007 | 11.502 | 0.118 |
| | | 9 | 0.048 | 0.043 | 12.561 | 0.128 |
| | | 10 | 0.035 | 0.020 | 13.136 | 0.157 |
| | | 11 | 0.046 | 0.053 | 14.127 | 0.167 |
| | | 12 | 0.022 | 0.010 | 14.344 | 0.215 |
| | | 13 | -0.081 | -0.079 | 17.428 | 0.134 |
| | | 14 | 0.067 | 0.058 | 19.556 | 0.107 |
| | | 15 | -0.026 | -0.031 | 19.867 | 0.134 |
| | | 16 | 0.099 | 0.098 | 24.537 | 0.057 |
| | | 17 | -0.007 | -0.038 | 24.560 | 0.078 |
| | | 18 | -0.021 | -0.027 | 24.764 | 0.100 |
| | | 19 | 0.072 | 0.057 | 27.209 | 0.075 |
| | | 20 | -0.039 | -0.019 | 27.947 | 0.084 |
| | | 21 | -0.001 | -0.021 | 27.947 | 0.111 |
| | | 22 | -0.068 | -0.064 | 30.189 | 0.088 |
| | | 23 | 0.017 | 0.009 | 30.331 | 0.111 |
| | | 24 | 0.024 | 0.031 | 30.608 | 0.133 |
| | | 25 | -0.044 | -0.046 | 31.522 | 0.139 |
| | | 26 | 0.004 | -0.026 | 31.529 | 0.172 |
| | | 27 | -0.062 | -0.053 | 33.416 | 0.150 |

**LAMPIRAN 7** : Estimasi model TARCH

1. Model TARCH (1,0) Threshold 1

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:30
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 15 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-1)^2*(RESID(-1)<0)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.133561 | 0.029215 | -4.571684 | 0.0000 |
| **Variance Equation** | | | | |
| C | 0.000123 | 8.86E-06 | 13.90645 | 0.0000 |
| RESID(-1)^2 | 0.205039 | 0.086708 | 2.364710 | 0.0180 |
| RESID(-1)^2*(RESID(-1)<0) | 0.517941 | 0.128378 | 4.034490 | 0.0001 |

| | | | |
|---|---|---|---|
| R-squared | 0.037052 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.030879 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014249 | Akaike info criterion | -5.785733 |
| Sum squared resid | 0.095018 | Schwarz criterion | -5.750504 |
| Log likelihood | 1369.433 | Durbin-Watson stat | 1.975242 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .26-.44i | .26+.44i | -.51 |

2. Model TARCH (1,0)Threshold 2

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:35
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 16 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-1)^2*(RESID(-1)<0) + C(5)*RESID(-2)^2*(RESID(-2)<0)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.102734 | 0.037090 | -2.769846 | 0.0056 |
| **Variance Equation** | | | | |
| C | 0.000117 | 8.43E-06 | 13.86459 | 0.0000 |
| RESID(-1)^2 | 0.166570 | 0.072250 | 2.305464 | 0.0211 |
| RESID(-1)^2*(RESID(-1)<0) | 0.415313 | 0.128624 | 3.228896 | 0.0012 |
| RESID(-2)^2*(RESID(-2)<0) | 0.179097 | 0.094069 | 1.903895 | 0.0569 |

| | | | |
|---|---|---|---|
| R-squared | 0.031582 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.023287 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014305 | Akaike info criterion | -5.797726 |
| Sum squared resid | 0.095558 | Schwarz criterion | -5.753690 |
| Log likelihood | 1373.263 | Durbin-Watson stat | 1.965247 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .23+.41i | .23-.41i | -.47 |

3. Model TARCH(2,0) Threshold 1

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:38
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 18 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-1)^2*(RESID(-1)<0)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.121657 | 0.033908 | -3.587810 | 0.0003 |
| Variance Equation | | | | |
| C | 0.000119 | 8.84E-06 | 13.40001 | 0.0000 |
| RESID(-1)^2 | 0.176229 | 0.082522 | 2.135539 | 0.0327 |
| RESID(-1)^2*(RESID(-1)<0) | 0.490255 | 0.128820 | 3.805744 | 0.0001 |
| RESID(-2)^2 | 0.051852 | 0.050019 | 1.036651 | 0.2999 |

| | | | |
|---|---|---|---|
| R-squared | 0.035165 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.026901 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014278 | Akaike info criterion | -5.785553 |
| Sum squared resid | 0.095204 | Schwarz criterion | -5.741517 |
| Log likelihood | 1370.391 | Durbin-Watson stat | 1.971378 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .25-.43i | .25+.43i | -.50 |

4. Model TARCH (2,0)Threshold 2

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:41
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 44 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-1)^2*(RESID(-1)<0) + C(6)*RESID(-2)^2*(RESID(
-2)<0)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.104283 | 0.037326 | -2.793879 | 0.0052 |
| Variance Equation | | | | |
| C | 0.000118 | 8.70E-06 | 13.54399 | 0.0000 |
| RESID(-1)^2 | 0.177775 | 0.075177 | 2.364758 | 0.0180 |
| RESID(-1)^2*(RESID(-1)<0) | 0.404776 | 0.129319 | 3.130049 | 0.0017 |
| RESID(-2)^2 | -0.017368 | 0.045744 | -0.379679 | 0.7042 |
| RESID(-2)^2*(RESID(-2)<0) | 0.191364 | 0.098320 | 1.946333 | 0.0516 |

| | | | |
|---|---|---|---|
| R-squared | 0.031902 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.021515 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014318 | Akaike info criterion | -5.794187 |
| Sum squared resid | 0.095526 | Schwarz criterion | -5.741344 |
| Log likelihood | 1373.428 | Durbin-Watson stat | 1.965748 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .24+.41i | .24-.41i | -.47 |

5. Model TARCH (3,0)Threshold 1

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 08:19
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 13 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-3)^2 + C(6)*RESID(-1)^2*(RESID(-1)<0)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.079323 | 0.045736 | -1.734383 | 0.0829 |
| Variance Equation | | | | |
| C | 9.99E-05 | 8.81E-06 | 11.33158 | 0.0000 |
| RESID(-1)^2 | 0.110446 | 0.069319 | 1.593312 | 0.1111 |
| RESID(-1)^2*(RESID(-1)<0) | 0.376676 | 0.119673 | 3.147548 | 0.0016 |
| RESID(-2)^2 | 0.045528 | 0.046608 | 0.976827 | 0.3287 |
| RESID(-3)^2 | 0.183670 | 0.051129 | 3.592292 | 0.0003 |

| | | | |
|---|---|---|---|
| R-squared | 0.026155 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.015706 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014360 | Akaike info criterion | -5.815807 |
| Sum squared resid | 0.096093 | Schwarz criterion | -5.762964 |
| Log likelihood | 1378.530 | Durbin-Watson stat | 1.957698 |
| Inverted AR Roots | .21+.37i | .21-.37i | -.43 |

6. Model TARCH(3,0)Threshold 2

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 08:22
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 32 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-3)^2 + C(6)*RESID(-1)^2*(RESID(-1)<0) + C(7)
*RESID(-2)^2*(RESID(-2)<0)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.077963 | 0.048895 | -1.594499 | 0.1108 |
| Variance Equation | | | | |
| C | 0.000101 | 9.09E-06 | 11.07060 | 0.0000 |
| RESID(-1)^2 | 0.102232 | 0.062482 | 1.636200 | 0.1018 |
| RESID(-1)^2*(RESID(-1)<0) | 0.339234 | 0.114236 | 2.969593 | 0.0030 |
| RESID(-2)^2 | -0.011250 | 0.053302 | -0.211053 | 0.8328 |
| RESID(-2)^2*(RESID(-2)<0) | 0.146535 | 0.097392 | 1.504597 | 0.1324 |
| RESID(-3)^2 | 0.177916 | 0.051403 | 3.461192 | 0.0005 |

| | | | |
|---|---|---|---|
| R-squared | 0.025805 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.013235 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014378 | Akaike info criterion | -5.820307 |
| Sum squared resid | 0.096128 | Schwarz criterion | -5.758657 |
| Log likelihood | 1380.592 | Durbin-Watson stat | 1.957261 |

7. Model TARCH (0,1)Threshold 1

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:43
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 12 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2*(RESID(-1)<0) + C(4)*GARCH(-1)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.133119 | 0.044482 | -2.992616 | 0.0028 |
| Variance Equation | | | | |
| C | 2.89E-06 | 1.21E-06 | 2.379588 | 0.0173 |
| RESID(-1)^2*(RESID(-1)<0) | 0.101205 | 0.022157 | 4.567579 | 0.0000 |
| GARCH(-1) | 0.934298 | 0.013011 | 71.80851 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.036987 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.030813 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014249 | Akaike info criterion | -5.887695 |
| Sum squared resid | 0.095025 | Schwarz criterion | -5.852466 |
| Log likelihood | 1393.496 | Durbin-Watson stat | 1.975098 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .26+.44i | .26-.44i | -.51 |

8. Model TARCH(0,1) Threshold 2

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:50
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 12 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2*(RESID(-1)<0) + C(4)*RESID(-2)^2*(RESID(-2)<0) + C(5)*GARCH(-1)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.132082 | 0.045071 | -2.930521 | 0.0034 |
| Variance Equation | | | | |
| C | 2.32E-06 | 1.22E-06 | 1.905386 | 0.0567 |
| RESID(-1)^2*(RESID(-1)<0) | 0.314163 | 0.110399 | 2.845711 | 0.0044 |
| RESID(-2)^2*(RESID(-2)<0) | -0.229060 | 0.111412 | -2.055973 | 0.0398 |
| GARCH(-1) | 0.945819 | 0.014105 | 67.05637 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.036833 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.028583 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014266 | Akaike info criterion | -5.893983 |
| Sum squared resid | 0.095040 | Schwarz criterion | -5.849947 |
| Log likelihood | 1395.980 | Durbin-Watson stat | 1.974761 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .25+.44i | .25-.44i | -.51 |

9. Model TARCH(0,2) Threshold 1

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:55
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 20 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2*(RESID(-1)<0) + C(4)*GARCH(
-1) + C(5)*GARCH(-2)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.133655 | 0.044869 | -2.978820 | 0.0029 |
| Variance Equation | | | | |
| C | 3.89E-06 | 2.40E-06 | 1.623847 | 0.1044 |
| RESID(-1)^2*(RESID(-1)<0) | 0.134813 | 0.054437 | 2.476486 | 0.0133 |
| GARCH(-1) | 0.591059 | 0.505535 | 1.169175 | 0.2423 |
| GARCH(-2) | 0.321091 | 0.473080 | 0.678726 | 0.4973 |

| | | | |
|---|---|---|---|
| R-squared | 0.037065 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.028818 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014264 | Akaike info criterion | -5.885621 |
| Sum squared resid | 0.095017 | Schwarz criterion | -5.841585 |
| Log likelihood | 1394.007 | Durbin-Watson stat | 1.975272 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .26+.44i | .26-.44i | -.51 |

10. Model TARCH (02) Threshold 2

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:57
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence not achieved after 500 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2*(RESID(-1)<0) + C(4)*RESID(
-2)^2*(RESID(-2)<0) + C(5)*GARCH(-1) + C(6)*GARCH(-2)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.125904 | 0.045038 | -2.795495 | 0.0052 |
| Variance Equation | | | | |
| C | 1.21E-06 | 1.03E-06 | 1.178601 | 0.2386 |
| RESID(-1)^2*(RESID(-1)<0) | 0.327837 | 0.114194 | 2.870871 | 0.0041 |
| RESID(-2)^2*(RESID(-2)<0) | -0.276802 | 0.105556 | -2.622318 | 0.0087 |
| GARCH(-1) | 1.238601 | 0.278559 | 4.446461 | 0.0000 |
| GARCH(-2) | -0.270119 | 0.261600 | -1.032564 | 0.3018 |

| | | | |
|---|---|---|---|
| R-squared | 0.035871 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.025526 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014288 | Akaike info criterion | -5.893683 |
| Sum squared resid | 0.095135 | Schwarz criterion | -5.840841 |
| Log likelihood | 1396.909 | Durbin-Watson stat | 1.972756 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .25+.43i | .25-.43i | -.50 |

11. Model TARCH (0,3) Threshold 1

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 08:09
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 74 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2*(RESID(-1)<0) + C(4)*GARCH(
-1) + C(5)*GARCH(-2) + C(6)*GARCH(-3)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.128433 | 0.037663 | -3.410067 | 0.0006 |
| Variance Equation | | | | |
| C | 4.34E-06 | 1.79E-06 | 2.431754 | 0.0150 |
| RESID(-1)^2*(RESID(-1)<0) | 0.156233 | 0.028421 | 5.497058 | 0.0000 |
| GARCH(-1) | 1.227601 | 0.024085 | 50.96884 | 0.0000 |
| GARCH(-2) | -1.192077 | 0.029463 | -40.46063 | 0.0000 |
| GARCH(-3) | 0.866248 | 0.021928 | 39.50395 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.036274 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.025933 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014285 | Akaike info criterion | -5.906737 |
| Sum squared resid | 0.095095 | Schwarz criterion | -5.853894 |
| Log likelihood | 1399.990 | Durbin-Watson stat | 1.973577 |
| Inverted AR Roots | .25+.44i | .25-.44i | -.50 |

12. Model TARCH (0,0,3) Threshold 2

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 08:16
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 28 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2*(RESID(-1)<0) + C(4)*RESID(
-2)^2*(RESID(-2)<0) + C(5)*GARCH(-1) + C(6)*GARCH(-2) +
C(7)*GARCH(-3)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.113382 | 0.037907 | -2.991034 | 0.0028 |
| Variance Equation | | | | |
| C | 3.31E-06 | 1.85E-06 | 1.794673 | 0.0727 |
| RESID(-1)^2*(RESID(-1)<0) | 0.403290 | 0.097765 | 4.125112 | 0.0000 |
| RESID(-2)^2*(RESID(-2)<0) | -0.265528 | 0.111722 | -2.376687 | 0.0175 |
| GARCH(-1) | 1.102188 | 0.099573 | 11.06911 | 0.0000 |
| GARCH(-2) | -0.636685 | 0.179892 | -3.539262 | 0.0004 |
| GARCH(-3) | 0.452897 | 0.154145 | 2.938118 | 0.0033 |

| | | | |
|---|---|---|---|
| R-squared | 0.033686 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.021218 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014320 | Akaike info criterion | -5.895882 |
| Sum squared resid | 0.095350 | Schwarz criterion | -5.834232 |
| Log likelihood | 1398.428 | Durbin-Watson stat | 1.968695 |

13. Modal TARCH (1,1) Threshold 1

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:08
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 13 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-1)^2*(RESID(-1)<0) + C(5)*GARCH(-1)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.132154 | 0.045555 | -2.901010 | 0.0037 |
| **Variance Equation** | | | | |
| C | 3.02E-06 | 1.33E-06 | 2.261758 | 0.0237 |
| RESID(-1)^2 | 0.024413 | 0.021306 | 1.145846 | 0.2519 |
| RESID(-1)^2*(RESID(-1)<0) | 0.076100 | 0.031187 | 2.440143 | 0.0147 |
| GARCH(-1) | 0.921725 | 0.017700 | 52.07616 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.036843 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.028594 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014266 | Akaike info criterion | -5.886254 |
| Sum squared resid | 0.095039 | Schwarz criterion | -5.842218 |
| Log likelihood | 1394.156 | Durbin-Watson stat | 1.974785 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .25+.44i | .25-.44i | -.51 |

14. Model TARCH (1,1) Threshold 2

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:09
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 12 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-1)^2*(RESID(-1)<0) + C(5)*RESID(-2)^2*(RESID(-2)<0) + C(6)*GARCH(-1)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.127465 | 0.045732 | -2.787230 | 0.0053 |
| **Variance Equation** | | | | |
| C | 2.54E-06 | 1.52E-06 | 1.666030 | 0.0957 |
| RESID(-1)^2 | 0.030602 | 0.020919 | 1.462873 | 0.1435 |
| RESID(-1)^2*(RESID(-1)<0) | 0.316089 | 0.113572 | 2.783157 | 0.0054 |
| RESID(-2)^2*(RESID(-2)<0) | -0.263264 | 0.114666 | -2.295911 | 0.0217 |
| GARCH(-1) | 0.930481 | 0.021409 | 43.46237 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.036121 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.025779 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014286 | Akaike info criterion | -5.894794 |
| Sum squared resid | 0.095110 | Schwarz criterion | -5.841951 |
| Log likelihood | 1397.171 | Durbin-Watson stat | 1.973263 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .25-.44i | .25+.44i | -.50 |

15. Model TARCH (1,2) Threshold 1

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:11
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence not achieved after 500 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-1)^2*(RESID(-1)<0) + C(5)*GARCH(-1) + C(6)*GARCH(-2)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.131996 | 0.046032 | -2.867464 | 0.0041 |
| **Variance Equation** | | | | |
| C | 4.81E-06 | 2.81E-06 | 1.709734 | 0.0873 |
| RESID(-1)^2 | 0.045225 | 0.037103 | 1.218910 | 0.2229 |
| RESID(-1)^2*(RESID(-1)<0) | 0.106314 | 0.049625 | 2.142327 | 0.0322 |
| GARCH(-1) | 0.421418 | 0.406356 | 1.037068 | 0.2997 |
| GARCH(-2) | 0.454891 | 0.368406 | 1.234755 | 0.2169 |

| | | | |
|---|---|---|---|
| R-squared | 0.036820 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.026485 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014281 | Akaike info criterion | -5.885276 |
| Sum squared resid | 0.095041 | Schwarz criterion | -5.832433 |
| Log likelihood | 1394.925 | Durbin-Watson stat | 1.974734 |

| | | | |
|---|---|---|---|
| Inverted AR Roots | .25+.44i | .25-.44i | -.51 |

16. Model TARCH (1,2) Threshold 2

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:12
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence not achieved after 500 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-1)^2*(RESID(-1)<0) + C(5)*RESID(-2)^2*(RESID(-2)<0) + C(6)*GARCH(-1) + C(7)*GARCH(-2)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.123371 | 0.046188 | -2.671032 | 0.0076 |
| **Variance Equation** | | | | |
| C | 1.37E-06 | 1.19E-06 | 1.157058 | 0.2472 |
| RESID(-1)^2 | 0.017868 | 0.015926 | 1.121946 | 0.2619 |
| RESID(-1)^2*(RESID(-1)<0) | 0.321945 | 0.115344 | 2.791170 | 0.0053 |
| RESID(-2)^2*(RESID(-2)<0) | -0.288216 | 0.109989 | -2.620410 | 0.0088 |
| GARCH(-1) | 1.181986 | 0.289361 | 4.084819 | 0.0000 |
| GARCH(-2) | -0.223527 | 0.267300 | -0.836239 | 0.4030 |

| | | | |
|---|---|---|---|
| R-squared | 0.035454 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.023009 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014307 | Akaike info criterion | -5.893178 |
| Sum squared resid | 0.095176 | Schwarz criterion | -5.831527 |
| Log likelihood | 1397.790 | Durbin-Watson stat | 1.971934 |

17. Model TARCH(1,3) Threshold 1

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/20/15 Time: 19:46
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 76 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-1)^2*(RESID(-1)<0) + C(5)*GARCH(-1) + C(6)*GARCH(-2) + C(7)*GARCH(-3)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.157907 | 0.044638 | -3.537469 | 0.0004 |
| Variance Equation | | | | |
| C | 6.16E-06 | 3.58E-06 | 1.720768 | 0.0853 |
| RESID(-1)^2 | 0.078589 | 0.036770 | 2.137298 | 0.0326 |
| RESID(-1)^2*(RESID(-1)<0) | 0.109877 | 0.038473 | 2.855960 | 0.0043 |
| GARCH(-1) | 0.148626 | 0.045322 | 3.279349 | 0.0010 |
| GARCH(-2) | -0.144952 | 0.039932 | -3.629959 | 0.0003 |
| GARCH(-3) | 0.831383 | 0.034828 | 23.87142 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.040025 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.027638 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014273 | Akaike info criterion | -5.894991 |
| Sum squared resid | 0.094725 | Schwarz criterion | -5.833341 |
| Log likelihood | 1398.218 | Durbin-Watson stat | 1.983144 |

18. Model TARCH (1,3) Threshold 2

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/20/15 Time: 19:49
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 21 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-1)^2*(RESID(-1)<0) + C(5)*RESID(-2)^2*(RESID(-2)<0) + C(6)*GARCH(-1) + C(7)*GARCH(-2) + C(8)*GARCH(-3)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.117649 | 0.040911 | -2.875765 | 0.0040 |
| Variance Equation | | | | |
| C | 2.85E-06 | 1.80E-06 | 1.582332 | 0.1136 |
| RESID(-1)^2 | 0.028495 | 0.023644 | 1.205202 | 0.2281 |
| RESID(-1)^2*(RESID(-1)<0) | 0.391910 | 0.116074 | 3.376379 | 0.0007 |
| RESID(-2)^2*(RESID(-2)<0) | -0.306657 | 0.127553 | -2.404157 | 0.0162 |
| GARCH(-1) | 1.087574 | 0.118658 | 9.165635 | 0.0000 |
| GARCH(-2) | -0.513527 | 0.216006 | -2.377371 | 0.0174 |
| GARCH(-3) | 0.343535 | 0.171882 | 1.998671 | 0.0456 |

| | | | |
|---|---|---|---|
| R-squared | 0.034466 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.019900 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014329 | Akaike info criterion | -5.895255 |
| Sum squared resid | 0.095273 | Schwarz criterion | -5.824798 |
| Log likelihood | 1399.280 | Durbin-Watson stat | 1.970078 |

19. Model TARCH (2,1)Threshold 1

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:13
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 14 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-1)^2*(RESID(-1)<0) + C(6)*GARCH(-1)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.129590 | 0.044978 | -2.881173 | 0.0040 |
| Variance Equation | | | | |
| C | 2.38E-06 | 1.23E-06 | 1.926473 | 0.0540 |
| RESID(-1)^2 | 0.120086 | 0.075023 | 1.600660 | 0.1095 |
| RESID(-1)^2*(RESID(-1)<0) | 0.062658 | 0.028906 | 2.167657 | 0.0302 |
| RESID(-2)^2 | -0.096907 | 0.068077 | -1.423496 | 0.1546 |
| GARCH(-1) | 0.933400 | 0.017776 | 52.50912 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.036454 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.026115 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014284 | Akaike info criterion | -5.886319 |
| Sum squared resid | 0.095077 | Schwarz criterion | -5.833476 |
| Log likelihood | 1395.171 | Durbin-Watson stat | 1.973952 |
| Inverted AR Roots | .25+.44i | .25-.44i | -.51 |

20. Model TARCH (2,1) Threshold 2

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:15
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence not achieved after 500 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-1)^2*(RESID(-1)<0) + C(6)*RESID(-2)^2*(RESID(
-2)<0) + C(7)*GARCH(-1)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.127104 | 0.045479 | -2.794806 | 0.0052 |
| Variance Equation | | | | |
| C | 2.35E-06 | 1.44E-06 | 1.631599 | 0.1028 |
| RESID(-1)^2 | 0.048229 | 0.079781 | 0.604510 | 0.5455 |
| RESID(-1)^2*(RESID(-1)<0) | 0.307708 | 0.125889 | 2.444275 | 0.0145 |
| RESID(-2)^2 | -0.020429 | 0.077002 | -0.265302 | 0.7908 |
| RESID(-2)^2*(RESID(-2)<0) | -0.255348 | 0.128315 | -1.990014 | 0.0466 |
| GARCH(-1) | 0.934531 | 0.020354 | 45.91426 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.036064 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.023626 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014302 | Akaike info criterion | -5.890796 |
| Sum squared resid | 0.095116 | Schwarz criterion | -5.829146 |
| Log likelihood | 1397.228 | Durbin-Watson stat | 1.973146 |

21. Model TARCH (2,2) Threshold 1

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:16
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence not achieved after 500 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-1)^2*(RESID(-1)<0) + C(6)*GARCH(-1) + C(7)
*GARCH(-2)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.132350 | 0.045490 | -2.909455 | 0.0036 |
| Variance Equation | | | | |
| C | 3.44E-06 | 2.45E-06 | 1.404090 | 0.1603 |
| RESID(-1)^2 | 0.104967 | 0.080978 | 1.296232 | 0.1949 |
| RESID(-1)^2*(RESID(-1)<0) | 0.082436 | 0.047504 | 1.735342 | 0.0827 |
| RESID(-2)^2 | -0.073305 | 0.079242 | -0.925074 | 0.3549 |
| GARCH(-1) | 0.689243 | 0.446709 | 1.542936 | 0.1228 |
| GARCH(-2) | 0.220064 | 0.405437 | 0.542781 | 0.5873 |

| | | | |
|---|---|---|---|
| R-squared | 0.036873 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.024445 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014296 | Akaike info criterion | -5.883023 |
| Sum squared resid | 0.095036 | Schwarz criterion | -5.821373 |
| Log likelihood | 1395.393 | Durbin-Watson stat | 1.974849 |

22. Model TARCH (2,2) Threshold 2

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:18
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 20 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-1)^2*(RESID(-1)<0) + C(6)*RESID(-2)^2*(RESID(
-2)<0) + C(7)*GARCH(-1) + C(8)*GARCH(-2)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.122882 | 0.046367 | -2.650227 | 0.0080 |
| Variance Equation | | | | |
| C | 1.37E-06 | 1.17E-06 | 1.166879 | 0.2433 |
| RESID(-1)^2 | 0.023636 | 0.070974 | 0.333022 | 0.7391 |
| RESID(-1)^2*(RESID(-1)<0) | 0.320218 | 0.123135 | 2.600539 | 0.0093 |
| RESID(-2)^2 | -0.005960 | 0.067981 | -0.087670 | 0.9301 |
| RESID(-2)^2*(RESID(-2)<0) | -0.286051 | 0.119807 | -2.387603 | 0.0170 |
| GARCH(-1) | 1.174878 | 0.286675 | 4.098293 | 0.0000 |
| GARCH(-2) | -0.216414 | 0.264942 | -0.816836 | 0.4140 |

| | | | |
|---|---|---|---|
| R-squared | 0.035372 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.020820 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014323 | Akaike info criterion | -5.888970 |
| Sum squared resid | 0.095184 | Schwarz criterion | -5.818512 |
| Log likelihood | 1397.797 | Durbin-Watson stat | 1.971776 |

23. Model TARCH (2,3) Threshold 1

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:19
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 42 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-1)^2*(RESID(-1)<0) + C(6)*GARCH(-1) + C(7)
*GARCH(-2) + C(8)*GARCH(-3)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.148056 | 0.046086 | -3.212574 | 0.0013 |
| **Variance Equation** | | | | |
| C | 6.21E-06 | 3.93E-06 | 1.579400 | 0.1142 |
| RESID(-1)^2 | 0.076062 | 0.032576 | 2.334881 | 0.0195 |
| RESID(-1)^2*(RESID(-1)<0) | 0.086731 | 0.039956 | 2.170667 | 0.0300 |
| RESID(-2)^2 | 0.034413 | 0.029725 | 1.157717 | 0.2470 |
| GARCH(-1) | 0.118190 | 0.040172 | 2.942127 | 0.0033 |
| GARCH(-2) | -0.154946 | 0.036501 | -4.244949 | 0.0000 |
| GARCH(-3) | 0.851525 | 0.034986 | 24.33926 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.038965 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.024466 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014296 | Akaike info criterion | -5.893768 |
| Sum squared resid | 0.094829 | Schwarz criterion | -5.823311 |
| Log likelihood | 1398.929 | Durbin-Watson stat | 1.979947 |

24. Model TARCH (2,3) Threshold 2

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:20
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 31 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-1)^2*(RESID(-1)<0) + C(6)*RESID(-2)^2*(RESID(
-2)<0) + C(7)*GARCH(-1) + C(8)*GARCH(-2) + C(9)*GARCH(-3)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.118201 | 0.041137 | -2.873364 | 0.0041 |
| **Variance Equation** | | | | |
| C | 3.45E-06 | 2.16E-06 | 1.592325 | 0.1113 |
| RESID(-1)^2 | 0.011801 | 0.041981 | 0.281098 | 0.7786 |
| RESID(-1)^2*(RESID(-1)<0) | 0.389217 | 0.107703 | 3.613789 | 0.0003 |
| RESID(-2)^2 | 0.021702 | 0.041052 | 0.528659 | 0.5970 |
| RESID(-2)^2*(RESID(-2)<0) | -0.291362 | 0.120290 | -2.422164 | 0.0154 |
| GARCH(-1) | 1.074399 | 0.114555 | 9.378910 | 0.0000 |
| GARCH(-2) | -0.566112 | 0.201119 | -2.814814 | 0.0049 |
| GARCH(-3) | 0.395528 | 0.169687 | 2.330926 | 0.0198 |

| | | | |
|---|---|---|---|
| R-squared | 0.034564 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.017883 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014344 | Akaike info criterion | -5.891418 |
| Sum squared resid | 0.095264 | Schwarz criterion | -5.812154 |
| Log likelihood | 1399.375 | Durbin-Watson stat | 1.970257 |

25. Model TARCH (3,1) Threshold 1

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/20/15 Time: 19:51
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 23 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-3)^2 + C(6)*RESID(-1)^2*(RESID(-1)<0) + C(7)
*GARCH(-1)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.132148 | 0.045732 | -2.889621 | 0.0039 |
| Variance Equation | | | | |
| C | 2.59E-06 | 1.36E-06 | 1.911075 | 0.0560 |
| RESID(-1)^2 | 0.121058 | 0.075857 | 1.595883 | 0.1105 |
| RESID(-1)^2*(RESID(-1)<0) | 0.062863 | 0.029182 | 2.154150 | 0.0312 |
| RESID(-2)^2 | -0.110582 | 0.082372 | -1.342469 | 0.1794 |
| RESID(-3)^2 | 0.015254 | 0.046632 | 0.327119 | 0.7436 |
| GARCH(-1) | 0.929534 | 0.020268 | 45.86208 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.036842 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.024415 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014296 | Akaike info criterion | -5.882335 |
| Sum squared resid | 0.095039 | Schwarz criterion | -5.820685 |
| Log likelihood | 1395.231 | Durbin-Watson stat | 1.974783 |

26. Model TARCH (3,1) Threshold 2

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/20/15 Time: 19:53
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence not achieved after 500 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-3)^2 + C(6)*RESID(-1)^2*(RESID(-1)<0) + C(7)
*RESID(-2)^2*(RESID(-2)<0) + C(8)*GARCH(-1)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.128729 | 0.046010 | -2.797822 | 0.0051 |
| Variance Equation | | | | |
| C | 2.63E-06 | 1.66E-06 | 1.591235 | 0.1116 |
| RESID(-1)^2 | 0.050269 | 0.080698 | 0.622934 | 0.5333 |
| RESID(-1)^2*(RESID(-1)<0) | 0.308455 | 0.126401 | 2.440294 | 0.0147 |
| RESID(-2)^2 | -0.032956 | 0.094944 | -0.347112 | 0.7285 |
| RESID(-2)^2*(RESID(-2)<0) | -0.254553 | 0.127957 | -1.989364 | 0.0467 |
| RESID(-3)^2 | 0.013443 | 0.051022 | 0.263468 | 0.7922 |
| GARCH(-1) | 0.929326 | 0.024396 | 38.09333 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.036320 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.021782 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014316 | Akaike info criterion | -5.886720 |
| Sum squared resid | 0.095090 | Schwarz criterion | -5.816263 |
| Log likelihood | 1397.266 | Durbin-Watson stat | 1.973673 |

27. Model TARCH (3,2) Threshold 1

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:22
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 22 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-3)^2 + C(6)*RESID(-1)^2*(RESID(-1)<0) + C(7)
*GARCH(-1) + C(8)*GARCH(-2)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.131575 | 0.045911 | -2.865873 | 0.0042 |
| **Variance Equation** | | | | |
| C | 3.43E-06 | 3.59E-06 | 0.955364 | 0.3394 |
| RESID(-1)^2 | 0.106638 | 0.085485 | 1.247450 | 0.2122 |
| RESID(-1)^2*(RESID(-1)<0) | 0.085158 | 0.074131 | 1.148757 | 0.2507 |
| RESID(-2)^2 | -0.064291 | 0.182842 | -0.351618 | 0.7251 |
| RESID(-3)^2 | -0.010762 | 0.116121 | -0.092679 | 0.9262 |
| GARCH(-1) | 0.640682 | 1.086724 | 0.589553 | 0.5555 |
| GARCH(-2) | 0.267461 | 1.009176 | 0.265029 | 0.7910 |

| | | | |
|---|---|---|---|
| R-squared | 0.036757 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.022225 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014312 | Akaike info criterion | -5.878841 |
| Sum squared resid | 0.095047 | Schwarz criterion | -5.808384 |
| Log likelihood | 1395.407 | Durbin-Watson stat | 1.974597 |

28. Model TARCH (3,2) Threshold 2

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:23
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 36 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-3)^2 + C(6)*RESID(-1)^2*(RESID(-1)<0) + C(7)
*RESID(-2)^2*(RESID(-2)<0) + C(8)*GARCH(-1) + C(9)
*GARCH(-2)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.121262 | 0.046663 | -2.598654 | 0.0094 |
| **Variance Equation** | | | | |
| C | 6.80E-06 | 4.18E-06 | 1.626775 | 0.1038 |
| RESID(-1)^2 | 0.052169 | 0.081105 | 0.643226 | 0.5201 |
| RESID(-1)^2*(RESID(-1)<0) | 0.367167 | 0.109679 | 3.347637 | 0.0008 |
| RESID(-2)^2 | -0.070639 | 0.099639 | -0.708955 | 0.4784 |
| RESID(-2)^2*(RESID(-2)<0) | -0.340139 | 0.100976 | -3.368519 | 0.0008 |
| RESID(-3)^2 | 0.101419 | 0.056198 | 1.804678 | 0.0711 |
| GARCH(-1) | 1.156075 | 0.239083 | 4.835463 | 0.0000 |
| GARCH(-2) | -0.286057 | 0.201706 | -1.418189 | 0.1561 |

| | | | |
|---|---|---|---|
| R-squared | 0.035098 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.018426 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014340 | Akaike info criterion | -5.885480 |
| Sum squared resid | 0.095211 | Schwarz criterion | -5.806216 |

29. Model TARCH (3,3) Threshold 1

Dependent Variable: RETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 03/18/15 Time: 07:25
Sample (adjusted): 4 475
Included observations: 472 after adjustments
Convergence achieved after 16 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-3)^2 + C(6)*RESID(-1)^2*(RESID(-1)<0) + C(7)
*GARCH(-1) + C(8)*GARCH(-2) + C(9)*GARCH(-3)

| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.104315 | 0.048862 | -2.134894 | 0.0328 |
| Variance Equation | | | | |
| C | 2.65E-05 | 7.98E-06 | 3.320577 | 0.0009 |
| RESID(-1)^2 | -0.026630 | 0.024084 | -1.105724 | 0.2688 |
| RESID(-1)^2*(RESID(-1)<0) | 0.324804 | 0.048766 | 6.660534 | 0.0000 |
| RESID(-2)^2 | 0.000107 | 0.026336 | 0.004054 | 0.9968 |
| RESID(-3)^2 | 0.213901 | 0.046734 | 4.576974 | 0.0000 |
| GARCH(-1) | 0.493600 | 0.056439 | 8.745792 | 0.0000 |
| GARCH(-2) | -0.517023 | 0.065955 | -7.839072 | 0.0000 |
| GARCH(-3) | 0.548502 | 0.077192 | 7.105723 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.031909 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.015181 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014364 | Akaike info criterion | -5.904164 |
| Sum squared resid | 0.095526 | Schwarz criterion | -5.824899 |
| Log likelihood | 1402.383 | Durbin-Watson stat | 1.965759 |

30. Model TARCH (3,3) Threshold 2

Convergence achieved after 11 iterations
Variance backcast: ON
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)
*RESID(-3)^2 + C(6)*RESID(-1)^2*(RESID(-1)<0) + C(7)
*RESID(-2)^2*(RESID(-2)<0) + C(8)*GARCH(-1) + C(9)
*GARCH(-2) + C(10)*GARCH(-3)

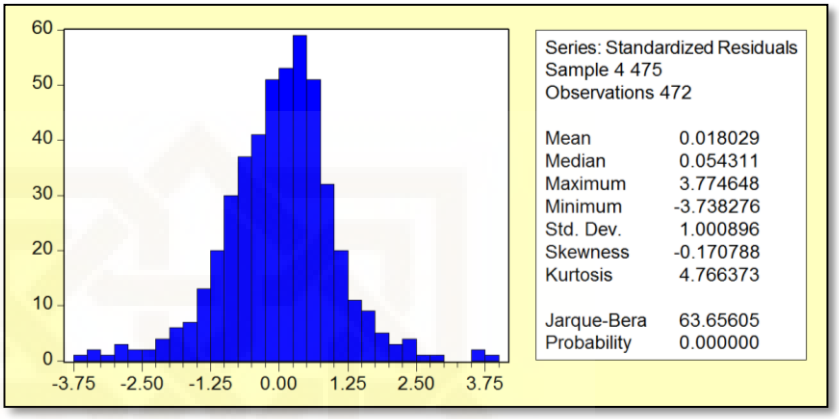
| | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| AR(3) | -0.102836 | 0.050450 | -2.038378 | 0.0415 |
| Variance Equation | | | | |
| C | 3.05E-05 | 9.66E-06 | 3.160505 | 0.0016 |
| RESID(-1)^2 | -0.020396 | 0.027380 | -0.744930 | 0.4563 |
| RESID(-1)^2*(RESID(-1)<0) | 0.307025 | 0.054286 | 5.655713 | 0.0000 |
| RESID(-2)^2 | -0.006650 | 0.032269 | -0.206064 | 0.8367 |
| RESID(-2)^2*(RESID(-2)<0) | 0.046729 | 0.069357 | 0.673749 | 0.5005 |
| RESID(-3)^2 | 0.219856 | 0.051794 | 4.244856 | 0.0000 |
| GARCH(-1) | 0.463508 | 0.077871 | 5.952268 | 0.0000 |
| GARCH(-2) | -0.501709 | 0.077519 | -6.472112 | 0.0000 |
| GARCH(-3) | 0.527272 | 0.083536 | 6.311874 | 0.0000 |

| | | | |
|---|---|---|---|
| R-squared | 0.031603 | Mean dependent var | 0.000291 |
| Adjusted R-squared | 0.012738 | S.D. dependent var | 0.014474 |
| S.E. of regression | 0.014382 | Akaike info criterion | -5.902120 |
| Sum squared resid | 0.095556 | Schwarz criterion | -5.814049 |
| Log likelihood | 1402.900 | Durbin-Watson stat | 1.965280 |

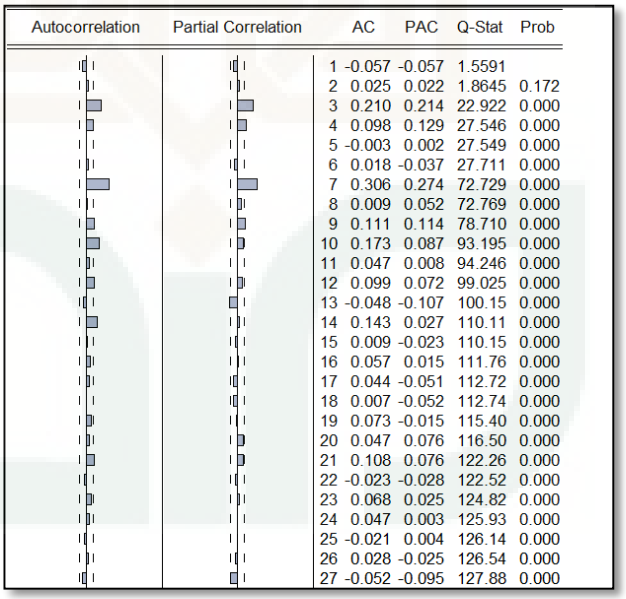
| | | | |
|---|---|---|---|
| Inverted AR Roots | .23+.41i | .23-.41i | -.47 |

**LAMPIRAN 8** : Uji diagnosa model TARCH

1. Model TARCH (1,0) Threshold 1
   a. Uji Normalitas




   b. Uji Autokorelasi




| | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|
| 1 | -0.057 | -0.057 | 1.5591 | |
| 2 | 0.025 | 0.022 | 1.8645 | 0.172 |
| 3 | 0.210 | 0.214 | 22.922 | 0.000 |
| 4 | 0.098 | 0.129 | 27.546 | 0.000 |
| 5 | -0.003 | 0.002 | 27.549 | 0.000 |
| 6 | 0.018 | -0.037 | 27.711 | 0.000 |
| 7 | 0.306 | 0.274 | 72.729 | 0.000 |
| 8 | 0.009 | 0.052 | 72.769 | 0.000 |
| 9 | 0.111 | 0.114 | 78.710 | 0.000 |
| 10 | 0.173 | 0.087 | 93.195 | 0.000 |
| 11 | 0.047 | 0.008 | 94.246 | 0.000 |
| 12 | 0.099 | 0.072 | 99.025 | 0.000 |
| 13 | -0.048 | -0.107 | 100.15 | 0.000 |
| 14 | 0.143 | 0.027 | 110.11 | 0.000 |
| 15 | 0.009 | -0.023 | 110.15 | 0.000 |
| 16 | 0.057 | 0.015 | 111.76 | 0.000 |
| 17 | 0.044 | -0.051 | 112.72 | 0.000 |
| 18 | 0.007 | -0.052 | 112.74 | 0.000 |
| 19 | 0.073 | -0.015 | 115.40 | 0.000 |
| 20 | 0.047 | 0.076 | 116.50 | 0.000 |
| 21 | 0.108 | 0.076 | 122.26 | 0.000 |
| 22 | -0.023 | -0.028 | 122.52 | 0.000 |
| 23 | 0.068 | 0.025 | 124.82 | 0.000 |
| 24 | 0.047 | 0.003 | 125.93 | 0.000 |
| 25 | -0.021 | 0.004 | 126.14 | 0.000 |
| 26 | 0.028 | -0.025 | 126.54 | 0.000 |
| 27 | -0.052 | -0.095 | 127.88 | 0.000 |

c. Uji Heterokedastisitas

ARCH Test:

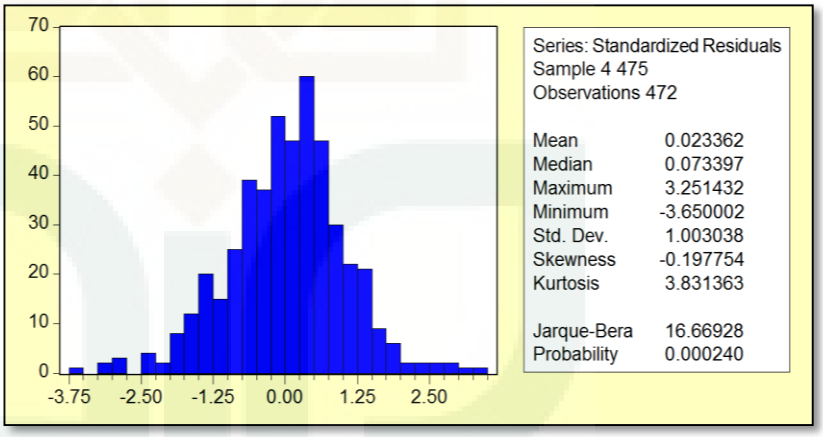
| | | | |
|---|---|---|---|
| F-statistic | 1.526856 | Probability | 0.217203 |
| Obs*R-squared | 1.528391 | Probability | 0.216354 |

Test Equation:
Dependent Variable: STD_RESID^2
Method: Least Squares
Date: 03/20/15 Time: 18:18
Sample (adjusted): 5 475
Included observations: 471 after adjustments

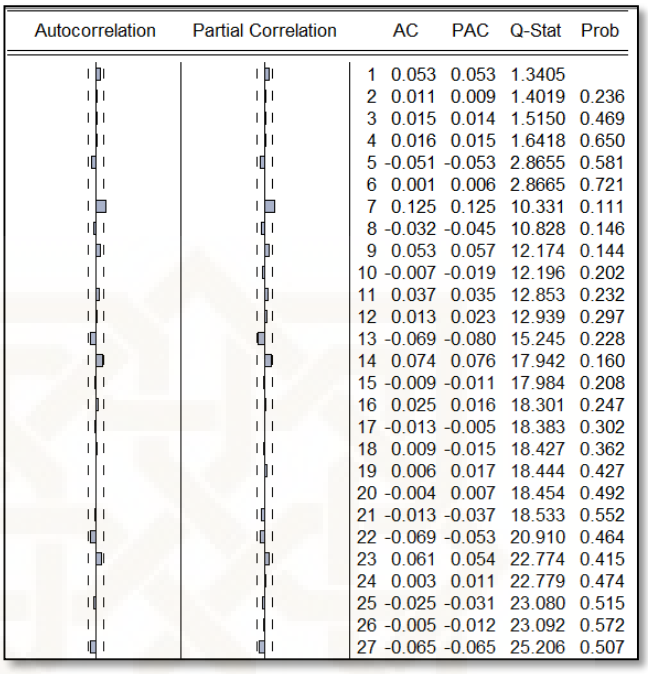
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 1.059030 | 0.100593 | 10.52783 | 0.0000 |
| STD_RESID^2(-1) | -0.056957 | 0.046094 | -1.235660 | 0.2172 |

| | | | |
|---|---|---|---|
| R-squared | 0.003245 | Mean dependent var | 1.001999 |
| Adjusted R-squared | 0.001120 | S.D. dependent var | 1.940864 |
| S.E. of regression | 1.939777 | Akaike info criterion | 4.167260 |
| Sum squared resid | 1764.722 | Schwarz criterion | 4.184903 |
| Log likelihood | -979.3898 | F-statistic | 1.526856 |
| Durbin-Watson stat | 1.997514 | Prob(F-statistic) | 0.217203 |

2. Model TARCH (0,1) Threshold 1
   a. Uji normalitas



b. Uji Autokorelasi



| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| | | 1 | 0.053 | 0.053 | 1.3405 | |
| | | 2 | 0.011 | 0.009 | 1.4019 | 0.236 |
| | | 3 | 0.015 | 0.014 | 1.5150 | 0.469 |
| | | 4 | 0.016 | 0.015 | 1.6418 | 0.650 |
| | | 5 | -0.051 | -0.053 | 2.8655 | 0.581 |
| | | 6 | 0.001 | 0.006 | 2.8665 | 0.721 |
| | | 7 | 0.125 | 0.125 | 10.331 | 0.111 |
| | | 8 | -0.032 | -0.045 | 10.828 | 0.146 |
| | | 9 | 0.053 | 0.057 | 12.174 | 0.144 |
| | | 10 | -0.007 | -0.019 | 12.196 | 0.202 |
| | | 11 | 0.037 | 0.035 | 12.853 | 0.232 |
| | | 12 | 0.013 | 0.023 | 12.939 | 0.297 |
| | | 13 | -0.069 | -0.080 | 15.245 | 0.228 |
| | | 14 | 0.074 | 0.076 | 17.942 | 0.160 |
| | | 15 | -0.009 | -0.011 | 17.984 | 0.208 |
| | | 16 | 0.025 | 0.016 | 18.301 | 0.247 |
| | | 17 | -0.013 | -0.005 | 18.383 | 0.302 |
| | | 18 | 0.009 | -0.015 | 18.427 | 0.362 |
| | | 19 | 0.006 | 0.017 | 18.444 | 0.427 |
| | | 20 | -0.004 | 0.007 | 18.454 | 0.492 |
| | | 21 | -0.013 | -0.037 | 18.533 | 0.552 |
| | | 22 | -0.069 | -0.053 | 20.910 | 0.464 |
| | | 23 | 0.061 | 0.054 | 22.774 | 0.415 |
| | | 24 | 0.003 | 0.011 | 22.779 | 0.474 |
| | | 25 | -0.025 | -0.031 | 23.080 | 0.515 |
| | | 26 | -0.005 | -0.012 | 23.092 | 0.572 |
| | | 27 | -0.065 | -0.065 | 25.206 | 0.507 |

c. Uji Heterokedastisitas

ARCH Test:

| | | | |
|---|---|---|---|
| F-statistic | 1.344584 | Probability | 0.246817 |
| Obs*R-squared | 1.346457 | Probability | 0.245898 |

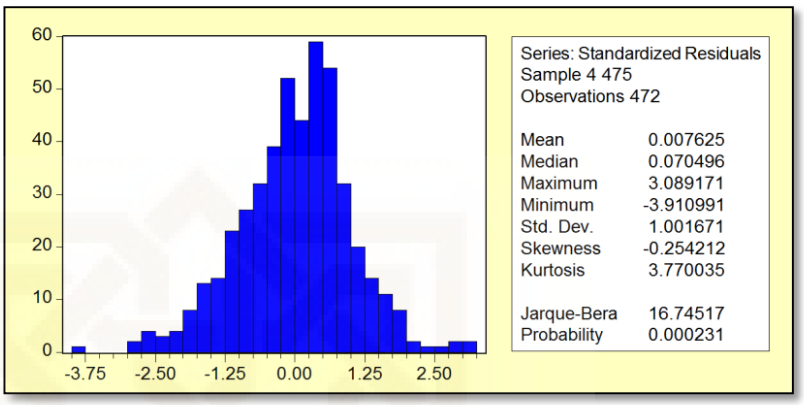
Test Equation:
Dependent Variable: STD_RESID^2
Method: Least Squares
Date: 03/20/15 Time: 18:22
Sample (adjusted): 5 475
Included observations: 471 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.952648 | 0.090499 | 10.52664 | 0.0000 |
| STD_RESID^2(-1) | 0.053455 | 0.046099 | 1.159562 | 0.2468 |

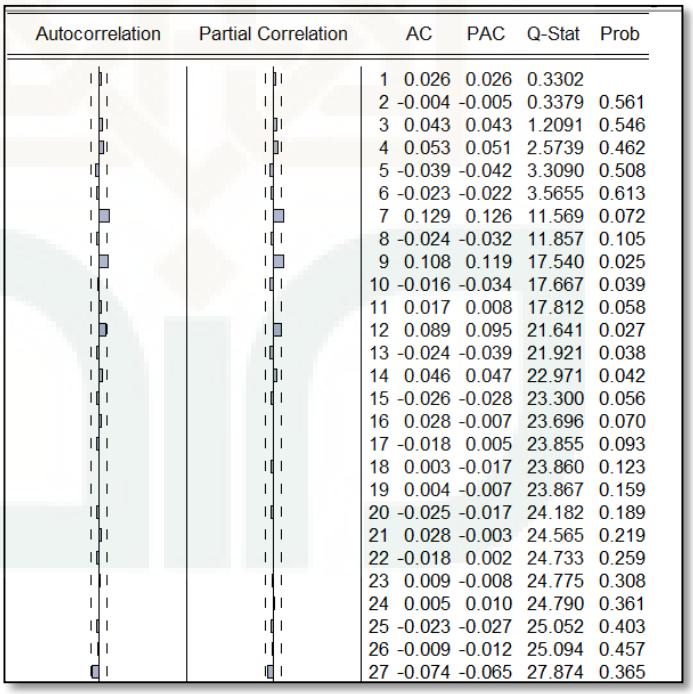
| | | | |
|---|---|---|---|
| R-squared | 0.002859 | Mean dependent var | 1.006393 |
| Adjusted R-squared | 0.000733 | S.D. dependent var | 1.687535 |
| S.E. of regression | 1.686917 | Akaike info criterion | 3.887919 |
| Sum squared resid | 1334.627 | Schwarz criterion | 3.905562 |
| Log likelihood | -913.6049 | F-statistic | 1.344584 |
| Durbin-Watson stat | 2.000649 | Prob(F-statistic) | 0.246817 |

3. Model TARCH(0,3)Threshold 1

a. Uji Normalitas




b. Uji Autokorelasi



| Autocorrelation | Partial Correlation | | AC | PAC | Q-Stat | Prob |
|---|---|---|---|---|---|---|
| | | 1 | 0.026 | 0.026 | 0.3302 | |
| | | 2 | -0.004 | -0.005 | 0.3379 | 0.561 |
| | | 3 | 0.043 | 0.043 | 1.2091 | 0.546 |
| | | 4 | 0.053 | 0.051 | 2.5739 | 0.462 |
| | | 5 | -0.039 | -0.042 | 3.3090 | 0.508 |
| | | 6 | -0.023 | -0.022 | 3.5655 | 0.613 |
| | | 7 | 0.129 | 0.126 | 11.569 | 0.072 |
| | | 8 | -0.024 | -0.032 | 11.857 | 0.105 |
| | | 9 | 0.108 | 0.119 | 17.540 | 0.025 |
| | | 10 | -0.016 | -0.034 | 17.667 | 0.039 |
| | | 11 | 0.017 | 0.008 | 17.812 | 0.058 |
| | | 12 | 0.089 | 0.095 | 21.641 | 0.027 |
| | | 13 | -0.024 | -0.039 | 21.921 | 0.038 |
| | | 14 | 0.046 | 0.047 | 22.971 | 0.042 |
| | | 15 | -0.026 | -0.028 | 23.300 | 0.056 |
| | | 16 | 0.028 | -0.007 | 23.696 | 0.070 |
| | | 17 | -0.018 | 0.005 | 23.855 | 0.093 |
| | | 18 | 0.003 | -0.017 | 23.860 | 0.123 |
| | | 19 | 0.004 | -0.007 | 23.867 | 0.159 |
| | | 20 | -0.025 | -0.017 | 24.182 | 0.189 |
| | | 21 | 0.028 | -0.003 | 24.565 | 0.219 |
| | | 22 | -0.018 | 0.002 | 24.733 | 0.259 |
| | | 23 | 0.009 | -0.008 | 24.775 | 0.308 |
| | | 24 | 0.005 | 0.010 | 24.790 | 0.361 |
| | | 25 | -0.023 | -0.027 | 25.052 | 0.403 |
| | | 26 | -0.009 | -0.012 | 25.094 | 0.457 |
| | | 27 | -0.074 | -0.065 | 27.874 | 0.365 |

c. Uji Heterokedastisitas

ARCH Test:

| | | | |
|---|---|---|---|
| F-statistic | 0.333841 | Probability | 0.563683 |
| Obs*R-squared | 0.335026 | Probability | 0.562714 |

Test Equation:
Dependent Variable: STD_RESID^2
Method: Least Squares
Date: 03/20/15 Time: 18:26
Sample (adjusted): 5 475
Included observations: 471 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.976442 | 0.089710 | 10.88439 | 0.0000 |
| STD_RESID^2(-1) | 0.026664 | 0.046148 | 0.577790 | 0.5637 |

| | | | |
|---|---|---|---|
| R-squared | 0.000711 | Mean dependent var | 1.003162 |
| Adjusted R-squared | -0.001419 | S.D. dependent var | 1.667141 |
| S.E. of regression | 1.668323 | Akaike info criterion | 3.865753 |
| Sum squared resid | 1305.369 | Schwarz criterion | 3.883395 |
| Log likelihood | -908.3847 | F-statistic | 0.333841 |
| Durbin-Watson stat | 1.999431 | Prob(F-statistic) | 0.563683 |

**LAMPIRAN 9 :** Perhitungan *Likelihood Ratio Test*

| No | Tanggal | Close | Return | Return * 10000000 | T-1 hari | T-6 hari | T-30 hari | T-90 hari |
|---|---|---|---|---|---|---|---|---|
| 1 | 3/4/2013 | 646.86 | 0 | 0 | TRUE | TRUE | TRUE | TRUE |
| 2 | 3/5/2013 | 648.65 | 0.00276721 | 27672.14 | TRUE | TRUE | TRUE | TRUE |
| 3 | 3/6/2013 | 661.12 | 0.01922454 | 192245.43 | TRUE | TRUE | TRUE | TRUE |
| 4 | 3/7/2013 | 662.96 | 0.00278316 | 27831.56 | TRUE | TRUE | TRUE | TRUE |
| 5 | 3/8/2013 | 668.46 | 0.00829613 | 82961.26 | TRUE | TRUE | TRUE | TRUE |
| 6 | 3/11/2013 | 660.31 | -0.0121922 | -121922.03 | TRUE | TRUE | TRUE | TRUE |
| 7 | 3/13/2013 | 656.21 | -0.0062092 | -62092.05 | TRUE | TRUE | TRUE | TRUE |
| 8 | 3/14/2013 | 645.38 | -0.0165039 | -165038.63 | TRUE | TRUE | TRUE | TRUE |
| 9 | 3/15/2013 | 648.64 | 0.00505129 | 50512.88 | TRUE | TRUE | TRUE | TRUE |
| 10 | 3/18/2013 | 650.99 | 0.00362297 | 36229.65 | TRUE | TRUE | TRUE | TRUE |
| 11 | 3/19/2013 | 650.02 | -0.00149 | -14900.38 | TRUE | TRUE | TRUE | TRUE |
| 12 | 3/21/2013 | 646.12 | -0.0059998 | -59998.15 | TRUE | TRUE | TRUE | TRUE |
| 13 | 3/22/2013 | 630.61 | -0.0240048 | -240048.29 | **FALSE** | TRUE | TRUE | TRUE |
| 14 | 3/26/2013 | 649.88 | 0.03055771 | 305577.14 | TRUE | TRUE | TRUE | TRUE |
| 15 | 3/27/2013 | 660.33 | 0.01607989 | 160798.92 | TRUE | TRUE | TRUE | TRUE |
| 16 | 3/28/2013 | 660.34 | 0.0000151 | 151 | TRUE | TRUE | TRUE | TRUE |
| 17 | 4/1/2013 | 658.05 | -0.0034679 | -34679.1 | TRUE | TRUE | TRUE | TRUE |
| 18 | 4/2/2013 | 662.15 | 0.00623053 | 62305.3 | TRUE | TRUE | TRUE | TRUE |
| 19 | 4/3/2013 | 669.78 | 0.01152307 | 115230.69 | TRUE | TRUE | TRUE | TRUE |
| 20 | 4/4/2013 | 659.34 | -0.0155872 | -155872.08 | TRUE | TRUE | TRUE | TRUE |
| 21 | 4/5/2013 | 656.54 | -0.0042467 | -42466.71 | TRUE | TRUE | TRUE | TRUE |
| 22 | 4/8/2013 | 655.31 | -0.0018735 | -18734.58 | TRUE | TRUE | TRUE | TRUE |
| 23 | 4/9/2013 | 656.95 | 0.00250263 | 25026.32 | TRUE | TRUE | TRUE | TRUE |
| 24 | 4/10/2013 | 653.38 | -0.0054342 | -54342.04 | TRUE | TRUE | TRUE | TRUE |
| 25 | 4/11/2013 | 660.09 | 0.01026968 | 102696.75 | TRUE | TRUE | TRUE | TRUE |
| 26 | 4/12/2013 | 660.7 | 0.00092412 | 9241.16 | TRUE | TRUE | TRUE | TRUE |
| 27 | 4/15/2013 | 655.73 | -0.0075223 | -75223.25 | TRUE | TRUE | TRUE | TRUE |
| 28 | 4/16/2013 | 667.89 | 0.01854422 | 185442.18 | TRUE | TRUE | TRUE | TRUE |
| 29 | 4/17/2013 | 673 | 0.00765096 | 76509.6 | TRUE | TRUE | TRUE | TRUE |
| 30 | 4/18/2013 | 674.02 | 0.0015156 | 15156.02 | TRUE | TRUE | TRUE | TRUE |
| 31 | 4/19/2013 | 672.39 | -0.0024183 | -24183.26 | TRUE | TRUE | TRUE | TRUE |
| 32 | 4/22/2013 | 674.38 | 0.00295959 | 29595.92 | TRUE | TRUE | TRUE | TRUE |

| No | Tanggal | Close | Return | Return * 10000000 | T-1 hari | T-6 hari | T-30 hari | T-90 hari |
|---|---|---|---|---|---|---|---|---|
| 33 | 4/23/2013 | 673.49 | -0.00132 | -13197.31 | TRUE | TRUE | TRUE | TRUE |
| 34 | 4/24/2013 | 678.95 | 0.008107 | 81070.25 | TRUE | TRUE | TRUE | TRUE |
| 35 | 4/25/2013 | 671.85 | -0.010457 | -104573.24 | TRUE | TRUE | TRUE | TRUE |
| 36 | 4/26/2013 | 664.64 | -0.010732 | -107315.62 | TRUE | TRUE | TRUE | TRUE |
| 37 | 4/29/2013 | 670.94 | 0.0094788 | 94788.16 | TRUE | TRUE | TRUE | TRUE |
| 38 | 5/1/2013 | 682.85 | 0.0177512 | 177512.15 | TRUE | TRUE | TRUE | TRUE |
| 39 | 5/2/2013 | 674.96 | -0.011555 | -115545.14 | TRUE | TRUE | TRUE | TRUE |
| 40 | 5/3/2013 | 665.41 | -0.014149 | -141489.87 | TRUE | TRUE | TRUE | TRUE |
| 41 | 5/6/2013 | 673.55 | 0.0122331 | 122330.59 | TRUE | TRUE | TRUE | TRUE |
| 42 | 5/7/2013 | 677.04 | 0.0051815 | 51815.01 | TRUE | TRUE | TRUE | TRUE |
| 43 | 5/8/2013 | 683.67 | 0.0097926 | 97926.27 | TRUE | TRUE | TRUE | TRUE |
| 44 | 5/10/2013 | 684.84 | 0.0017114 | 17113.52 | TRUE | TRUE | TRUE | TRUE |
| 45 | 5/13/2013 | 679.32 | -0.00806 | -80602.77 | TRUE | TRUE | TRUE | TRUE |
| 46 | 5/14/2013 | 682.21 | 0.0042543 | 42542.54 | TRUE | TRUE | TRUE | TRUE |
| 47 | 5/15/2013 | 681.71 | -0.000733 | -7329.12 | TRUE | TRUE | TRUE | TRUE |
| 48 | 5/16/2013 | 681.49 | -0.000323 | -3227.18 | TRUE | TRUE | TRUE | TRUE |
| 49 | 5/17/2013 | 696.58 | 0.0221427 | 221426.58 | TRUE | TRUE | TRUE | TRUE |
| 50 | 5/21/2013 | 703.32 | 0.0096759 | 96758.45 | TRUE | TRUE | TRUE | TRUE |
| 51 | 5/22/2013 | 708.1 | 0.0067963 | 67963.37 | TRUE | TRUE | TRUE | TRUE |
| 52 | 5/23/2013 | 694.79 | -0.018797 | -187967.8 | TRUE | TRUE | TRUE | TRUE |
| 53 | 5/24/2013 | 701.25 | 0.0092978 | 92977.73 | TRUE | TRUE | TRUE | TRUE |
| 54 | 5/27/2013 | 685.35 | -0.022674 | -226737.97 | TRUE | TRUE | TRUE | TRUE |
| 55 | 5/29/2013 | 705.97 | 0.0300868 | 300868.17 | TRUE | TRUE | TRUE | TRUE |
| 56 | 5/30/2013 | 690 | -0.022621 | -226213.58 | TRUE | TRUE | TRUE | TRUE |
| 57 | 5/31/2013 | 676.58 | -0.019449 | -194492.75 | TRUE | TRUE | TRUE | TRUE |
| 58 | 6/3/2013 | 665.63 | -0.016184 | -161843.39 | TRUE | TRUE | TRUE | TRUE |
| 59 | 6/4/2013 | 677.35 | 0.0176074 | 176073.79 | TRUE | TRUE | TRUE | TRUE |
| 60 | 6/5/2013 | 674.4 | -0.004355 | -43552.08 | TRUE | TRUE | TRUE | TRUE |
| 61 | 6/7/2013 | 647.28 | -0.040214 | -402135.23 | **FALSE** | TRUE | TRUE | TRUE |
| 62 | 6/10/2013 | 634.29 | -0.020069 | -200685.95 | TRUE | TRUE | TRUE | TRUE |
| 63 | 6/11/2013 | 608.88 | -0.040061 | -400605.4 | **FALSE** | TRUE | TRUE | TRUE |
| 64 | 6/12/2013 | 635.1 | 0.0430627 | 430626.72 | TRUE | TRUE | TRUE | TRUE |
| 65 | 6/13/2013 | 618.57 | -0.026027 | -260273.97 | **FALSE** | TRUE | TRUE | TRUE |

| No | Tanggal | Close | Return | Return * 10000000 | T-1 hari | T-6 hari | T-30 hari | T-90 hari |
|---|---|---|---|---|---|---|---|---|
| 33 | 4/23/2013 | 673.49 | -0.0013197 | -13197.31 | TRUE | TRUE | TRUE | TRUE |
| 34 | 4/24/2013 | 678.95 | 0.00810703 | 81070.25 | TRUE | TRUE | TRUE | TRUE |
| 35 | 4/25/2013 | 671.85 | -0.0104573 | -104573.24 | TRUE | TRUE | TRUE | TRUE |
| 36 | 4/26/2013 | 664.64 | -0.0107316 | -107315.62 | TRUE | TRUE | TRUE | TRUE |
| 37 | 4/29/2013 | 670.94 | 0.00947882 | 94788.16 | TRUE | TRUE | TRUE | TRUE |
| 38 | 5/1/2013 | 682.85 | 0.01775122 | 177512.15 | TRUE | TRUE | TRUE | TRUE |
| 39 | 5/2/2013 | 674.96 | -0.0115545 | -115545.14 | TRUE | TRUE | TRUE | TRUE |
| 40 | 5/3/2013 | 665.41 | -0.014149 | -141489.87 | TRUE | TRUE | TRUE | TRUE |
| 41 | 5/6/2013 | 673.55 | 0.01223306 | 122330.59 | TRUE | TRUE | TRUE | TRUE |
| 42 | 5/7/2013 | 677.04 | 0.0051815 | 51815.01 | TRUE | TRUE | TRUE | TRUE |
| 43 | 5/8/2013 | 683.67 | 0.00979263 | 97926.27 | TRUE | TRUE | TRUE | TRUE |
| 44 | 5/10/2013 | 684.84 | 0.00171135 | 17113.52 | TRUE | TRUE | TRUE | TRUE |
| 45 | 5/13/2013 | 679.32 | -0.0080603 | -80602.77 | TRUE | TRUE | TRUE | TRUE |
| 46 | 5/14/2013 | 682.21 | 0.00425425 | 42542.54 | TRUE | TRUE | TRUE | TRUE |
| 47 | 5/15/2013 | 681.71 | -0.0007329 | -7329.12 | TRUE | TRUE | TRUE | TRUE |
| 48 | 5/16/2013 | 681.49 | -0.0003227 | -3227.18 | TRUE | TRUE | TRUE | TRUE |
| 49 | 5/17/2013 | 696.58 | 0.02214266 | 221426.58 | TRUE | TRUE | TRUE | TRUE |
| 50 | 5/21/2013 | 703.32 | 0.00967585 | 96758.45 | TRUE | TRUE | TRUE | TRUE |
| 51 | 5/22/2013 | 708.1 | 0.00679634 | 67963.37 | TRUE | TRUE | TRUE | TRUE |
| 52 | 5/23/2013 | 694.79 | -0.0187968 | -187967.8 | TRUE | TRUE | TRUE | TRUE |
| 53 | 5/24/2013 | 701.25 | 0.00929777 | 92977.73 | TRUE | TRUE | TRUE | TRUE |
| 54 | 5/27/2013 | 685.35 | -0.0226738 | -226737.97 | TRUE | TRUE | TRUE | TRUE |
| 55 | 5/29/2013 | 705.97 | 0.03008682 | 300868.17 | TRUE | TRUE | TRUE | TRUE |
| 56 | 5/30/2013 | 690 | -0.0226214 | -226213.58 | TRUE | TRUE | TRUE | TRUE |
| 57 | 5/31/2013 | 676.58 | -0.0194493 | -194492.75 | TRUE | TRUE | TRUE | TRUE |
| 58 | 6/3/2013 | 665.63 | -0.0161843 | -161843.39 | TRUE | TRUE | TRUE | TRUE |
| 59 | 6/4/2013 | 677.35 | 0.0176074 | 176073.79 | TRUE | TRUE | TRUE | TRUE |
| 60 | 6/5/2013 | 674.4 | -0.0043552 | -43552.08 | TRUE | TRUE | TRUE | TRUE |
| 61 | 6/7/2013 | 647.28 | -0.0402135 | -402135.23 | **FALSE** | TRUE | TRUE | TRUE |
| 62 | 6/10/2013 | 634.29 | -0.0200686 | -200685.95 | TRUE | TRUE | TRUE | TRUE |
| 63 | 6/11/2013 | 608.88 | -0.0400605 | -400605.4 | **FALSE** | TRUE | TRUE | TRUE |
| 64 | 6/12/2013 | 635.1 | 0.0430627 | 430626.72 | TRUE | TRUE | TRUE | TRUE |
| 65 | 6/13/2013 | 618.57 | -0.0260274 | -260273.97 | **FALSE** | TRUE | TRUE | TRUE |

| No | Tanggal | Close | Return | Return * 10000000 | T-1 hari | T-6 hari | T-30 hari | T-90 hari |
|---|---|---|---|---|---|---|---|---|
| 66 | 6/14/2013 | 640.22 | 0.0350001 | 350000.81 | TRUE | TRUE | TRUE | TRUE |
| 67 | 6/17/2013 | 642.79 | 0.0040142 | 40142.45 | TRUE | TRUE | TRUE | TRUE |
| 68 | 6/18/2013 | 649.35 | 0.0102055 | 102055.1 | TRUE | TRUE | TRUE | TRUE |
| 69 | 6/19/2013 | 642.42 | -0.0106722 | -106722.11 | TRUE | TRUE | TRUE | TRUE |
| 70 | 6/20/2013 | 618.39 | -0.0374054 | -374054.36 | **FALSE** | TRUE | TRUE | TRUE |
| 71 | 6/21/2013 | 596.67 | -0.0351235 | -351234.66 | **FALSE** | TRUE | TRUE | TRUE |
| 72 | 6/25/2013 | 583.4 | -0.0222401 | -222400.99 | TRUE | TRUE | TRUE | TRUE |
| 73 | 6/27/2013 | 634.27 | 0.0871957 | 871957.49 | TRUE | TRUE | TRUE | TRUE |
| 74 | 6/28/2013 | 660.16 | 0.0408186 | 408185.79 | TRUE | TRUE | TRUE | TRUE |
| 75 | 7/1/2013 | 648.25 | -0.0180411 | -180410.81 | TRUE | TRUE | TRUE | TRUE |
| 76 | 7/2/2013 | 640.97 | -0.0112302 | -112302.35 | TRUE | TRUE | TRUE | TRUE |
| 77 | 7/3/2013 | 618.62 | -0.0348690 | -348690.27 | **FALSE** | TRUE | TRUE | TRUE |
| 78 | 7/4/2013 | 619.17 | 0.0008891 | 8890.76 | TRUE | TRUE | TRUE | TRUE |
| 79 | 7/5/2013 | 626.55 | 0.0119192 | 119191.82 | TRUE | TRUE | TRUE | TRUE |
| 80 | 7/8/2013 | 601.22 | -0.0404277 | -404277.39 | **FALSE** | TRUE | TRUE | TRUE |
| 81 | 7/9/2013 | 597.7 | -0.0058548 | -58547.62 | TRUE | TRUE | TRUE | TRUE |
| 82 | 7/10/2013 | 614.08 | 0.0274051 | 274050.53 | TRUE | TRUE | TRUE | TRUE |
| 83 | 7/11/2013 | 633.03 | 0.0308592 | 308591.71 | TRUE | TRUE | TRUE | TRUE |
| 84 | 7/12/2013 | 636.97 | 0.0062240 | 62240.34 | TRUE | TRUE | TRUE | TRUE |
| 85 | 7/15/2013 | 637.7 | 0.0011461 | 11460.51 | TRUE | TRUE | TRUE | TRUE |
| 86 | 7/16/2013 | 637.51 | -0.0002979 | -2979.46 | TRUE | TRUE | TRUE | TRUE |
| 87 | 7/17/2013 | 641.93 | 0.0069332 | 69332.25 | TRUE | TRUE | TRUE | TRUE |
| 88 | 7/19/2013 | 646.65 | 0.0073528 | 73528.27 | TRUE | TRUE | TRUE | TRUE |
| 89 | 7/22/2013 | 637 | -0.0149231 | -149230.65 | TRUE | TRUE | TRUE | TRUE |
| 90 | 7/23/2013 | 651.96 | 0.0234851 | 234850.86 | TRUE | TRUE | TRUE | TRUE |
| 91 | 7/24/2013 | 642.41 | -0.0146481 | -146481.38 | TRUE | TRUE | TRUE | TRUE |
| 92 | 7/25/2013 | 635.18 | -0.0112545 | -112544.95 | TRUE | TRUE | TRUE | TRUE |
| 93 | 7/26/2013 | 629.95 | -0.0082339 | -82338.86 | TRUE | TRUE | TRUE | TRUE |
| 94 | 7/30/2013 | 627.13 | -0.0044765 | -44765.46 | TRUE | TRUE | TRUE | TRUE |
| 95 | 7/31/2013 | 623.75 | -0.0053896 | -53896.32 | TRUE | TRUE | TRUE | TRUE |
| 96 | 8/1/2013 | 630.93 | 0.0115110 | 115110.22 | TRUE | TRUE | TRUE | TRUE |
| 97 | 8/2/2013 | 630.16 | -0.0012204 | -12204.21 | TRUE | TRUE | TRUE | TRUE |
| 98 | 8/12/2013 | 622.95 | -0.0114415 | -114415.39 | TRUE | TRUE | TRUE | TRUE |

| No | Tanggal | Close | Return | Return * 10000000 | T-1 hari | T-6 hari | T-30 hari | T-90 hari |
|---|---|---|---|---|---|---|---|---|
| 99 | 8/13/2013 | 633.38 | 0.0167429 | 167429.17 | TRUE | TRUE | TRUE | TRUE |
| 100 | 8/14/2013 | 639.99 | 0.0104361 | 104360.73 | TRUE | TRUE | TRUE | TRUE |
| 101 | 8/15/2013 | 634.57 | -0.0084689 | -84688.82 | TRUE | TRUE | TRUE | TRUE |
| 102 | 8/16/2013 | 619.73 | -0.0233859 | -233859.15 | **FALSE** | TRUE | TRUE | TRUE |
| 103 | 8/19/2013 | 580.13 | -0.0638988 | -638987.95 | **FALSE** | **FALSE** | TRUE | TRUE |
| 104 | 8/20/2013 | 561.36 | -0.0323548 | -323548.17 | **FALSE** | TRUE | TRUE | TRUE |
| 105 | 8/21/2013 | 572.63 | 0.0200762 | 200762.43 | TRUE | TRUE | TRUE | TRUE |
| 106 | 8/22/2013 | 571.88 | -0.0013097 | -13097.46 | TRUE | TRUE | TRUE | TRUE |
| 107 | 8/23/2013 | 572.6 | 0.0012590 | 12590.05 | TRUE | TRUE | TRUE | TRUE |
| 108 | 8/26/2013 | 563 | -0.0167656 | -167656.3 | TRUE | TRUE | TRUE | TRUE |
| 109 | 8/27/2013 | 541.03 | -0.0390231 | -390230.91 | **FALSE** | TRUE | TRUE | TRUE |
| 110 | 8/28/2013 | 552.12 | 0.0204979 | 204979.39 | TRUE | TRUE | TRUE | TRUE |
| 111 | 8/29/2013 | 568.92 | 0.0304282 | 304281.68 | TRUE | TRUE | TRUE | TRUE |
| 112 | 8/30/2013 | 592 | 0.0405681 | 405680.94 | TRUE | TRUE | TRUE | TRUE |
| 113 | 9/2/2013 | 574.59 | -0.0294088 | -294087.84 | **FALSE** | TRUE | TRUE | TRUE |
| 114 | 9/3/2013 | 585.03 | 0.0181695 | 181694.77 | TRUE | TRUE | TRUE | TRUE |
| 115 | 9/4/2013 | 568.37 | -0.0284772 | -284771.72 | **FALSE** | TRUE | TRUE | TRUE |
| 116 | 9/5/2013 | 562.61 | -0.0101342 | -101342.44 | TRUE | TRUE | TRUE | TRUE |
| 117 | 9/6/2013 | 569.3 | 0.0118910 | 118910.08 | TRUE | TRUE | TRUE | TRUE |
| 118 | 9/9/2013 | 587.38 | 0.0317583 | 317583 | TRUE | TRUE | TRUE | TRUE |
| 119 | 9/10/2013 | 611.05 | 0.0402976 | 402975.93 | TRUE | TRUE | TRUE | TRUE |
| 120 | 9/11/2013 | 605.83 | -0.0085427 | -85426.72 | TRUE | TRUE | TRUE | TRUE |
| 121 | 9/12/2013 | 600.72 | -0.0084347 | -84347.09 | TRUE | TRUE | TRUE | TRUE |
| 122 | 9/13/2013 | 600.64 | -0.0001332 | -1331.74 | TRUE | TRUE | TRUE | TRUE |
| 123 | 9/16/2013 | 627.06 | 0.0439864 | 439864.14 | TRUE | TRUE | TRUE | TRUE |
| 124 | 9/17/2013 | 625.98 | -0.0017223 | -17223.23 | TRUE | TRUE | TRUE | TRUE |
| 125 | 9/18/2013 | 618.2 | -0.0124285 | -124285.12 | TRUE | TRUE | TRUE | TRUE |
| 126 | 9/19/2013 | 649.92 | 0.0513103 | 513102.56 | TRUE | TRUE | TRUE | TRUE |
| 127 | 9/20/2013 | 635.91 | -0.0215565 | -215564.99 | TRUE | TRUE | TRUE | TRUE |
| 128 | 9/23/2013 | 633.33 | -0.0040572 | -40571.78 | TRUE | TRUE | TRUE | TRUE |
| 129 | 9/24/2013 | 613.54 | -0.0312475 | -312475.33 | **FALSE** | TRUE | TRUE | TRUE |
| 130 | 9/25/2013 | 603.19 | -0.0168693 | -168693.16 | TRUE | TRUE | TRUE | TRUE |
| 131 | 9/26/2013 | 602.2 | -0.0016413 | -16412.74 | TRUE | TRUE | TRUE | TRUE |

| No | Tanggal | Close | Return | Return * 10000000 | T-1 hari | T-6 hari | T-30 hari | T-90 hari |
|---|---|---|---|---|---|---|---|---|
| 132 | 9/27/2013 | 606.39 | 0.0069578 | 69578.21 | TRUE | TRUE | TRUE | TRUE |
| 133 | 9/30/2013 | 585.59 | -0.0343014 | -343013.57 | **FALSE** | TRUE | TRUE | TRUE |
| 134 | 10/1/2013 | 593.08 | 0.0127905 | 127905.19 | TRUE | TRUE | TRUE | TRUE |
| 135 | 10/2/2013 | 600.63 | 0.0127302 | 127301.54 | TRUE | TRUE | TRUE | TRUE |
| 136 | 10/3/2013 | 605.54 | 0.0081748 | 81747.5 | TRUE | TRUE | TRUE | TRUE |
| 137 | 10/4/2013 | 600.5 | -0.0083232 | -83231.5 | TRUE | TRUE | TRUE | TRUE |
| 138 | 10/7/2013 | 599.15 | -0.0022481 | -22481.27 | TRUE | TRUE | TRUE | TRUE |
| 139 | 10/8/2013 | 606.51 | 0.0122841 | 122840.69 | TRUE | TRUE | TRUE | TRUE |
| 140 | 10/9/2013 | 613.56 | 0.0116239 | 116238.81 | TRUE | TRUE | TRUE | TRUE |
| 141 | 10/10/2013 | 618.04 | 0.0073016 | 73016.49 | TRUE | TRUE | TRUE | TRUE |
| 142 | 10/11/2013 | 627.98 | 0.0160831 | 160831.01 | TRUE | TRUE | TRUE | TRUE |
| 143 | 10/16/2013 | 622.05 | -0.0094430 | -94429.76 | TRUE | TRUE | TRUE | TRUE |
| 144 | 10/17/2013 | 627.42 | 0.0086327 | 86327.47 | TRUE | TRUE | TRUE | TRUE |
| 145 | 10/18/2013 | 633.92 | 0.0103599 | 103598.87 | TRUE | TRUE | TRUE | TRUE |
| 146 | 10/21/2013 | 638.54 | 0.0072880 | 72879.86 | TRUE | TRUE | TRUE | TRUE |
| 147 | 10/22/2013 | 623.21 | -0.0240079 | -240078.93 | TRUE | TRUE | TRUE | TRUE |
| 148 | 10/23/2013 | 627.06 | 0.0061777 | 61776.93 | TRUE | TRUE | TRUE | TRUE |
| 149 | 10/24/2013 | 632.29 | 0.0083405 | 83405.1 | TRUE | TRUE | TRUE | TRUE |
| 150 | 10/25/2013 | 627.44 | -0.0076705 | -76705.31 | TRUE | TRUE | TRUE | TRUE |
| 151 | 10/28/2013 | 629.89 | 0.0039048 | 39047.56 | TRUE | TRUE | TRUE | TRUE |
| 152 | 10/29/2013 | 626.83 | -0.0048580 | -48579.91 | TRUE | TRUE | TRUE | TRUE |
| 153 | 10/30/2013 | 628.41 | 0.0025206 | 25206.2 | TRUE | TRUE | TRUE | TRUE |
| 154 | 10/31/2013 | 615.71 | -0.0202097 | -202097.36 | TRUE | TRUE | TRUE | TRUE |
| 155 | 11/1/2013 | 603.51 | -0.0198145 | -198145.23 | TRUE | TRUE | TRUE | TRUE |
| 156 | 11/4/2013 | 603.92 | 0.0006794 | 6793.59 | TRUE | TRUE | TRUE | TRUE |
| 157 | 11/6/2013 | 609.59 | 0.0093887 | 93886.61 | TRUE | TRUE | TRUE | TRUE |
| 158 | 11/7/2013 | 616.11 | 0.0106957 | 106957.14 | TRUE | TRUE | TRUE | TRUE |
| 159 | 11/8/2013 | 615.63 | -0.0007791 | -7790.82 | TRUE | TRUE | TRUE | TRUE |
| 160 | 11/11/2013 | 610.5 | -0.0083329 | -83329.27 | TRUE | TRUE | TRUE | TRUE |
| 161 | 11/12/2013 | 604.55 | -0.0097461 | -97461.1 | TRUE | TRUE | TRUE | TRUE |
| 162 | 11/13/2013 | 590.93 | -0.0225292 | -225291.54 | TRUE | TRUE | TRUE | TRUE |
| 163 | 11/14/2013 | 599.4 | 0.0143333 | 143333.39 | TRUE | TRUE | TRUE | TRUE |
| 164 | 11/15/2013 | 590.73 | -0.0144645 | -144644.64 | TRUE | TRUE | TRUE | TRUE |

| No | Tanggal | Close | Return | Return * 10000000 | T-1 hari | T-6 hari | T-30 hari | T-90 hari |
|---|---|---|---|---|---|---|---|---|
| 165 | 11/18/2013 | 605.59 | 0.0251553 | 251553.16 | TRUE | TRUE | TRUE | TRUE |
| 166 | 11/19/2013 | 608.25 | 0.0043924 | 43924.11 | TRUE | TRUE | TRUE | TRUE |
| 167 | 11/20/2013 | 597.71 | -0.0173284 | -173284.01 | TRUE | TRUE | TRUE | TRUE |
| 168 | 11/21/2013 | 595.13 | -0.0043165 | -43164.75 | TRUE | TRUE | TRUE | TRUE |
| 169 | 11/22/2013 | 592.89 | -0.0037639 | -37638.84 | TRUE | TRUE | TRUE | TRUE |
| 170 | 11/25/2013 | 592.72 | -0.0002867 | -2867.31 | TRUE | TRUE | TRUE | TRUE |
| 171 | 11/26/2013 | 573.57 | -0.0323087 | -323086.79 | **FALSE** | TRUE | TRUE | TRUE |
| 172 | 11/27/2013 | 580.2 | 0.0115592 | 115591.82 | TRUE | TRUE | TRUE | TRUE |
| 173 | 11/28/2013 | 578.91 | -0.0022234 | -22233.71 | TRUE | TRUE | TRUE | TRUE |
| 174 | 11/29/2013 | 579.87 | 0.0016583 | 16582.89 | TRUE | TRUE | TRUE | TRUE |
| 175 | 12/2/2013 | 591.92 | 0.0207805 | 207805.2 | TRUE | TRUE | TRUE | TRUE |
| 176 | 12/3/2013 | 584.71 | -0.0121807 | -121807 | TRUE | TRUE | TRUE | TRUE |
| 177 | 12/4/2013 | 577.39 | -0.0125190 | -125190.27 | TRUE | TRUE | TRUE | TRUE |
| 178 | 12/5/2013 | 573.88 | -0.0060791 | -60790.8 | TRUE | TRUE | TRUE | TRUE |
| 179 | 12/6/2013 | 569 | -0.0085035 | -85035.2 | TRUE | TRUE | TRUE | TRUE |
| 180 | 12/9/2013 | 576.23 | 0.0127065 | 127065.03 | TRUE | TRUE | TRUE | TRUE |
| 181 | 12/10/2013 | 587.52 | 0.0195929 | 195928.71 | TRUE | TRUE | TRUE | TRUE |
| 182 | 12/11/2013 | 586.11 | -0.0023999 | -23999.18 | TRUE | TRUE | TRUE | TRUE |
| 183 | 12/12/2013 | 575.66 | -0.0178294 | -178294.18 | TRUE | TRUE | TRUE | TRUE |
| 184 | 12/13/2013 | 568.15 | -0.0130459 | -130458.95 | TRUE | TRUE | TRUE | TRUE |
| 185 | 12/16/2013 | 560.75 | -0.0130247 | -130247.29 | TRUE | TRUE | TRUE | TRUE |
| 186 | 12/17/2013 | 567.51 | 0.0120553 | 120552.83 | TRUE | TRUE | TRUE | TRUE |
| 187 | 12/18/2013 | 572.12 | 0.0081232 | 81232.05 | TRUE | TRUE | TRUE | TRUE |
| 188 | 12/19/2013 | 579.32 | 0.0125848 | 125847.72 | TRUE | TRUE | TRUE | TRUE |
| 189 | 12/20/2013 | 575.8 | -0.0060761 | -60760.89 | TRUE | TRUE | TRUE | TRUE |
| 190 | 12/23/2013 | 572.59 | -0.0055749 | -55748.52 | TRUE | TRUE | TRUE | TRUE |
| 191 | 12/24/2013 | 578.14 | 0.0096928 | 96927.99 | TRUE | TRUE | TRUE | TRUE |
| 192 | 12/27/2013 | 578.64 | 0.0008648 | 8648.42 | TRUE | TRUE | TRUE | TRUE |
| 193 | 12/30/2013 | 585.11 | 0.0111814 | 111813.91 | TRUE | TRUE | TRUE | TRUE |
| 194 | 1/2/2014 | 596.15 | 0.0188682 | 188682.47 | TRUE | TRUE | TRUE | TRUE |
| 195 | 1/3/2014 | 585.64 | -0.0176298 | -176297.91 | TRUE | TRUE | TRUE | TRUE |
| 196 | 1/6/2014 | 579.93 | -0.0097500 | -97500.17 | TRUE | TRUE | TRUE | TRUE |
| 197 | 1/7/2014 | 572.29 | -0.0131740 | -131740.04 | TRUE | TRUE | TRUE | TRUE |

| No | Tanggal | Close | Return | Return * 10000000 | T-1 hari | T-6 hari | T-30 hari | T-90 hari |
|---|---|---|---|---|---|---|---|---|
| 198 | 1/8/2014 | 576.41 | 0.0071991 | 71991.47 | TRUE | TRUE | TRUE | TRUE |
| 199 | 1/9/2014 | 574.28 | -0.0036953 | -36952.86 | TRUE | TRUE | TRUE | TRUE |
| 200 | 1/10/2014 | 582.38 | 0.0141046 | 141046.18 | TRUE | TRUE | TRUE | TRUE |
| 201 | 1/13/2014 | 601.81 | 0.0333631 | 333630.96 | TRUE | TRUE | TRUE | TRUE |
| 202 | 1/15/2014 | 609.9 | 0.0134428 | 134427.81 | TRUE | TRUE | TRUE | TRUE |
| 203 | 1/16/2014 | 606.82 | -0.0050500 | -50500.08 | TRUE | TRUE | TRUE | TRUE |
| 204 | 1/17/2014 | 603.06 | -0.0061962 | -61962.36 | TRUE | TRUE | TRUE | TRUE |
| 205 | 1/20/2014 | 608.32 | 0.0087222 | 87221.84 | TRUE | TRUE | TRUE | TRUE |
| 206 | 1/21/2014 | 609.11 | 0.0012987 | 12986.59 | TRUE | TRUE | TRUE | TRUE |
| 207 | 1/22/2014 | 614.41 | 0.0087012 | 87012.2 | TRUE | TRUE | TRUE | TRUE |
| 208 | 1/23/2014 | 614.97 | 0.0009114 | 9114.43 | TRUE | TRUE | TRUE | TRUE |
| 209 | 1/24/2014 | 604.37 | -0.0172366 | -172366.13 | TRUE | TRUE | TRUE | TRUE |
| 210 | 1/27/2014 | 583.88 | -0.0339031 | -339030.73 | **FALSE** | TRUE | TRUE | TRUE |
| 211 | 1/28/2014 | 588.27 | 0.0075187 | 75186.68 | TRUE | TRUE | TRUE | TRUE |
| 212 | 1/29/2014 | 601.54 | 0.0225577 | 225576.69 | TRUE | TRUE | TRUE | TRUE |
| 213 | 1/30/2014 | 602.87 | 0.0022110 | 22109.92 | TRUE | TRUE | TRUE | TRUE |
| 214 | 2/3/2014 | 595.62 | -0.0120258 | -120258.1 | TRUE | TRUE | TRUE | TRUE |
| 215 | 2/4/2014 | 587.49 | -0.0136496 | -136496.42 | TRUE | TRUE | TRUE | TRUE |
| 216 | 2/5/2014 | 594.5 | 0.0119321 | 119321.18 | TRUE | TRUE | TRUE | TRUE |
| 217 | 2/6/2014 | 601.06 | 0.0110345 | 110344.83 | TRUE | TRUE | TRUE | TRUE |
| 218 | 2/7/2014 | 606.22 | 0.0085848 | 85848.33 | TRUE | TRUE | TRUE | TRUE |
| 219 | 2/10/2014 | 603.33 | -0.0047672 | -47672.46 | TRUE | TRUE | TRUE | TRUE |
| 220 | 2/11/2014 | 604.7 | 0.0022707 | 22707.31 | TRUE | TRUE | TRUE | TRUE |
| 221 | 2/12/2014 | 609.08 | 0.0072433 | 72432.61 | TRUE | TRUE | TRUE | TRUE |
| 222 | 2/13/2014 | 607.22 | -0.0030538 | -30537.86 | TRUE | TRUE | TRUE | TRUE |
| 223 | 2/14/2014 | 608.97 | 0.0028820 | 28819.87 | TRUE | TRUE | TRUE | TRUE |
| 224 | 2/17/2014 | 615.61 | 0.0109037 | 109036.57 | TRUE | TRUE | TRUE | TRUE |
| 225 | 2/18/2014 | 615.1 | -0.0008284 | -8284.47 | TRUE | TRUE | TRUE | TRUE |
| 226 | 2/19/2014 | 621.73 | 0.0107787 | 107787.35 | TRUE | TRUE | TRUE | TRUE |
| 227 | 2/20/2014 | 622.16 | 0.0006916 | 6916.19 | TRUE | TRUE | TRUE | TRUE |
| 228 | 2/21/2014 | 626.97 | 0.0077311 | 77311.3 | TRUE | TRUE | TRUE | TRUE |
| 229 | 2/24/2014 | 621.94 | -0.0080227 | -80227.12 | TRUE | TRUE | TRUE | TRUE |
| 230 | 2/25/2014 | 614.48 | -0.0119947 | -119947.26 | TRUE | TRUE | TRUE | TRUE |

| No | Tanggal | Close | Return | Return * 10000000 | T-1 hari | T-6 hari | T-30 hari | T-90 hari |
|---|---|---|---|---|---|---|---|---|
| 231 | 2/26/2014 | 606.03 | -0.0137515 | -137514.65 | TRUE | TRUE | TRUE | TRUE |
| 232 | 2/27/2014 | 612.84 | 0.0112371 | 112370.67 | TRUE | TRUE | TRUE | TRUE |
| 233 | 2/28/2014 | 626.86 | 0.0228771 | 228770.97 | TRUE | TRUE | TRUE | TRUE |
| 234 | 3/3/2014 | 618.98 | -0.0125706 | -125705.9 | TRUE | TRUE | TRUE | TRUE |
| 235 | 3/4/2014 | 620.05 | 0.0017287 | 17286.5 | TRUE | TRUE | TRUE | TRUE |
| 236 | 3/5/2014 | 628 | 0.0128215 | 128215.47 | TRUE | TRUE | TRUE | TRUE |
| 237 | 3/6/2014 | 631 | 0.0047771 | 47770.7 | TRUE | TRUE | TRUE | TRUE |
| 238 | 3/7/2014 | 631.74 | 0.0011727 | 11727.42 | TRUE | TRUE | TRUE | TRUE |
| 239 | 3/10/2014 | 632.91 | 0.0018520 | 18520.28 | TRUE | TRUE | TRUE | TRUE |
| 240 | 3/11/2014 | 635.35 | 0.0038552 | 38552.08 | TRUE | TRUE | TRUE | TRUE |
| 241 | 3/12/2014 | 633.17 | -0.0034312 | -34311.8 | TRUE | TRUE | TRUE | TRUE |
| 242 | 3/13/2014 | 641.31 | 0.0128559 | 128559.47 | TRUE | TRUE | TRUE | TRUE |
| 243 | 3/14/2014 | 661.74 | 0.0318567 | 318566.68 | TRUE | TRUE | TRUE | TRUE |
| 244 | 3/17/2014 | 663.86 | 0.0032037 | 32036.75 | TRUE | TRUE | TRUE | TRUE |
| 245 | 3/18/2014 | 651.32 | -0.0188895 | -188895.25 | TRUE | TRUE | TRUE | TRUE |
| 246 | 3/19/2014 | 655.45 | 0.0063410 | 63409.69 | TRUE | TRUE | TRUE | TRUE |
| 247 | 3/20/2014 | 634.17 | -0.0324662 | -324662.45 | **FALSE** | TRUE | TRUE | TRUE |
| 248 | 3/21/2014 | 636.55 | 0.0037529 | 37529.37 | TRUE | TRUE | TRUE | TRUE |
| 249 | 3/24/2014 | 637.79 | 0.0019480 | 19480.01 | TRUE | TRUE | TRUE | TRUE |
| 250 | 3/25/2014 | 632.44 | -0.0083883 | -83883.41 | TRUE | TRUE | TRUE | TRUE |
| 251 | 3/26/2014 | 636.48 | 0.0063880 | 63879.58 | TRUE | TRUE | TRUE | TRUE |
| 252 | 3/27/2014 | 635.02 | -0.0022939 | -22938.66 | TRUE | TRUE | TRUE | TRUE |
| 253 | 3/28/2014 | 640.41 | 0.0084879 | 84879.22 | TRUE | TRUE | TRUE | TRUE |
| 254 | 4/1/2014 | 657.09 | 0.0260458 | 260458.14 | TRUE | TRUE | TRUE | TRUE |
| 255 | 4/2/2014 | 655.27 | -0.0027698 | -27697.88 | TRUE | TRUE | TRUE | TRUE |
| 256 | 4/3/2014 | 658.53 | 0.0049750 | 49750.48 | TRUE | TRUE | TRUE | TRUE |
| 257 | 4/4/2014 | 653.27 | -0.0079875 | -79874.87 | TRUE | TRUE | TRUE | TRUE |
| 258 | 4/7/2014 | 667.22 | 0.0213541 | 213541.11 | TRUE | TRUE | TRUE | TRUE |
| 259 | 4/8/2014 | 666.52 | -0.0010491 | -10491.29 | TRUE | TRUE | TRUE | TRUE |
| 260 | 4/9/2014 | 666.52 | 0.0000000 | 0 | TRUE | TRUE | TRUE | TRUE |
| 261 | 4/10/2014 | 643.15 | -0.0350627 | -350627.14 | **FALSE** | TRUE | TRUE | TRUE |
| 262 | 4/11/2014 | 653.28 | 0.0157506 | 157506.03 | TRUE | TRUE | TRUE | TRUE |
| 263 | 4/14/2014 | 659.71 | 0.0098426 | 98426.4 | TRUE | TRUE | TRUE | TRUE |

| No | Tanggal | Close | Return | Return * 10000000 | T-1 hari | T-6 hari | T-30 hari | T-90 hari |
|---|---|---|---|---|---|---|---|---|
| 264 | 4/15/2014 | 659.78 | 0.0001061 | 1061.07 | TRUE | TRUE | TRUE | TRUE |
| 265 | 4/16/2014 | 657.86 | -0.0029101 | -29100.61 | TRUE | TRUE | TRUE | TRUE |
| 266 | 4/17/2014 | 663.59 | 0.0087101 | 87100.6 | TRUE | TRUE | TRUE | TRUE |
| 267 | 4/21/2014 | 663.52 | -0.0001055 | -1054.87 | TRUE | TRUE | TRUE | TRUE |
| 268 | 4/22/2014 | 664.13 | 0.0009193 | 9193.39 | TRUE | TRUE | TRUE | TRUE |
| 269 | 4/23/2014 | 664.14 | 0.0000151 | 151 | TRUE | TRUE | TRUE | TRUE |
| 270 | 4/24/2014 | 663.18 | -0.0014455 | -14454.78 | TRUE | TRUE | TRUE | TRUE |
| 271 | 4/25/2014 | 663.21 | 0.0000452 | 452 | TRUE | TRUE | TRUE | TRUE |
| 272 | 4/28/2014 | 650.32 | -0.0194358 | -194357.74 | TRUE | TRUE | TRUE | TRUE |
| 273 | 4/29/2014 | 645.25 | -0.0077962 | -77961.62 | TRUE | TRUE | TRUE | TRUE |
| 274 | 4/30/2014 | 647.67 | 0.0037505 | 37504.84 | TRUE | TRUE | TRUE | TRUE |
| 275 | 5/2/2014 | 646.25 | -0.0021925 | -21924.75 | TRUE | TRUE | TRUE | TRUE |
| 276 | 5/5/2014 | 648.25 | 0.0030948 | 30947.78 | TRUE | TRUE | TRUE | TRUE |
| 277 | 5/6/2014 | 647.04 | -0.0018666 | -18665.64 | TRUE | TRUE | TRUE | TRUE |
| 278 | 5/7/2014 | 651.73 | 0.0072484 | 72483.93 | TRUE | TRUE | TRUE | TRUE |
| 279 | 5/8/2014 | 652.8 | 0.0016418 | 16417.84 | TRUE | TRUE | TRUE | TRUE |
| 280 | 5/9/2014 | 655.95 | 0.0048254 | 48253.68 | TRUE | TRUE | TRUE | TRUE |
| 281 | 5/12/2014 | 662.47 | 0.0099398 | 99397.82 | TRUE | TRUE | TRUE | TRUE |
| 282 | 5/13/2014 | 661.05 | -0.0021435 | -21434.93 | TRUE | TRUE | TRUE | TRUE |
| 283 | 5/14/2014 | 672.6 | 0.0174722 | 174722.03 | TRUE | TRUE | TRUE | TRUE |
| 284 | 5/16/2014 | 680.63 | 0.0119387 | 119387.45 | TRUE | TRUE | TRUE | TRUE |
| 285 | 5/19/2014 | 678.08 | -0.0037465 | -37465.29 | TRUE | TRUE | TRUE | TRUE |
| 286 | 5/20/2014 | 660.08 | -0.0265455 | -265455.4 | **FALSE** | TRUE | TRUE | TRUE |
| 287 | 5/21/2014 | 664.78 | 0.0071203 | 71203.49 | TRUE | TRUE | TRUE | TRUE |
| 288 | 5/22/2014 | 672.51 | 0.0116279 | 116279.07 | TRUE | TRUE | TRUE | TRUE |
| 289 | 5/23/2014 | 672.11 | -0.0005948 | -5947.87 | TRUE | TRUE | TRUE | TRUE |
| 290 | 5/26/2014 | 671.82 | -0.0004315 | -4314.77 | TRUE | TRUE | TRUE | TRUE |
| 291 | 5/28/2014 | 673.96 | 0.0031854 | 31853.77 | TRUE | TRUE | TRUE | TRUE |
| 292 | 5/30/2014 | 656.83 | -0.0254169 | -254169.39 | TRUE | TRUE | TRUE | TRUE |
| 293 | 6/2/2014 | 658.9 | 0.0031515 | 31515 | TRUE | TRUE | TRUE | TRUE |
| 294 | 6/3/2014 | 662.61 | 0.0056306 | 56305.96 | TRUE | TRUE | TRUE | TRUE |
| 295 | 6/4/2014 | 661.62 | -0.0014941 | -14940.92 | TRUE | TRUE | TRUE | TRUE |
| 296 | 6/5/2014 | 663.03 | 0.0021311 | 21311.33 | TRUE | TRUE | TRUE | TRUE |

| No | Tanggal | Close | Return | Return * 10000000 | T-1 hari | T-6 hari | T-30 hari | T-90 hari |
|---|---|---|---|---|---|---|---|---|
| 297 | 6/6/2014 | 666.4 | 0.0050827 | 50827.26 | TRUE | TRUE | TRUE | TRUE |
| 298 | 6/9/2014 | 658.99 | -0.0111194 | -111194.48 | TRUE | TRUE | TRUE | TRUE |
| 299 | 6/10/2014 | 669.18 | 0.0154631 | 154630.57 | TRUE | TRUE | TRUE | TRUE |
| 300 | 6/11/2014 | 672.99 | 0.0056935 | 56935.35 | TRUE | TRUE | TRUE | TRUE |
| 301 | 6/12/2014 | 666.65 | -0.0094206 | -94206.45 | TRUE | TRUE | TRUE | TRUE |
| 302 | 6/13/2014 | 665.27 | -0.0020701 | -20700.52 | TRUE | TRUE | TRUE | TRUE |
| 303 | 6/16/2014 | 655.9 | -0.0140845 | -140845.07 | TRUE | TRUE | TRUE | TRUE |
| 304 | 6/17/2014 | 661.51 | 0.0085531 | 85531.33 | TRUE | TRUE | TRUE | TRUE |
| 305 | 6/18/2014 | 658.05 | -0.0052305 | -52304.58 | TRUE | TRUE | TRUE | TRUE |
| 306 | 6/19/2014 | 654.36 | -0.0056075 | -56074.77 | TRUE | TRUE | TRUE | TRUE |
| 307 | 6/20/2014 | 652.97 | -0.0021242 | -21242.13 | TRUE | TRUE | TRUE | TRUE |
| 308 | 6/23/2014 | 653.44 | 0.0007198 | 7197.88 | TRUE | TRUE | TRUE | TRUE |
| 309 | 6/24/2014 | 654.65 | 0.0018517 | 18517.38 | TRUE | TRUE | TRUE | TRUE |
| 310 | 6/25/2014 | 651.63 | -0.0046132 | -46131.52 | TRUE | TRUE | TRUE | TRUE |
| 311 | 6/26/2014 | 656.69 | 0.0077651 | 77651.43 | TRUE | TRUE | TRUE | TRUE |
| 312 | 6/27/2014 | 651.89 | -0.0073094 | -73093.85 | TRUE | TRUE | TRUE | TRUE |
| 313 | 6/30/2014 | 655 | 0.0047707 | 47707.44 | TRUE | TRUE | TRUE | TRUE |
| 314 | 7/1/2014 | 656.35 | 0.0020611 | 20610.69 | TRUE | TRUE | TRUE | TRUE |
| 315 | 7/2/2014 | 663.86 | 0.0114421 | 114420.66 | TRUE | TRUE | TRUE | TRUE |
| 316 | 7/3/2014 | 661.79 | -0.0031181 | -31181.27 | TRUE | TRUE | TRUE | TRUE |
| 317 | 7/4/2014 | 663.63 | 0.0027803 | 27803.38 | TRUE | TRUE | TRUE | TRUE |
| 318 | 7/7/2014 | 679.41 | 0.0237783 | 237783.1 | TRUE | TRUE | TRUE | TRUE |
| 319 | 7/8/2014 | 683.29 | 0.0057108 | 57108.37 | TRUE | TRUE | TRUE | TRUE |
| 320 | 7/10/2014 | 692.85 | 0.0139911 | 139911.31 | TRUE | TRUE | TRUE | TRUE |
| 321 | 7/11/2014 | 679.85 | -0.0187631 | -187630.8 | TRUE | TRUE | TRUE | TRUE |
| 322 | 7/14/2014 | 679.71 | -0.0002059 | -2059.28 | TRUE | TRUE | TRUE | TRUE |
| 323 | 7/15/2014 | 688.2 | 0.0124906 | 124906.21 | TRUE | TRUE | TRUE | TRUE |
| 324 | 7/16/2014 | 694.49 | 0.0091398 | 91397.85 | TRUE | TRUE | TRUE | TRUE |
| 325 | 7/17/2014 | 685.93 | -0.0123256 | -123255.91 | TRUE | TRUE | TRUE | TRUE |
| 326 | 7/18/2014 | 689.79 | 0.0056274 | 56273.96 | TRUE | TRUE | TRUE | TRUE |
| 327 | 7/21/2014 | 697.11 | 0.0106119 | 106119.25 | TRUE | TRUE | TRUE | TRUE |
| 328 | 7/22/2014 | 692.33 | -0.0068569 | -68568.81 | TRUE | TRUE | TRUE | TRUE |
| 329 | 7/23/2014 | 692.14 | -0.0002744 | -2744.36 | TRUE | TRUE | TRUE | TRUE |

| No | Tanggal | Close | Return | Return * 10000000 | T-1 hari | T-6 hari | T-30 hari | T-90 hari |
|---|---|---|---|---|---|---|---|---|
| 330 | 7/24/2014 | 692.46 | 0.0004623 | 4623.34 | TRUE | TRUE | TRUE | TRUE |
| 331 | 7/25/2014 | 690.4 | -0.0029749 | -29749.01 | TRUE | TRUE | TRUE | TRUE |
| 332 | 8/4/2014 | 701.23 | 0.0156866 | 156865.59 | TRUE | TRUE | TRUE | TRUE |
| 333 | 8/5/2014 | 697.15 | -0.0058183 | -58183.48 | TRUE | TRUE | TRUE | TRUE |
| 334 | 8/6/2014 | 687.88 | -0.0132970 | -132969.95 | TRUE | TRUE | TRUE | TRUE |
| 335 | 8/7/2014 | 690.39 | 0.0036489 | 36488.92 | TRUE | TRUE | TRUE | TRUE |
| 336 | 8/8/2014 | 686.73 | -0.0053014 | -53013.51 | TRUE | TRUE | TRUE | TRUE |
| 337 | 8/11/2014 | 697.35 | 0.0154646 | 154645.93 | TRUE | TRUE | TRUE | TRUE |
| 338 | 8/12/2014 | 700.19 | 0.0040726 | 40725.6 | TRUE | TRUE | TRUE | TRUE |
| 339 | 8/13/2014 | 707.38 | 0.0102686 | 102686.41 | TRUE | TRUE | TRUE | TRUE |
| 340 | 8/14/2014 | 703.81 | -0.0050468 | -50467.92 | TRUE | TRUE | TRUE | TRUE |
| 341 | 8/15/2014 | 701.44 | -0.0033674 | -33673.86 | TRUE | TRUE | TRUE | TRUE |
| 342 | 8/18/2014 | 702.47 | 0.0014684 | 14684.08 | TRUE | TRUE | TRUE | TRUE |
| 343 | 8/19/2014 | 701.37 | -0.0015659 | -15659.03 | TRUE | TRUE | TRUE | TRUE |
| 344 | 8/20/2014 | 706.22 | 0.0069150 | 69150.38 | TRUE | TRUE | TRUE | TRUE |
| 345 | 8/21/2014 | 707.44 | 0.0017275 | 17275.07 | TRUE | TRUE | TRUE | TRUE |
| 346 | 8/22/2014 | 704.21 | -0.0045658 | -45657.58 | TRUE | TRUE | TRUE | TRUE |
| 347 | 8/25/2014 | 701.09 | -0.0044305 | -44304.97 | TRUE | TRUE | TRUE | TRUE |
| 348 | 8/26/2014 | 696 | -0.0072601 | -72601.24 | TRUE | TRUE | TRUE | TRUE |
| 349 | 8/27/2014 | 698.91 | 0.0041810 | 41810.34 | TRUE | TRUE | TRUE | TRUE |
| 350 | 8/28/2014 | 701.52 | 0.0037344 | 37343.86 | TRUE | TRUE | TRUE | TRUE |
| 351 | 8/29/2014 | 691.13 | -0.0148107 | -148106.97 | TRUE | TRUE | TRUE | TRUE |
| 352 | 9/1/2014 | 699.5 | 0.0121106 | 121106.01 | TRUE | TRUE | TRUE | TRUE |
| 353 | 9/2/2014 | 703.05 | 0.0050751 | 50750.54 | TRUE | TRUE | TRUE | TRUE |
| 354 | 9/3/2014 | 707.22 | 0.0059313 | 59312.99 | TRUE | TRUE | TRUE | TRUE |
| 355 | 9/4/2014 | 702.23 | -0.0070558 | -70557.96 | TRUE | TRUE | TRUE | TRUE |
| 356 | 9/5/2014 | 702.85 | 0.0008829 | 8829.02 | TRUE | TRUE | TRUE | TRUE |
| 357 | 9/8/2014 | 707.98 | 0.0072989 | 72988.55 | TRUE | TRUE | TRUE | TRUE |
| 358 | 9/9/2014 | 698.21 | -0.0137998 | -137998.25 | TRUE | TRUE | TRUE | TRUE |
| 359 | 9/10/2014 | 688.65 | -0.0136922 | -136921.56 | TRUE | TRUE | TRUE | TRUE |
| 360 | 9/11/2014 | 683.32 | -0.0077398 | -77397.81 | TRUE | TRUE | TRUE | TRUE |
| 361 | 9/12/2014 | 688.68 | 0.0078441 | 78440.55 | TRUE | TRUE | TRUE | TRUE |
| 362 | 9/15/2014 | 691.6 | 0.0042400 | 42399.95 | TRUE | TRUE | TRUE | TRUE |

| No | Tanggal | Close | Return | Return * 10000000 | T-1 hari | T-6 hari | T-30 hari | T-90 hari |
|---|---|---|---|---|---|---|---|---|
| 363 | 9/16/2014 | 691 | -0.0008676 | -8675.53 | TRUE | TRUE | TRUE | TRUE |
| 364 | 9/17/2014 | 699.09 | 0.0117077 | 117076.7 | TRUE | TRUE | TRUE | TRUE |
| 365 | 9/18/2014 | 702.72 | 0.0051925 | 51924.64 | TRUE | TRUE | TRUE | TRUE |
| 366 | 9/19/2014 | 704.71 | 0.0028319 | 28318.53 | TRUE | TRUE | TRUE | TRUE |
| 367 | 9/22/2014 | 702.42 | -0.0032496 | -32495.64 | TRUE | TRUE | TRUE | TRUE |
| 368 | 9/23/2014 | 696.19 | -0.0088693 | -88693.37 | TRUE | TRUE | TRUE | TRUE |
| 369 | 9/24/2014 | 692.53 | -0.0052572 | -52571.86 | TRUE | TRUE | TRUE | TRUE |
| 370 | 9/25/2014 | 695 | 0.0035666 | 35666.32 | TRUE | TRUE | TRUE | TRUE |
| 371 | 9/26/2014 | 687.63 | -0.0106043 | -106043.17 | TRUE | TRUE | TRUE | TRUE |
| 372 | 9/29/2014 | 689.48 | 0.0026904 | 26904 | TRUE | TRUE | TRUE | TRUE |
| 373 | 9/30/2014 | 687.62 | -0.0026977 | -26976.85 | TRUE | TRUE | TRUE | TRUE |
| 374 | 10/1/2014 | 682.39 | -0.0076059 | -76059.45 | TRUE | TRUE | TRUE | TRUE |
| 375 | 10/2/2014 | 661.7 | -0.0303199 | -303199.05 | **FALSE** | TRUE | TRUE | TRUE |
| 376 | 10/3/2014 | 658.99 | -0.0040955 | -40955.12 | TRUE | TRUE | TRUE | TRUE |
| 377 | 10/6/2014 | 665.12 | 0.0093021 | 93021.14 | TRUE | TRUE | TRUE | TRUE |
| 378 | 10/7/2014 | 671.01 | 0.0088555 | 88555.45 | TRUE | TRUE | TRUE | TRUE |
| 379 | 10/8/2014 | 659.35 | -0.0173768 | -173767.9 | TRUE | TRUE | TRUE | TRUE |
| 380 | 10/9/2014 | 662.82 | 0.0052628 | 52627.59 | TRUE | TRUE | TRUE | TRUE |
| 381 | 10/10/2014 | 655.99 | -0.0103045 | -103044.57 | TRUE | TRUE | TRUE | TRUE |
| 382 | 10/13/2014 | 647.24 | -0.0133386 | -133386.18 | TRUE | TRUE | TRUE | TRUE |
| 383 | 10/14/2014 | 650.34 | 0.0047896 | 47895.68 | TRUE | TRUE | TRUE | TRUE |
| 384 | 10/15/2014 | 652.77 | 0.0037365 | 37365.07 | TRUE | TRUE | TRUE | TRUE |
| 385 | 10/16/2014 | 651.98 | -0.0012102 | -12102.27 | TRUE | TRUE | TRUE | TRUE |
| 386 | 10/17/2014 | 663.57 | 0.0177766 | 177766.19 | TRUE | TRUE | TRUE | TRUE |
| 387 | 10/20/2014 | 662.62 | -0.0014317 | -14316.5 | TRUE | TRUE | TRUE | TRUE |
| 388 | 10/21/2014 | 661.88 | -0.0011168 | -11167.79 | TRUE | TRUE | TRUE | TRUE |
| 389 | 10/22/2014 | 668.13 | 0.0094428 | 94427.99 | TRUE | TRUE | TRUE | TRUE |
| 390 | 10/23/2014 | 671.07 | 0.0044003 | 44003.41 | TRUE | TRUE | TRUE | TRUE |
| 391 | 10/24/2014 | 666.41 | -0.0069441 | -69441.34 | TRUE | TRUE | TRUE | TRUE |
| 392 | 10/27/2014 | 658.7 | -0.0115695 | -115694.54 | TRUE | TRUE | TRUE | TRUE |
| 393 | 10/28/2014 | 652.62 | -0.0092303 | -92303.02 | TRUE | TRUE | TRUE | TRUE |
| 394 | 10/29/2014 | 667.8 | 0.0232601 | 232600.9 | TRUE | TRUE | TRUE | TRUE |
| 395 | 10/30/2014 | 666.81 | -0.0014825 | -14824.8 | TRUE | TRUE | TRUE | TRUE |

| No | Tanggal | Close | Return | Return * 10000000 | T-1 hari | T-6 hari | T-30 hari | T-90 hari |
|---|---|---|---|---|---|---|---|---|
| 396 | 10/31/2014 | 670.44 | 0.0054438 | 54438.3 | TRUE | TRUE | TRUE | TRUE |
| 397 | 11/3/2014 | 670.19 | -0.0003729 | -3728.89 | TRUE | TRUE | TRUE | TRUE |
| 398 | 11/4/2014 | 664.45 | -0.0085647 | -85647.35 | TRUE | TRUE | TRUE | TRUE |
| 399 | 11/5/2014 | 665.43 | 0.0014749 | 14749.04 | TRUE | TRUE | TRUE | TRUE |
| 400 | 11/6/2014 | 662.14 | -0.0049442 | -49441.71 | TRUE | TRUE | TRUE | TRUE |
| 401 | 11/7/2014 | 654.02 | -0.0122633 | -122632.68 | TRUE | TRUE | TRUE | TRUE |
| 402 | 11/10/2014 | 649.65 | -0.0066818 | -66817.53 | TRUE | TRUE | TRUE | TRUE |
| 403 | 11/11/2014 | 661.68 | 0.0185177 | 185176.63 | TRUE | TRUE | TRUE | TRUE |
| 404 | 11/12/2014 | 663.92 | 0.0033853 | 33853.22 | TRUE | TRUE | TRUE | TRUE |
| 405 | 11/13/2014 | 665.7 | 0.0026810 | 26810.46 | TRUE | TRUE | TRUE | TRUE |
| 406 | 11/14/2014 | 665.84 | 0.0002103 | 2103.05 | TRUE | TRUE | TRUE | TRUE |
| 407 | 11/17/2014 | 668.51 | 0.0040100 | 40099.72 | TRUE | TRUE | TRUE | TRUE |
| 408 | 11/18/2014 | 675.76 | 0.0108450 | 108450.14 | TRUE | TRUE | TRUE | TRUE |
| 409 | 11/19/2014 | 678.64 | 0.0042619 | 42618.68 | TRUE | TRUE | TRUE | TRUE |
| 410 | 11/20/2014 | 672.59 | -0.0089149 | -89148.89 | TRUE | TRUE | TRUE | TRUE |
| 411 | 11/21/2014 | 677.52 | 0.0073299 | 73298.74 | TRUE | TRUE | TRUE | TRUE |
| 412 | 11/24/2014 | 686.49 | 0.0132395 | 132394.62 | TRUE | TRUE | TRUE | TRUE |
| 413 | 11/25/2014 | 680.1 | -0.0093082 | -93082.2 | TRUE | TRUE | TRUE | TRUE |
| 414 | 11/26/2014 | 681.6 | 0.0022056 | 22055.58 | TRUE | TRUE | TRUE | TRUE |
| 415 | 11/27/2014 | 684.71 | 0.0045628 | 45627.93 | TRUE | TRUE | TRUE | TRUE |
| 416 | 11/28/2014 | 683.02 | -0.0024682 | -24681.98 | TRUE | TRUE | TRUE | TRUE |
| 417 | 12/1/2014 | 685.4 | 0.0034845 | 34845.25 | TRUE | TRUE | TRUE | TRUE |
| 418 | 12/2/2014 | 685.92 | 0.0007587 | 7586.81 | TRUE | TRUE | TRUE | TRUE |
| 419 | 12/3/2014 | 681.74 | -0.0060940 | -60940.05 | TRUE | TRUE | TRUE | TRUE |
| 420 | 12/4/2014 | 686.69 | 0.0072608 | 72608.33 | TRUE | TRUE | TRUE | TRUE |
| 421 | 12/5/2014 | 688.28 | 0.0023155 | 23154.55 | TRUE | TRUE | TRUE | TRUE |
| 422 | 12/8/2014 | 680.77 | -0.0109113 | -109112.57 | TRUE | TRUE | TRUE | TRUE |
| 423 | 12/9/2014 | 678.71 | -0.0030260 | -30259.85 | TRUE | TRUE | TRUE | TRUE |
| 424 | 12/10/2014 | 682.72 | 0.0059083 | 59082.67 | TRUE | TRUE | TRUE | TRUE |
| 425 | 12/11/2014 | 679.66 | -0.0044821 | -44820.72 | TRUE | TRUE | TRUE | TRUE |
| 426 | 12/12/2014 | 680.39 | 0.0010741 | 10740.66 | TRUE | TRUE | TRUE | TRUE |
| 427 | 12/15/2014 | 674.28 | -0.0089801 | -89801.44 | TRUE | TRUE | TRUE | TRUE |
| 428 | 12/16/2014 | 663.39 | -0.0161506 | -161505.61 | TRUE | TRUE | TRUE | TRUE |

| No | Tanggal | Close | Return | Return * 10000000 | T-1 hari | T-6 hari | T-30 hari | T-90 hari |
|---|---|---|---|---|---|---|---|---|
| 429 | 12/17/2014 | 661.6 | -0.0026983 | -26982.62 | TRUE | TRUE | TRUE | TRUE |
| 430 | 12/18/2014 | 675.49 | 0.0209946 | 209945.59 | TRUE | TRUE | TRUE | TRUE |
| 431 | 12/19/2014 | 679.18 | 0.0054627 | 54627.01 | TRUE | TRUE | TRUE | TRUE |
| 432 | 12/29/2014 | 685.84 | 0.0098059 | 98059.42 | TRUE | TRUE | TRUE | TRUE |
| 433 | 12/30/2014 | 691.04 | 0.0075819 | 75819.43 | TRUE | TRUE | TRUE | TRUE |
| 434 | 12/31/2014 | 691.04 | 0.0000000 | 0 | TRUE | TRUE | TRUE | TRUE |
| 435 | 1/2/2015 | 694.47 | 0.0049635 | 49635.33 | TRUE | TRUE | TRUE | TRUE |
| 436 | 1/5/2015 | 689.09 | -0.0077469 | -77469.15 | TRUE | TRUE | TRUE | TRUE |
| 437 | 1/6/2015 | 681.07 | -0.0116385 | -116385.38 | TRUE | TRUE | TRUE | TRUE |
| 438 | 1/7/2015 | 687.51 | 0.0094557 | 94557.09 | TRUE | TRUE | TRUE | TRUE |
| 439 | 1/8/2015 | 688.14 | 0.0009164 | 9163.5 | TRUE | TRUE | TRUE | TRUE |
| 440 | 1/9/2015 | 688.95 | 0.0011771 | 11770.86 | TRUE | TRUE | TRUE | TRUE |
| 441 | 1/12/2015 | 683.78 | -0.0075042 | -75041.73 | TRUE | TRUE | TRUE | TRUE |
| 442 | 1/13/2015 | 692.15 | 0.0122408 | 122407.79 | TRUE | TRUE | TRUE | TRUE |
| 443 | 1/14/2015 | 681.66 | -0.0151557 | -151556.74 | TRUE | TRUE | TRUE | TRUE |
| 444 | 1/15/2015 | 687.57 | 0.0086700 | 86700.11 | TRUE | TRUE | TRUE | TRUE |
| 445 | 1/16/2015 | 681.69 | -0.0085519 | -85518.57 | TRUE | TRUE | TRUE | TRUE |
| 446 | 1/19/2015 | 681.64 | -0.0000733 | -733 | TRUE | TRUE | TRUE | TRUE |
| 447 | 1/20/2015 | 688.62 | 0.0102400 | 102400.09 | TRUE | TRUE | TRUE | TRUE |
| 448 | 1/21/2015 | 702.1 | 0.0195754 | 195753.83 | TRUE | TRUE | TRUE | TRUE |
| 449 | 1/22/2015 | 708.84 | 0.0095998 | 95997.72 | TRUE | TRUE | TRUE | TRUE |
| 450 | 1/23/2015 | 716.73 | 0.0111309 | 111308.62 | TRUE | TRUE | TRUE | TRUE |
| 451 | 1/26/2015 | 705.43 | -0.0157660 | -157660.49 | TRUE | TRUE | TRUE | TRUE |
| 452 | 1/27/2015 | 707.71 | 0.0032321 | 32320.71 | TRUE | TRUE | TRUE | TRUE |
| 453 | 1/28/2015 | 706.09 | -0.0022891 | -22890.73 | TRUE | TRUE | TRUE | TRUE |
| 454 | 1/29/2015 | 703.1 | -0.0042346 | -42345.88 | TRUE | TRUE | TRUE | TRUE |
| 455 | 1/30/2015 | 706.68 | 0.0050917 | 50917.37 | TRUE | TRUE | TRUE | TRUE |
| 456 | 2/2/2015 | 701.5 | -0.0073301 | -73300.5 | TRUE | TRUE | TRUE | TRUE |
| 457 | 2/3/2015 | 704.64 | 0.0044761 | 44761.23 | TRUE | TRUE | TRUE | TRUE |
| 458 | 2/4/2015 | 708.72 | 0.0057902 | 57901.91 | TRUE | TRUE | TRUE | TRUE |
| 459 | 2/5/2015 | 700.4 | -0.0117395 | -117394.74 | TRUE | TRUE | TRUE | TRUE |
| 460 | 2/6/2015 | 711.52 | 0.0158766 | 158766.42 | TRUE | TRUE | TRUE | TRUE |
| 461 | 2/9/2015 | 710.89 | -0.0008854 | -8854.28 | TRUE | TRUE | TRUE | TRUE |

| No | Tanggal | Close | Return | Return * 10000000 | T-1 hari | T-6 hari | T-30 hari | T-90 hari |
|---|---|---|---|---|---|---|---|---|
| 462 | 2/10/2015 | 707.01 | -0.0054579 | -54579.47 | TRUE | TRUE | TRUE | TRUE |
| 463 | 2/11/2015 | 712.14 | 0.0072559 | 72559.09 | TRUE | TRUE | TRUE | TRUE |
| 464 | 2/12/2015 | 713.98 | 0.0025838 | 25837.62 | TRUE | TRUE | TRUE | TRUE |
| 465 | 2/13/2015 | 721.53 | 0.0105745 | 105745.26 | TRUE | TRUE | TRUE | TRUE |
| 466 | 2/16/2015 | 709.6 | -0.0165343 | -165343.09 | TRUE | TRUE | TRUE | TRUE |
| 467 | 2/17/2015 | 714.34 | 0.0066798 | 66798.2 | TRUE | TRUE | TRUE | TRUE |
| 468 | 2/18/2015 | 718.68 | 0.0060755 | 60755.38 | TRUE | TRUE | TRUE | TRUE |
| 469 | 2/19/2015 | 718.68 | 0.0000000 | 0 | TRUE | TRUE | TRUE | TRUE |
| 470 | 2/20/2015 | 715.36 | -0.0046196 | -46195.8 | TRUE | TRUE | TRUE | TRUE |
| 471 | 2/23/2015 | 718.39 | 0.0042356 | 42356.3 | TRUE | TRUE | TRUE | TRUE |
| 472 | 2/24/2015 | 720.43 | 0.0028397 | 28396.83 | TRUE | TRUE | TRUE | TRUE |
| 473 | 2/25/2015 | 727.44 | 0.0097303 | 97303 | TRUE | TRUE | TRUE | TRUE |
| 474 | 2/26/2015 | 727.37 | -0.0000962 | -962 | TRUE | TRUE | TRUE | TRUE |
| 475 | 2/27/2015 | 722.1 | -0.0072453 | -72452.81 | TRUE | TRUE | TRUE | TRUE |

| Periode Waktu (Hari) | VaR-TARCH(0,3) dengan Threshold 1 | N | X | Likelihood Ratio (LR) |
|---|---|---|---|---|
| 1 | 260.093 | 475 | 22 | 41.27197 |
| 6 | 637.096 | 475 | 1 | 20.60955 |
| 30 | 1.424.590 | 475 | 0 | Tidak terdefinisi |
| 90 | 2.467.463 | 475 | 0 | Tidak terdefinisi |

**LAMPIRAN 10** : Program untuk menghitung VAR-TARCH dengan matlab

1. M-File

```
clc;
Po=input('Besar Nilai Awal Investasi  : ');
t1=input('Periode Waktu : ');
t2=input('Periode Waktu : ');
t3=input('Periode Waktu : ');
t4=input('Periode Waktu : ');
Z=input('Nilai Z Alpha : ');
    s=0.237306;%nilai skweness
    V=0.01407728;%nilai volatilitas
    Z_koreksi=Z-(1/6*((Z^2)-1)*s)%karena  tidak  berdistribusi
     normal
    a1=sqrt(t1);%akar kuadrat dari t1
    a2=sqrt(t2);%akar kuadrat dari t2
    a3=sqrt(t3);%akar kuadrat dari t3
    a4=sqrt(t4);%akar kuadrat dari t4
    VaR_1=Po*Z_koreksi*V*a1;%VaR pada waktu t1
    VaR_2=Po*Z_koreksi*V*a2;%VaR pada waktu t2
    VaR_3=Po*Z_koreksi*V*a3;%VaR pada waktu t3
    VaR_4=Po*Z_koreksi*V*a4;%VaR pada waktu t4
clc;
fprintf('================================================\n')
fprintf('==  ANALISIS RISIKO INVESTASI SAHAM SYARIAH   ==\n')
fprintf('===              DENGAN                      ===\n')
fprintf('====          MODEL VaR-TARCH              ====\n')
fprintf('================================================\n')
fprintf('|Value at Risk(t)=Po*Z_koreksi*Volatilitas*akar t|\n')
fprintf('|  |\n')
fprintf('|  Besar Nilai Awal Investasi : Rp.%8.0f    |\n',Po)
fprintf('|  Nilai Z koreksi            : %8.4f  |\n',Z_koreksi)
fprintf('|Nilai Volatilitas          : %8.7f       |\n',V)
fprintf('|  Periode Waktu       : %8.0f hari       |\n',t1)
fprintf('|  Periode Waktu       : %8.0f hari       |\n',t2)
fprintf('|  Periode Waktu       : %8.0f hari       |\n',t3)
fprintf('|  Periode Waktu       : %8.0f hari       |\n',t4)
fprintf('|============================================|\n')
fprintf('|   1. Besar risiko pada waktu %2.0f hari kedepan :
    Rp.%8.0f  |\n',t1,VaR_1)
fprintf('|   2. Besar risiko pada waktu %2.0f hari kedepan :
    Rp.%8.0f  |\n',t2,VaR_2)
fprintf('|   3. Besar risiko pada waktu %1.0f hari kedepan :
    Rp.%8.0f  |\n',t3,VaR_3)
fprintf('|   4. Besar risiko pada waktu %1.f hari kedepan :
    Rp.%8.0f  |\n',t4,VaR_4)
fprintf('================================================\n')
```

2. Output

```
================================================
==   ANALISIS RISIKO INVESTASI SAHAM SYARIAH   ==
===                  DENGAN                  ===
====            MODEL VaR-TARCH                ====
================================================
|Value at Risk(t)= Po*Z_koreksi*Volatilitas*akar t|
|                                                |
|  Besar Nilai Awal Investasi :   Rp.10000000    |
|  Nilai Z koreksi            :        1.8476    |
|  Nilai Volatilitas          :     0.0140773    |
|  Periode Waktu              :        1 hari    |
|  Periode Waktu              :        6 hari    |
|  Periode Waktu              :       30 hari    |
|  Periode Waktu              :       90 hari    |
|================================================|
|  1. Besar risiko pada waktu  1 hari kedepan :
Rp.  260093  |
|  2. Besar risiko pada waktu  6 hari kedepan :
Rp.  637096  |
|  3. Besar risiko pada waktu 30 hari kedepan :
Rp. 1424590  |
|  4. Besar risiko pada waktu 90 hari kedepan :
Rp. 2467463  |
================================================
```

**LAMPIRAN 11** : Tabel Chi-Kuadrat

## TABEL CHI-KUADRAT

| Db | 0.25 | 0.2 | 0.15 | 0.1 | 0.05 | 0.025 | 0.02 | 0.01 |
|---|---|---|---|---|---|---|---|---|
| **1** | 1.3233 | 1.6424 | 2.0723 | 2.7055 | 3.8415 | 5.0239 | 5.4119 | 6.6349 |
| **2** | 2.7726 | 3.2189 | 3.7942 | 4.6052 | 5.9915 | 7.3778 | 7.824 | 9.2103 |
| **3** | 4.1083 | 4.6416 | 5.317 | 6.2514 | 7.8147 | 9.3484 | 9.8374 | 11.345 |
| **4** | 5.3853 | 5.9886 | 6.7449 | 7.7794 | 9.4877 | 11.143 | 11.668 | 13.277 |
| **5** | 6.6257 | 7.2893 | 8.1152 | 9.2364 | 11.07 | 12.833 | 13.388 | 15.086 |
| **6** | 7.8408 | 8.5581 | 9.4461 | 10.645 | 12.592 | 14.449 | 15.033 | 16.812 |
| **7** | 9.0371 | 9.8032 | 10.748 | 12.017 | 14.067 | 16.013 | 16.622 | 18.475 |
| **8** | 10.219 | 11.03 | 12.027 | 13.362 | 15.507 | 17.535 | 18.168 | 20.09 |
| **9** | 11.389 | 12.242 | 13.288 | 14.684 | 16.919 | 19.023 | 19.679 | 21.666 |
| **10** | 12.549 | 13.442 | 14.534 | 15.987 | 18.307 | 20.483 | 21.161 | 23.209 |
| **11** | 13.701 | 14.631 | 15.767 | 17.275 | 19.675 | 21.92 | 22.618 | 24.725 |
| **12** | 14.845 | 15.812 | 16.989 | 18.549 | 21.026 | 23.337 | 24.054 | 26.217 |
| **13** | 15.984 | 16.985 | 18.202 | 19.812 | 22.362 | 24.736 | 25.472 | 27.688 |
| **14** | 17.117 | 18.151 | 19.406 | 21.064 | 23.685 | 26.119 | 26.873 | 29.141 |
| **15** | 18.245 | 19.311 | 20.603 | 22.307 | 24.996 | 27.488 | 28.259 | 30.578 |
| **16** | 19.369 | 20.465 | 21.793 | 23.542 | 26.296 | 28.845 | 29.633 | 32 |
| **17** | 20.489 | 21.615 | 22.977 | 24.769 | 27.587 | 30.191 | 30.995 | 33.409 |
| **18** | 21.605 | 22.76 | 24.155 | 25.989 | 28.869 | 31.526 | 32.346 | 34.805 |
| **19** | 22.718 | 23.9 | 25.329 | 27.204 | 30.144 | 32.852 | 33.687 | 36.191 |
| **20** | 23.828 | 25.038 | 26.498 | 28.412 | 31.41 | 34.17 | 35.02 | 37.566 |
| **21** | 24.935 | 26.171 | 27.662 | 29.615 | 32.671 | 35.479 | 36.343 | 38.932 |
| **22** | 26.039 | 27.301 | 28.822 | 30.813 | 33.924 | 36.781 | 37.659 | 40.289 |
| **23** | 27.141 | 28.429 | 29.979 | 32.007 | 35.172 | 38.076 | 38.968 | 41.638 |
| **24** | 28.241 | 29.553 | 31.132 | 33.196 | 36.415 | 39.364 | 40.27 | 42.98 |
| **25** | 29.339 | 30.675 | 32.282 | 34.382 | 37.652 | 40.646 | 41.566 | 44.314 |
| **26** | 30.435 | 31.795 | 33.429 | 35.563 | 38.885 | 41.923 | 42.856 | 45.642 |
| **27** | 31.528 | 32.912 | 34.574 | 36.741 | 40.113 | 43.195 | 44.14 | 46.963 |
| **28** | 32.62 | 34.027 | 35.715 | 37.916 | 41.337 | 44.461 | 45.419 | 48.278 |
| **29** | 33.711 | 35.139 | 36.854 | 39.087 | 42.557 | 45.722 | 46.693 | 49.588 |
| **30** | 34.8 | 36.25 | 37.99 | 40.256 | 43.773 | 46.979 | 47.962 | 50.892 |
| **31** | 35.887 | 37.359 | 39.124 | 41.422 | 44.985 | 48.232 | 49.226 | 52.191 |
| **32** | 36.973 | 38.466 | 40.256 | 42.585 | 46.194 | 49.48 | 50.487 | 53.486 |
| **33** | 38.058 | 39.572 | 41.386 | 43.745 | 47.4 | 50.725 | 51.743 | 54.776 |
| **34** | 39.141 | 40.676 | 42.514 | 44.903 | 48.602 | 51.966 | 52.995 | 56.061 |

| db | 0.25 | 0.2 | 0.15 | 0.1 | 0.05 | 0.025 | 0.02 | 0.01 |
|---|---|---|---|---|---|---|---|---|
| **35** | 40.223 | 41.778 | 43.64 | 46.059 | 49.802 | 53.203 | 54.244 | 57.342 |
| **36** | 41.304 | 42.879 | 44.764 | 47.212 | 50.998 | 54.437 | 55.489 | 58.619 |
| **37** | 42.383 | 43.978 | 45.886 | 48.363 | 52.192 | 55.668 | 56.73 | 59.893 |
| **38** | 43.462 | 45.076 | 47.007 | 49.513 | 53.384 | 56.896 | 57.969 | 61.162 |
| **39** | 44.539 | 46.173 | 48.126 | 50.66 | 54.572 | 58.12 | 59.204 | 62.428 |
| **40** | 45.616 | 47.269 | 49.244 | 51.805 | 55.758 | 59.342 | 60.436 | 63.691 |
| **41** | 46.692 | 48.363 | 50.36 | 52.949 | 56.942 | 60.561 | 61.665 | 64.95 |
| **42** | 47.766 | 49.456 | 51.475 | 54.09 | 58.124 | 61.777 | 62.892 | 66.206 |
| **43** | 48.84 | 50.548 | 52.588 | 55.23 | 59.304 | 62.99 | 64.116 | 67.459 |
| **44** | 49.913 | 51.639 | 53.7 | 56.369 | 60.481 | 64.201 | 65.337 | 68.71 |
| **45** | 50.985 | 52.729 | 54.81 | 57.505 | 61.656 | 65.41 | 66.555 | 69.957 |
| **46** | 52.056 | 53.818 | 55.92 | 58.641 | 62.83 | 66.617 | 67.771 | 71.201 |
| **47** | 53.127 | 54.906 | 57.028 | 59.774 | 64.001 | 67.821 | 68.985 | 72.443 |
| **48** | 54.196 | 55.993 | 58.135 | 60.907 | 65.171 | 69.023 | 70.197 | 73.683 |
| **49** | 55.265 | 57.079 | 59.241 | 62.038 | 66.339 | 70.222 | 71.406 | 74.919 |
| **50** | 56.334 | 58.164 | 60.346 | 63.167 | 67.505 | 71.42 | 72.613 | 76.154 |
| **51** | 57.401 | 59.248 | 61.45 | 64.295 | 68.669 | 72.616 | 73.818 | 77.386 |
| **52** | 58.468 | 60.332 | 62.553 | 65.422 | 69.832 | 73.81 | 75.021 | 78.616 |
| **53** | 59.534 | 61.414 | 63.654 | 66.548 | 70.993 | 75.002 | 76.223 | 79.843 |
| **54** | 60.6 | 62.496 | 64.755 | 67.673 | 72.153 | 76.192 | 77.422 | 81.069 |
| **55** | 61.665 | 63.577 | 65.855 | 68.796 | 73.311 | 77.38 | 78.619 | 82.292 |
| **56** | 62.729 | 64.658 | 66.954 | 69.919 | 74.468 | 78.567 | 79.815 | 83.513 |
| **57** | 63.793 | 65.737 | 68.052 | 71.04 | 75.624 | 79.752 | 81.009 | 84.733 |
| **58** | 64.857 | 66.816 | 69.149 | 72.16 | 76.778 | 80.936 | 82.201 | 85.95 |
| **59** | 65.919 | 67.894 | 70.246 | 73.279 | 77.931 | 82.117 | 83.391 | 87.166 |
| **60** | 66.981 | 68.972 | 71.341 | 74.397 | 79.082 | 83.298 | 84.58 | 88.379 |
| **61** | 68.043 | 70.049 | 72.436 | 75.514 | 80.232 | 84.476 | 85.767 | 89.591 |
| **62** | 69.104 | 71.125 | 73.53 | 76.63 | 81.381 | 85.654 | 86.953 | 90.802 |
| **63** | 70.165 | 72.201 | 74.623 | 77.745 | 82.529 | 86.83 | 88.137 | 92.01 |
| **64** | 71.225 | 73.276 | 75.715 | 78.86 | 83.675 | 88.004 | 89.32 | 93.217 |
| **65** | 72.285 | 74.351 | 76.807 | 79.973 | 84.821 | 89.177 | 90.501 | 94.422 |
| **66** | 73.344 | 75.424 | 77.898 | 81.085 | 85.965 | 90.349 | 91.681 | 95.626 |
| **67** | 74.403 | 76.498 | 78.988 | 82.197 | 87.108 | 91.519 | 92.86 | 96.828 |
| **68** | 75.461 | 77.571 | 80.078 | 83.308 | 88.25 | 92.689 | 94.037 | 98.028 |
| **69** | 76.519 | 78.643 | 81.167 | 84.418 | 89.391 | 93.856 | 95.213 | 99.228 |
| **70** | 77.577 | 79.715 | 82.255 | 85.527 | 90.531 | 95.023 | 96.388 | 100.43 |

| db | 0.25 | 0.2 | 0.15 | 0.1 | 0.05 | 0.025 | 0.02 | 0.01 |
|---|---|---|---|---|---|---|---|---|
| **71** | 78.634 | 80.786 | 83.343 | 86.635 | 91.67 | 96.189 | 97.561 | 101.62 |
| **72** | 79.69 | 81.857 | 84.43 | 87.743 | 92.808 | 97.353 | 98.733 | 102.82 |
| **73** | 80.747 | 82.927 | 85.517 | 88.85 | 93.945 | 98.516 | 99.904 | 104.01 |
| **74** | 81.803 | 83.997 | 86.602 | 89.956 | 95.081 | 99.678 | 101.07 | 105.2 |
| **75** | 82.858 | 85.066 | 87.688 | 91.061 | 96.217 | 100.84 | 102.24 | 106.39 |
| **76** | 83.913 | 86.135 | 88.772 | 92.166 | 97.351 | 102 | 103.41 | 107.58 |
| **77** | 84.968 | 87.203 | 89.857 | 93.27 | 98.484 | 103.16 | 104.58 | 108.77 |
| **78** | 86.022 | 88.271 | 90.94 | 94.374 | 99.617 | 104.32 | 105.74 | 109.96 |
| **79** | 87.077 | 89.338 | 92.023 | 95.476 | 100.75 | 105.47 | 106.91 | 111.14 |
| **80** | 88.13 | 90.405 | 93.106 | 96.578 | 101.88 | 106.63 | 108.07 | 112.33 |
| **81** | 89.184 | 91.472 | 94.188 | 97.68 | 103.01 | 107.78 | 109.23 | 113.51 |
| **82** | 90.237 | 92.538 | 95.269 | 98.78 | 104.14 | 108.94 | 110.39 | 114.69 |
| **83** | 91.289 | 93.604 | 96.35 | 99.88 | 105.27 | 110.09 | 111.55 | 115.88 |
| **84** | 92.342 | 94.669 | 97.431 | 100.98 | 106.39 | 111.24 | 112.71 | 117.06 |
| **85** | 93.394 | 95.734 | 98.511 | 102.08 | 107.52 | 112.39 | 113.87 | 118.24 |
| **86** | 94.446 | 96.799 | 99.59 | 103.18 | 108.65 | 113.54 | 115.03 | 119.41 |
| **87** | 95.497 | 97.863 | 100.67 | 104.28 | 109.77 | 114.69 | 116.18 | 120.59 |
| **88** | 96.548 | 98.927 | 101.75 | 105.37 | 110.9 | 115.84 | 117.34 | 121.77 |
| **89** | 97.599 | 99.991 | 102.83 | 106.47 | 112.02 | 116.99 | 118.49 | 122.94 |
| **90** | 98.65 | 101.05 | 103.9 | 107.57 | 113.15 | 118.14 | 119.65 | 124.12 |
| **91** | 99.7 | 102.12 | 104.98 | 108.66 | 114.27 | 119.28 | 120.8 | 125.29 |
| **92** | 100.75 | 103.18 | 106.06 | 109.76 | 115.39 | 120.43 | 121.95 | 126.46 |
| **93** | 101.8 | 104.24 | 107.13 | 110.85 | 116.51 | 121.57 | 123.1 | 127.63 |
| **94** | 102.85 | 105.3 | 108.21 | 111.94 | 117.63 | 122.72 | 124.26 | 128.8 |
| **95** | 103.9 | 106.36 | 109.29 | 113.04 | 118.75 | 123.86 | 125.4 | 129.97 |
| **96** | 104.95 | 107.43 | 110.36 | 114.13 | 119.87 | 125 | 126.55 | 131.14 |
| **97** | 106 | 108.49 | 111.44 | 115.22 | 120.99 | 126.14 | 127.7 | 132.31 |
| **98** | 107.05 | 109.55 | 112.51 | 116.32 | 122.11 | 127.28 | 128.85 | 133.48 |
| **99** | 108.09 | 110.61 | 113.59 | 117.41 | 123.23 | 128.42 | 130 | 134.64 |
| **100** | 109.14 | 111.67 | 114.66 | 118.5 | 124.34 | 129.56 | 131.14 | 135.81 |
| **101** | 110.19 | 112.73 | 115.73 | 119.59 | 125.46 | 130.7 | 132.29 | 136.97 |
| **102** | 111.24 | 113.79 | 116.81 | 120.68 | 126.57 | 131.84 | 133.43 | 138.13 |
| **103** | 112.28 | 114.84 | 117.88 | 121.77 | 127.69 | 132.97 | 134.57 | 139.3 |
| **104** | 113.33 | 115.9 | 118.95 | 122.86 | 128.8 | 134.11 | 135.72 | 140.46 |
| **105** | 114.38 | 116.96 | 120.02 | 123.95 | 129.92 | 135.25 | 136.86 | 141.62 |
| **106** | 115.42 | 118.02 | 121.09 | 125.04 | 131.03 | 136.38 | 138 | 142.78 |

| db | 0.25 | 0.2 | 0.15 | 0.1 | 0.05 | 0.025 | 0.02 | 0.01 |
|---|---|---|---|---|---|---|---|---|
| **107** | 116.47 | 119.08 | 122.16 | 126.12 | 132.14 | 137.52 | 139.14 | 143.94 |
| **108** | 117.52 | 120.14 | 123.24 | 127.21 | 133.26 | 138.65 | 140.28 | 145.1 |
| **109** | 118.56 | 121.19 | 124.31 | 128.3 | 134.37 | 139.78 | 141.42 | 146.26 |
| **110** | 119.61 | 122.25 | 125.38 | 129.39 | 135.48 | 140.92 | 142.56 | 147.41 |
| **111** | 120.65 | 123.31 | 126.45 | 130.47 | 136.59 | 142.05 | 143.7 | 148.57 |
| **112** | 121.7 | 124.36 | 127.52 | 131.56 | 137.7 | 143.18 | 144.84 | 149.73 |
| **113** | 122.74 | 125.42 | 128.59 | 132.64 | 138.81 | 144.31 | 145.97 | 150.88 |
| **114** | 123.79 | 126.48 | 129.65 | 133.73 | 139.92 | 145.44 | 147.11 | 152.04 |
| **115** | 124.83 | 127.53 | 130.72 | 134.81 | 141.03 | 146.57 | 148.25 | 153.19 |
| **116** | 125.88 | 128.59 | 131.79 | 135.9 | 142.14 | 147.7 | 149.38 | 154.34 |
| **117** | 126.92 | 129.64 | 132.86 | 136.98 | 143.25 | 148.83 | 150.52 | 155.5 |
| **118** | 127.97 | 130.7 | 133.93 | 138.07 | 144.35 | 149.96 | 151.65 | 156.65 |
| **119** | 129.01 | 131.75 | 134.99 | 139.15 | 145.46 | 151.08 | 152.79 | 157.8 |
| **120** | 130.05 | 132.81 | 136.06 | 140.23 | 146.57 | 152.21 | 153.92 | 158.95 |
| **121** | 131.1 | 133.86 | 137.13 | 141.32 | 147.67 | 153.34 | 155.05 | 160.1 |
| **122** | 132.14 | 134.91 | 138.2 | 142.4 | 148.78 | 154.46 | 156.18 | 161.25 |
| **123** | 133.18 | 135.97 | 139.26 | 143.48 | 149.88 | 155.59 | 157.31 | 162.4 |
| **124** | 134.23 | 137.02 | 140.33 | 144.56 | 150.99 | 156.71 | 158.44 | 163.55 |
| **125** | 135.27 | 138.08 | 141.39 | 145.64 | 152.09 | 157.84 | 159.58 | 164.69 |
| **126** | 136.31 | 139.13 | 142.46 | 146.72 | 153.2 | 158.96 | 160.71 | 165.84 |
| **127** | 137.36 | 140.18 | 143.52 | 147.8 | 154.3 | 160.09 | 161.83 | 166.99 |
| **128** | 138.4 | 141.24 | 144.59 | 148.89 | 155.4 | 161.21 | 162.96 | 168.13 |
| **129** | 139.44 | 142.29 | 145.65 | 149.97 | 156.51 | 162.33 | 164.09 | 169.28 |
| **130** | 140.48 | 143.34 | 146.72 | 151.05 | 157.61 | 163.45 | 165.22 | 170.42 |
| **131** | 141.52 | 144.39 | 147.78 | 152.12 | 158.71 | 164.57 | 166.35 | 171.57 |
| **132** | 142.57 | 145.44 | 148.85 | 153.2 | 159.81 | 165.7 | 167.47 | 172.71 |
| **133** | 143.61 | 146.5 | 149.91 | 154.28 | 160.91 | 166.82 | 168.6 | 173.85 |
| **134** | 144.65 | 147.55 | 150.98 | 155.36 | 162.02 | 167.94 | 169.73 | 175 |
| **135** | 145.69 | 148.6 | 152.04 | 156.44 | 163.12 | 169.06 | 170.85 | 176.14 |
| **136** | 146.73 | 149.65 | 153.1 | 157.52 | 164.22 | 170.18 | 171.98 | 177.28 |
| **137** | 147.77 | 150.7 | 154.16 | 158.6 | 165.32 | 171.29 | 173.1 | 178.42 |
| **138** | 148.81 | 151.75 | 155.23 | 159.67 | 166.42 | 172.41 | 174.22 | 179.56 |
| **139** | 149.85 | 152.8 | 156.29 | 160.75 | 167.51 | 173.53 | 175.35 | 180.7 |
| **140** | 150.89 | 153.85 | 157.35 | 161.83 | 168.61 | 174.65 | 176.47 | 181.84 |
| **141** | 151.93 | 154.9 | 158.41 | 162.9 | 169.71 | 175.76 | 177.59 | 182.98 |
| **142** | 152.97 | 155.95 | 159.48 | 163.98 | 170.81 | 176.88 | 178.72 | 184.12 |

| db | 0.25 | 0.2 | 0.15 | 0.1 | 0.05 | 0.025 | 0.02 | 0.01 |
|---|---|---|---|---|---|---|---|---|
| **143** | 154.01 | 157 | 160.54 | 165.06 | 171.91 | 178 | 179.84 | 185.26 |
| **144** | 155.05 | 158.05 | 161.6 | 166.13 | 173 | 179.11 | 180.96 | 186.39 |
| **145** | 156.09 | 159.1 | 162.66 | 167.21 | 174.1 | 180.23 | 182.08 | 187.53 |
| **146** | 157.13 | 160.15 | 163.72 | 168.28 | 175.2 | 181.34 | 183.2 | 188.67 |
| **147** | 158.17 | 161.2 | 164.78 | 169.36 | 176.29 | 182.46 | 184.32 | 189.8 |
| **148** | 159.21 | 162.25 | 165.84 | 170.43 | 177.39 | 183.57 | 185.44 | 190.94 |
| **149** | 160.25 | 163.3 | 166.9 | 171.51 | 178.49 | 184.69 | 186.56 | 192.07 |
| **150** | 161.29 | 164.35 | 167.96 | 172.58 | 179.58 | 185.8 | 187.68 | 193.21 |
| **151** | 162.33 | 165.4 | 169.02 | 173.66 | 180.68 | 186.91 | 188.8 | 194.34 |
| **152** | 163.37 | 166.45 | 170.08 | 174.73 | 181.77 | 188.03 | 189.92 | 195.48 |
| **153** | 164.41 | 167.49 | 171.14 | 175.8 | 182.86 | 189.14 | 191.03 | 196.61 |
| **154** | 165.45 | 168.54 | 172.2 | 176.88 | 183.96 | 190.25 | 192.15 | 197.74 |
| **155** | 166.48 | 169.59 | 173.26 | 177.95 | 185.05 | 191.36 | 193.27 | 198.87 |
| **156** | 167.52 | 170.64 | 174.32 | 179.02 | 186.15 | 192.47 | 194.38 | 200.01 |
| **157** | 168.56 | 171.69 | 175.38 | 180.09 | 187.24 | 193.58 | 195.5 | 201.14 |
| **158** | 169.6 | 172.73 | 176.44 | 181.17 | 188.33 | 194.7 | 196.62 | 202.27 |
| **159** | 170.64 | 173.78 | 177.49 | 182.24 | 189.42 | 195.81 | 197.73 | 203.4 |
| **160** | 171.68 | 174.83 | 178.55 | 183.31 | 190.52 | 196.92 | 198.85 | 204.53 |
| **161** | 172.71 | 175.88 | 179.61 | 184.38 | 191.61 | 198.02 | 199.96 | 205.66 |
| **162** | 173.75 | 176.92 | 180.67 | 185.45 | 192.7 | 199.13 | 201.08 | 206.79 |
| **163** | 174.79 | 177.97 | 181.73 | 186.52 | 193.79 | 200.24 | 202.19 | 207.92 |
| **164** | 175.83 | 179.02 | 182.78 | 187.6 | 194.88 | 201.35 | 203.3 | 209.05 |
| **165** | 176.86 | 180.06 | 183.84 | 188.67 | 195.97 | 202.46 | 204.42 | 210.18 |
| **166** | 177.9 | 181.11 | 184.9 | 189.74 | 197.06 | 203.57 | 205.53 | 211.3 |
| **167** | 178.94 | 182.15 | 185.95 | 190.81 | 198.15 | 204.67 | 206.64 | 212.43 |
| **168** | 179.97 | 183.2 | 187.01 | 191.88 | 199.24 | 205.78 | 207.75 | 213.56 |
| **169** | 181.01 | 184.25 | 188.07 | 192.95 | 200.33 | 206.89 | 208.87 | 214.69 |
| **170** | 182.05 | 185.29 | 189.12 | 194.02 | 201.42 | 208 | 209.98 | 215.81 |
| **171** | 183.08 | 186.34 | 190.18 | 195.09 | 202.51 | 209.1 | 211.09 | 216.94 |
| **172** | 184.12 | 187.38 | 191.24 | 196.16 | 203.6 | 210.21 | 212.2 | 218.06 |
| **173** | 185.16 | 188.43 | 192.29 | 197.23 | 204.69 | 211.31 | 213.31 | 219.19 |
| **174** | 186.19 | 189.47 | 193.35 | 198.29 | 205.78 | 212.42 | 214.42 | 220.31 |
| **175** | 187.23 | 190.52 | 194.4 | 199.36 | 206.87 | 213.52 | 215.53 | 221.44 |
| **176** | 188.27 | 191.56 | 195.46 | 200.43 | 207.95 | 214.63 | 216.64 | 222.56 |
| **177** | 189.3 | 192.61 | 196.51 | 201.5 | 209.04 | 215.73 | 217.75 | 223.69 |
| **178** | 190.34 | 193.65 | 197.57 | 202.57 | 210.13 | 216.84 | 218.86 | 224.81 |

| db | 0.25 | 0.2 | 0.15 | 0.1 | 0.05 | 0.025 | 0.02 | 0.01 |
|---|---|---|---|---|---|---|---|---|
| **179** | 191.37 | 194.7 | 198.62 | 203.64 | 211.22 | 217.94 | 219.97 | 225.93 |
| **180** | 192.41 | 195.74 | 199.68 | 204.7 | 212.3 | 219.04 | 221.08 | 227.06 |
| **181** | 193.44 | 196.79 | 200.73 | 205.77 | 213.39 | 220.15 | 222.19 | 228.18 |
| **182** | 194.48 | 197.83 | 201.79 | 206.84 | 214.48 | 221.25 | 223.29 | 229.3 |
| **183** | 195.52 | 198.88 | 202.84 | 207.91 | 215.56 | 222.35 | 224.4 | 230.42 |
| **184** | 196.55 | 199.92 | 203.9 | 208.97 | 216.65 | 223.46 | 225.51 | 231.54 |
| **185** | 197.59 | 200.96 | 204.95 | 210.04 | 217.73 | 224.56 | 226.62 | 232.67 |
| **186** | 198.62 | 202.01 | 206 | 211.11 | 218.82 | 225.66 | 227.72 | 233.79 |
| **187** | 199.66 | 203.05 | 207.06 | 212.17 | 219.91 | 226.76 | 228.83 | 234.91 |
| **188** | 200.69 | 204.1 | 208.11 | 213.24 | 220.99 | 227.86 | 229.93 | 236.03 |
| **189** | 201.73 | 205.14 | 209.17 | 214.31 | 222.08 | 228.96 | 231.04 | 237.15 |
| **190** | 202.76 | 206.18 | 210.22 | 215.37 | 223.16 | 230.06 | 232.15 | 238.27 |
| **191** | 203.79 | 207.23 | 211.27 | 216.44 | 224.24 | 231.16 | 233.25 | 239.39 |
| **192** | 204.83 | 208.27 | 212.32 | 217.5 | 225.33 | 232.27 | 234.36 | 240.5 |
| **193** | 205.86 | 209.31 | 213.38 | 218.57 | 226.41 | 233.37 | 235.46 | 241.62 |
| **194** | 206.9 | 210.35 | 214.43 | 219.63 | 227.5 | 234.46 | 236.57 | 242.74 |
| **195** | 207.93 | 211.4 | 215.48 | 220.7 | 228.58 | 235.56 | 237.67 | 243.86 |
| **196** | 208.97 | 212.44 | 216.54 | 221.76 | 229.66 | 236.66 | 238.77 | 244.98 |
| **197** | 210 | 213.48 | 217.59 | 222.83 | 230.75 | 237.76 | 239.88 | 246.09 |
| **198** | 211.03 | 214.52 | 218.64 | 223.89 | 231.83 | 238.86 | 240.98 | 247.21 |
| **199** | 212.07 | 215.57 | 219.69 | 224.96 | 232.91 | 239.96 | 242.08 | 248.33 |
| **200** | 213.1 | 216.61 | 220.74 | 226.02 | 233.99 | 241.06 | 243.19 | 249.45 |
| **201** | 214.14 | 217.65 | 221.8 | 227.09 | 235.08 | 242.16 | 244.29 | 250.56 |
| **202** | 215.17 | 218.69 | 222.85 | 228.15 | 236.16 | 243.25 | 245.39 | 251.68 |
| **203** | 216.2 | 219.73 | 223.9 | 229.21 | 237.24 | 244.35 | 246.49 | 252.79 |
| **204** | 217.24 | 220.78 | 224.95 | 230.28 | 238.32 | 245.45 | 247.6 | 253.91 |
| **205** | 218.27 | 221.82 | 226 | 231.34 | 239.4 | 246.55 | 248.7 | 255.02 |
| **206** | 219.3 | 222.86 | 227.05 | 232.4 | 240.48 | 247.64 | 249.8 | 256.14 |
| **207** | 220.34 | 223.9 | 228.1 | 233.47 | 241.57 | 248.74 | 250.9 | 257.25 |
| **208** | 221.37 | 224.94 | 229.16 | 234.53 | 242.65 | 249.83 | 252 | 258.37 |
| **209** | 222.4 | 225.98 | 230.21 | 235.59 | 243.73 | 250.93 | 253.1 | 259.48 |
| **210** | 223.44 | 227.03 | 231.26 | 236.65 | 244.81 | 252.03 | 254.2 | 260.59 |
| **211** | 224.47 | 228.07 | 232.31 | 237.72 | 245.89 | 253.12 | 255.3 | 261.71 |
| **212** | 225.5 | 229.11 | 233.36 | 238.78 | 246.97 | 254.22 | 256.4 | 262.82 |
| **213** | 226.53 | 230.15 | 234.41 | 239.84 | 248.05 | 255.31 | 257.5 | 263.93 |
| **214** | 227.57 | 231.19 | 235.46 | 240.9 | 249.13 | 256.41 | 258.6 | 265.05 |

| db | 0.25 | 0.2 | 0.15 | 0.1 | 0.05 | 0.025 | 0.02 | 0.01 |
|---|---|---|---|---|---|---|---|---|
| **215** | 228.6 | 232.23 | 236.51 | 241.97 | 250.21 | 257.5 | 259.7 | 266.16 |
| **216** | 229.63 | 233.27 | 237.56 | 243.03 | 251.29 | 258.6 | 260.8 | 267.27 |
| **217** | 230.66 | 234.31 | 238.61 | 244.09 | 252.37 | 259.69 | 261.9 | 268.38 |
| **218** | 231.7 | 235.35 | 239.66 | 245.15 | 253.44 | 260.79 | 263 | 269.49 |
| **219** | 232.73 | 236.39 | 240.71 | 246.21 | 254.52 | 261.88 | 264.1 | 270.61 |
| **220** | 233.76 | 237.43 | 241.76 | 247.27 | 255.6 | 262.97 | 265.19 | 271.72 |
| **221** | 234.79 | 238.47 | 242.81 | 248.33 | 256.68 | 264.07 | 266.29 | 272.83 |
| **222** | 235.83 | 239.51 | 243.86 | 249.4 | 257.76 | 265.16 | 267.39 | 273.94 |
| **223** | 236.86 | 240.55 | 244.91 | 250.46 | 258.84 | 266.25 | 268.49 | 275.05 |
| **224** | 237.89 | 241.59 | 245.95 | 251.52 | 259.91 | 267.35 | 269.58 | 276.16 |
| **225** | 238.92 | 242.63 | 247 | 252.58 | 260.99 | 268.44 | 270.68 | 277.27 |
| **226** | 239.95 | 243.67 | 248.05 | 253.64 | 262.07 | 269.53 | 271.78 | 278.38 |
| **227** | 240.99 | 244.71 | 249.1 | 254.7 | 263.15 | 270.62 | 272.87 | 279.49 |
| **228** | 242.02 | 245.75 | 250.15 | 255.76 | 264.22 | 271.71 | 273.97 | 280.6 |
| **229** | 243.05 | 246.79 | 251.2 | 256.82 | 265.3 | 272.81 | 275.07 | 281.71 |
| **230** | 244.08 | 247.83 | 252.25 | 257.88 | 266.38 | 273.9 | 276.16 | 282.81 |
| **231** | 245.11 | 248.87 | 253.3 | 258.94 | 267.45 | 274.99 | 277.26 | 283.92 |
| **232** | 246.14 | 249.91 | 254.34 | 260 | 268.53 | 276.08 | 278.35 | 285.03 |
| **233** | 247.17 | 250.95 | 255.39 | 261.06 | 269.61 | 277.17 | 279.45 | 286.14 |
| **234** | 248.21 | 251.99 | 256.44 | 262.12 | 270.68 | 278.26 | 280.54 | 287.25 |
| **235** | 249.24 | 253.02 | 257.49 | 263.18 | 271.76 | 279.35 | 281.64 | 288.35 |
| **236** | 250.27 | 254.06 | 258.54 | 264.24 | 272.84 | 280.44 | 282.73 | 289.46 |
| **237** | 251.3 | 255.1 | 259.58 | 265.29 | 273.91 | 281.53 | 283.83 | 290.57 |
| **238** | 252.33 | 256.14 | 260.63 | 266.35 | 274.99 | 282.62 | 284.92 | 291.68 |
| **239** | 253.36 | 257.18 | 261.68 | 267.41 | 276.06 | 283.71 | 286.02 | 292.78 |
| **240** | 254.39 | 258.22 | 262.73 | 268.47 | 277.14 | 284.8 | 287.11 | 293.89 |
| **241** | 255.42 | 259.26 | 263.77 | 269.53 | 278.21 | 285.89 | 288.2 | 294.99 |
| **242** | 256.45 | 260.29 | 264.82 | 270.59 | 279.29 | 286.98 | 289.3 | 296.1 |
| **243** | 257.48 | 261.33 | 265.87 | 271.65 | 280.36 | 288.07 | 290.39 | 297.21 |
| **244** | 258.51 | 262.37 | 266.91 | 272.7 | 281.44 | 289.16 | 291.48 | 298.31 |
| **245** | 259.55 | 263.41 | 267.96 | 273.76 | 282.51 | 290.25 | 292.58 | 299.42 |
| **246** | 260.58 | 264.45 | 269.01 | 274.82 | 283.59 | 291.34 | 293.67 | 300.52 |
| **247** | 261.61 | 265.49 | 270.05 | 275.88 | 284.66 | 292.42 | 294.76 | 301.63 |
| **248** | 262.64 | 266.52 | 271.1 | 276.94 | 285.73 | 293.51 | 295.85 | 302.73 |
| **249** | 263.67 | 267.56 | 272.15 | 277.99 | 286.81 | 294.6 | 296.95 | 303.84 |
| **250** | 264.7 | 268.6 | 273.19 | 279.05 | 287.88 | 295.69 | 298.04 | 304.94 |

| db | 0.25 | 0.2 | 0.15 | 0.1 | 0.05 | 0.025 | 0.02 | 0.01 |
|---|---|---|---|---|---|---|---|---|
| **251** | 265.73 | 269.64 | 274.24 | 280.11 | 288.96 | 296.78 | 299.13 | 306.04 |
| **252** | 266.76 | 270.67 | 275.29 | 281.16 | 290.03 | 297.86 | 300.22 | 307.15 |
| **253** | 267.79 | 271.71 | 276.33 | 282.22 | 291.1 | 298.95 | 301.31 | 308.25 |
| **254** | 268.82 | 272.75 | 277.38 | 283.28 | 292.17 | 300.04 | 302.4 | 309.35 |
| **255** | 269.85 | 273.79 | 278.43 | 284.34 | 293.25 | 301.13 | 303.5 | 310.46 |
| **256** | 270.88 | 274.82 | 279.47 | 285.39 | 294.32 | 302.21 | 304.59 | 311.56 |
| **257** | 271.91 | 275.86 | 280.52 | 286.45 | 295.39 | 303.3 | 305.68 | 312.66 |
| **258** | 272.94 | 276.9 | 281.56 | 287.51 | 296.47 | 304.38 | 306.77 | 313.77 |
| **259** | 273.97 | 277.93 | 282.61 | 288.56 | 297.54 | 305.47 | 307.86 | 314.87 |
| **260** | 275 | 278.97 | 283.65 | 289.62 | 298.61 | 306.56 | 308.95 | 315.97 |
| **261** | 276.03 | 280.01 | 284.7 | 290.67 | 299.68 | 307.64 | 310.04 | 317.07 |
| **262** | 277.06 | 281.05 | 285.74 | 291.73 | 300.75 | 308.73 | 311.13 | 318.17 |
| **263** | 278.08 | 282.08 | 286.79 | 292.79 | 301.83 | 309.81 | 312.22 | 319.28 |
| **264** | 279.11 | 283.12 | 287.84 | 293.84 | 302.9 | 310.9 | 313.31 | 320.38 |
| **265** | 280.14 | 284.16 | 288.88 | 294.9 | 303.97 | 311.99 | 314.4 | 321.48 |
| **266** | 281.17 | 285.19 | 289.93 | 295.95 | 305.04 | 313.07 | 315.49 | 322.58 |
| **267** | 282.2 | 286.23 | 290.97 | 297.01 | 306.11 | 314.16 | 316.58 | 323.68 |
| **268** | 283.23 | 287.27 | 292.02 | 298.07 | 307.18 | 315.24 | 317.66 | 324.78 |
| **269** | 284.26 | 288.3 | 293.06 | 299.12 | 308.25 | 316.32 | 318.75 | 325.88 |
| **270** | 285.29 | 289.34 | 294.1 | 300.18 | 309.33 | 317.41 | 319.84 | 326.98 |
| **271** | 286.32 | 290.37 | 295.15 | 301.23 | 310.4 | 318.49 | 320.93 | 328.08 |
| **272** | 287.35 | 291.41 | 296.19 | 302.29 | 311.47 | 319.58 | 322.02 | 329.18 |
| **273** | 288.38 | 292.45 | 297.24 | 303.34 | 312.54 | 320.66 | 323.11 | 330.28 |
| **274** | 289.41 | 293.48 | 298.28 | 304.4 | 313.61 | 321.75 | 324.19 | 331.38 |
| **275** | 290.43 | 294.52 | 299.33 | 305.45 | 314.68 | 322.83 | 325.28 | 332.48 |
| **276** | 291.46 | 295.55 | 300.37 | 306.51 | 315.75 | 323.91 | 326.37 | 333.58 |
| **277** | 292.49 | 296.59 | 301.42 | 307.56 | 316.82 | 325 | 327.46 | 334.68 |
| **278** | 293.52 | 297.63 | 302.46 | 308.61 | 317.89 | 326.08 | 328.54 | 335.78 |
| **279** | 294.55 | 298.66 | 303.5 | 309.67 | 318.96 | 327.16 | 329.63 | 336.88 |
| **280** | 295.58 | 299.7 | 304.55 | 310.72 | 320.03 | 328.25 | 330.72 | 337.97 |
| **281** | 296.61 | 300.73 | 305.59 | 311.78 | 321.1 | 329.33 | 331.8 | 339.07 |
| **282** | 297.63 | 301.77 | 306.63 | 312.83 | 322.17 | 330.41 | 332.89 | 340.17 |
| **283** | 298.66 | 302.8 | 307.68 | 313.89 | 323.24 | 331.49 | 333.98 | 341.27 |
| **284** | 299.69 | 303.84 | 308.72 | 314.94 | 324.31 | 332.58 | 335.06 | 342.37 |
| **285** | 300.72 | 304.87 | 309.77 | 315.99 | 325.37 | 333.66 | 336.15 | 343.46 |
| **286** | 301.75 | 305.91 | 310.81 | 317.05 | 326.44 | 334.74 | 337.24 | 344.56 |

| db | 0.25 | 0.2 | 0.15 | 0.1 | 0.05 | 0.025 | 0.02 | 0.01 |
|---|---|---|---|---|---|---|---|---|
| **287** | 302.78 | 306.94 | 311.85 | 318.1 | 327.51 | 335.82 | 338.32 | 345.66 |
| **288** | 303.8 | 307.98 | 312.9 | 319.15 | 328.58 | 336.9 | 339.41 | 346.75 |
| **289** | 304.83 | 309.02 | 313.94 | 320.21 | 329.65 | 337.99 | 340.49 | 347.85 |
| **290** | 305.86 | 310.05 | 314.98 | 321.26 | 330.72 | 339.07 | 341.58 | 348.95 |
| **291** | 306.89 | 311.09 | 316.02 | 322.31 | 331.79 | 340.15 | 342.66 | 350.04 |
| **292** | 307.92 | 312.12 | 317.07 | 323.37 | 332.85 | 341.23 | 343.75 | 351.14 |
| **293** | 308.94 | 313.15 | 318.11 | 324.42 | 333.92 | 342.31 | 344.83 | 352.24 |
| **294** | 309.97 | 314.19 | 319.15 | 325.47 | 334.99 | 343.39 | 345.92 | 353.33 |
| **295** | 311 | 315.22 | 320.2 | 326.53 | 336.06 | 344.47 | 347 | 354.43 |
| **296** | 312.03 | 316.26 | 321.24 | 327.58 | 337.13 | 345.55 | 348.09 | 355.53 |
| **297** | 313.06 | 317.29 | 322.28 | 328.63 | 338.19 | 346.63 | 349.17 | 356.62 |
| **298** | 314.08 | 318.33 | 323.32 | 329.68 | 339.26 | 347.71 | 350.26 | 357.72 |
| **299** | 315.11 | 319.36 | 324.37 | 330.74 | 340.33 | 348.79 | 351.34 | 358.81 |
| **300** | 316.14 | 320.4 | 325.41 | 331.79 | 341.4 | 349.87 | 352.42 | 359.91 |
| **301** | 317.17 | 321.43 | 326.45 | 332.84 | 342.46 | 350.95 | 353.51 | 361 |
| **302** | 318.19 | 322.47 | 327.49 | 333.89 | 343.53 | 352.03 | 354.59 | 362.1 |
| **303** | 319.22 | 323.5 | 328.54 | 334.95 | 344.6 | 353.11 | 355.68 | 363.19 |
| **304** | 320.25 | 324.53 | 329.58 | 336 | 345.66 | 354.19 | 356.76 | 364.29 |
| **305** | 321.28 | 325.57 | 330.62 | 337.05 | 346.73 | 355.27 | 357.84 | 365.38 |
| **306** | 322.3 | 326.6 | 331.66 | 338.1 | 347.8 | 356.35 | 358.93 | 366.47 |
| **307** | 323.33 | 327.64 | 332.7 | 339.15 | 348.86 | 357.43 | 360.01 | 367.57 |
| **308** | 324.36 | 328.67 | 333.75 | 340.2 | 349.93 | 358.51 | 361.09 | 368.66 |
| **309** | 325.38 | 329.7 | 334.79 | 341.26 | 351 | 359.59 | 362.17 | 369.76 |
| **310** | 326.41 | 330.74 | 335.83 | 342.31 | 352.06 | 360.67 | 363.26 | 370.85 |
| **311** | 327.44 | 331.77 | 336.87 | 343.36 | 353.13 | 361.75 | 364.34 | 371.94 |
| **312** | 328.47 | 332.81 | 337.91 | 344.41 | 354.19 | 362.83 | 365.42 | 373.04 |
| **313** | 329.49 | 333.84 | 338.95 | 345.46 | 355.26 | 363.9 | 366.5 | 374.13 |
| **314** | 330.52 | 334.87 | 340 | 346.51 | 356.33 | 364.98 | 367.59 | 375.22 |
| **315** | 331.55 | 335.91 | 341.04 | 347.56 | 357.39 | 366.06 | 368.67 | 376.31 |
| **316** | 332.57 | 336.94 | 342.08 | 348.62 | 358.46 | 367.14 | 369.75 | 377.41 |
| **317** | 333.6 | 337.97 | 343.12 | 349.67 | 359.52 | 368.22 | 370.83 | 378.5 |
| **318** | 334.63 | 339.01 | 344.16 | 350.72 | 360.59 | 369.29 | 371.91 | 379.59 |
| **319** | 335.65 | 340.04 | 345.2 | 351.77 | 361.65 | 370.37 | 372.99 | 380.68 |
| **320** | 336.68 | 341.07 | 346.24 | 352.82 | 362.72 | 371.45 | 374.08 | 381.78 |
| **321** | 337.71 | 342.11 | 347.28 | 353.87 | 363.78 | 372.53 | 375.16 | 382.87 |
| **322** | 338.73 | 343.14 | 348.32 | 354.92 | 364.85 | 373.6 | 376.24 | 383.96 |

| db | 0.25 | 0.2 | 0.15 | 0.1 | 0.05 | 0.025 | 0.02 | 0.01 |
|---|---|---|---|---|---|---|---|---|
| **323** | 339.76 | 344.17 | 349.37 | 355.97 | 365.91 | 374.68 | 377.32 | 385.05 |
| **324** | 340.79 | 345.21 | 350.41 | 357.02 | 366.98 | 375.76 | 378.4 | 386.14 |
| **325** | 341.81 | 346.24 | 351.45 | 358.07 | 368.04 | 376.84 | 379.48 | 387.23 |
| **326** | 342.84 | 347.27 | 352.49 | 359.12 | 369.11 | 377.91 | 380.56 | 388.33 |
| **327** | 343.87 | 348.31 | 353.53 | 360.17 | 370.17 | 378.99 | 381.64 | 389.42 |
| **328** | 344.89 | 349.34 | 354.57 | 361.22 | 371.23 | 380.07 | 382.72 | 390.51 |
| **329** | 345.92 | 350.37 | 355.61 | 362.27 | 372.3 | 381.14 | 383.8 | 391.6 |
| **330** | 346.95 | 351.4 | 356.65 | 363.32 | 373.36 | 382.22 | 384.88 | 392.69 |
| **331** | 347.97 | 352.44 | 357.69 | 364.37 | 374.43 | 383.3 | 385.96 | 393.78 |
| **332** | 349 | 353.47 | 358.73 | 365.42 | 375.49 | 384.37 | 387.04 | 394.87 |
| **333** | 350.02 | 354.5 | 359.77 | 366.47 | 376.55 | 385.45 | 388.12 | 395.96 |
| **334** | 351.05 | 355.54 | 360.81 | 367.52 | 377.62 | 386.52 | 389.2 | 397.05 |
| **335** | 352.08 | 356.57 | 361.85 | 368.57 | 378.68 | 387.6 | 390.28 | 398.14 |
| **336** | 353.1 | 357.6 | 362.89 | 369.62 | 379.75 | 388.68 | 391.36 | 399.23 |
| **337** | 354.13 | 358.63 | 363.93 | 370.67 | 380.81 | 389.75 | 392.44 | 400.32 |
| **338** | 355.15 | 359.67 | 364.97 | 371.72 | 381.87 | 390.83 | 393.52 | 401.41 |
| **339** | 356.18 | 360.7 | 366.01 | 372.77 | 382.94 | 391.9 | 394.6 | 402.5 |
| **340** | 357.21 | 361.73 | 367.05 | 373.82 | 384 | 392.98 | 395.68 | 403.59 |
| **341** | 358.23 | 362.76 | 368.09 | 374.87 | 385.06 | 394.05 | 396.75 | 404.68 |
| **342** | 359.26 | 363.79 | 369.13 | 375.92 | 386.13 | 395.13 | 397.83 | 405.77 |
| **343** | 360.28 | 364.83 | 370.17 | 376.96 | 387.19 | 396.2 | 398.91 | 406.85 |
| **344** | 361.31 | 365.86 | 371.21 | 378.01 | 388.25 | 397.28 | 399.99 | 407.94 |
| **345** | 362.34 | 366.89 | 372.25 | 379.06 | 389.31 | 398.35 | 401.07 | 409.03 |
| **346** | 363.36 | 367.92 | 373.29 | 380.11 | 390.38 | 399.43 | 402.15 | 410.12 |
| **347** | 364.39 | 368.95 | 374.33 | 381.16 | 391.44 | 400.5 | 403.22 | 411.21 |
| **348** | 365.41 | 369.99 | 375.37 | 382.21 | 392.5 | 401.57 | 404.3 | 412.3 |
| **349** | 366.44 | 371.02 | 376.41 | 383.26 | 393.56 | 402.65 | 405.38 | 413.39 |
| **350** | 367.46 | 372.05 | 377.45 | 384.31 | 394.63 | 403.72 | 406.46 | 414.47 |
| **351** | 368.49 | 373.08 | 378.48 | 385.35 | 395.69 | 404.8 | 407.54 | 415.56 |
| **352** | 369.51 | 374.11 | 379.52 | 386.4 | 396.75 | 405.87 | 408.61 | 416.65 |
| **353** | 370.54 | 375.15 | 380.56 | 387.45 | 397.81 | 406.95 | 409.69 | 417.74 |
| **354** | 371.57 | 376.18 | 381.6 | 388.5 | 398.87 | 408.02 | 410.77 | 418.82 |
| **355** | 372.59 | 377.21 | 382.64 | 389.55 | 399.94 | 409.09 | 411.84 | 419.91 |
| **356** | 373.62 | 378.24 | 383.68 | 390.6 | 401 | 410.17 | 412.92 | 421 |
| **357** | 374.64 | 379.27 | 384.72 | 391.64 | 402.06 | 411.24 | 414 | 422.09 |
| **358** | 375.67 | 380.3 | 385.76 | 392.69 | 403.12 | 412.31 | 415.08 | 423.17 |

| db | 0.25 | 0.2 | 0.15 | 0.1 | 0.05 | 0.025 | 0.02 | 0.01 |
|---|---|---|---|---|---|---|---|---|
| **359** | 376.69 | 381.34 | 386.8 | 393.74 | 404.18 | 413.39 | 416.15 | 424.26 |
| **360** | 377.72 | 382.37 | 387.83 | 394.79 | 405.24 | 414.46 | 417.23 | 425.35 |
| **361** | 378.74 | 383.4 | 388.87 | 395.84 | 406.3 | 415.53 | 418.31 | 426.43 |
| **362** | 379.77 | 384.43 | 389.91 | 396.88 | 407.37 | 416.61 | 419.38 | 427.52 |
| **363** | 380.79 | 385.46 | 390.95 | 397.93 | 408.43 | 417.68 | 420.46 | 428.61 |
| **364** | 381.82 | 386.49 | 391.99 | 398.98 | 409.49 | 418.75 | 421.53 | 429.69 |
| **365** | 382.84 | 387.52 | 393.03 | 400.03 | 410.55 | 419.82 | 422.61 | 430.78 |
| **366** | 383.87 | 388.55 | 394.07 | 401.07 | 411.61 | 420.9 | 423.69 | 431.87 |
| **367** | 384.89 | 389.59 | 395.1 | 402.12 | 412.67 | 421.97 | 424.76 | 432.95 |
| **368** | 385.92 | 390.62 | 396.14 | 403.17 | 413.73 | 423.04 | 425.84 | 434.04 |
| **369** | 386.94 | 391.65 | 397.18 | 404.21 | 414.79 | 424.11 | 426.91 | 435.12 |
| **370** | 387.97 | 392.68 | 398.22 | 405.26 | 415.85 | 425.19 | 427.99 | 436.21 |
| **371** | 388.99 | 393.71 | 399.26 | 406.31 | 416.91 | 426.26 | 429.06 | 437.29 |
| **372** | 390.02 | 394.74 | 400.29 | 407.36 | 417.97 | 427.33 | 430.14 | 438.38 |
| **373** | 391.04 | 395.77 | 401.33 | 408.4 | 419.03 | 428.4 | 431.22 | 439.46 |
| **374** | 392.07 | 396.8 | 402.37 | 409.45 | 420.09 | 429.47 | 432.29 | 440.55 |
| **375** | 393.09 | 397.83 | 403.41 | 410.5 | 421.15 | 430.54 | 433.37 | 441.63 |
| **376** | 394.12 | 398.86 | 404.45 | 411.54 | 422.21 | 431.62 | 434.44 | 442.72 |
| **377** | 395.14 | 399.89 | 405.48 | 412.59 | 423.27 | 432.69 | 435.52 | 443.8 |
| **378** | 396.16 | 400.93 | 406.52 | 413.64 | 424.33 | 433.76 | 436.59 | 444.89 |
| **379** | 397.19 | 401.96 | 407.56 | 414.68 | 425.39 | 434.83 | 437.66 | 445.97 |
| **380** | 398.21 | 402.99 | 408.6 | 415.73 | 426.45 | 435.9 | 438.74 | 447.06 |
| **381** | 399.24 | 404.02 | 409.63 | 416.78 | 427.51 | 436.97 | 439.81 | 448.14 |
| **382** | 400.26 | 405.05 | 410.67 | 417.82 | 428.57 | 438.04 | 440.89 | 449.23 |
| **383** | 401.29 | 406.08 | 411.71 | 418.87 | 429.63 | 439.11 | 441.96 | 450.31 |
| **384** | 402.31 | 407.11 | 412.75 | 419.92 | 430.69 | 440.18 | 443.04 | 451.39 |
| **385** | 403.34 | 408.14 | 413.78 | 420.96 | 431.75 | 441.26 | 444.11 | 452.48 |
| **386** | 404.36 | 409.17 | 414.82 | 422.01 | 432.81 | 442.33 | 445.18 | 453.56 |
| **387** | 405.38 | 410.2 | 415.86 | 423.05 | 433.87 | 443.4 | 446.26 | 454.65 |
| **388** | 406.41 | 411.23 | 416.9 | 424.1 | 434.93 | 444.47 | 447.33 | 455.73 |
| **389** | 407.43 | 412.26 | 417.93 | 425.15 | 435.99 | 445.54 | 448.41 | 456.81 |
| **390** | 408.46 | 413.29 | 418.97 | 426.19 | 437.05 | 446.61 | 449.48 | 457.9 |
| **391** | 409.48 | 414.32 | 420.01 | 427.24 | 438.11 | 447.68 | 450.55 | 458.98 |
| **392** | 410.5 | 415.35 | 421.05 | 428.28 | 439.16 | 448.75 | 451.63 | 460.06 |
| **393** | 411.53 | 416.38 | 422.08 | 429.33 | 440.22 | 449.82 | 452.7 | 461.15 |
| **394** | 412.55 | 417.41 | 423.12 | 430.38 | 441.28 | 450.89 | 453.77 | 462.23 |

| db | 0.25 | 0.2 | 0.15 | 0.1 | 0.05 | 0.025 | 0.02 | 0.01 |
|---|---|---|---|---|---|---|---|---|
| **395** | 413.58 | 418.44 | 424.16 | 431.42 | 442.34 | 451.96 | 454.85 | 463.31 |
| **396** | 414.6 | 419.47 | 425.19 | 432.47 | 443.4 | 453.03 | 455.92 | 464.39 |
| **397** | 415.63 | 420.5 | 426.23 | 433.51 | 444.46 | 454.1 | 456.99 | 465.48 |
| **398** | 416.65 | 421.53 | 427.27 | 434.56 | 445.52 | 455.17 | 458.07 | 466.56 |
| **399** | 417.67 | 422.56 | 428.3 | 435.6 | 446.57 | 456.24 | 459.14 | 467.64 |
| **400** | 418.7 | 423.59 | 429.34 | 436.65 | 447.63 | 457.31 | 460.21 | 468.72 |
| **401** | 419.72 | 424.62 | 430.38 | 437.69 | 448.69 | 458.37 | 461.28 | 469.81 |
| **402** | 420.74 | 425.65 | 431.41 | 438.74 | 449.75 | 459.44 | 462.36 | 470.89 |
| **403** | 421.77 | 426.68 | 432.45 | 439.78 | 450.81 | 460.51 | 463.43 | 471.97 |
| **404** | 422.79 | 427.71 | 433.49 | 440.83 | 451.86 | 461.58 | 464.5 | 473.05 |
| **405** | 423.82 | 428.74 | 434.52 | 441.87 | 452.92 | 462.65 | 465.57 | 474.13 |
| **406** | 424.84 | 429.77 | 435.56 | 442.92 | 453.98 | 463.72 | 466.65 | 475.22 |
| **407** | 425.86 | 430.8 | 436.6 | 443.97 | 455.04 | 464.79 | 467.72 | 476.3 |
| **408** | 426.89 | 431.83 | 437.63 | 445.01 | 456.1 | 465.86 | 468.79 | 477.38 |
| **409** | 427.91 | 432.86 | 438.67 | 446.05 | 457.15 | 466.93 | 469.86 | 478.46 |
| **410** | 428.93 | 433.89 | 439.7 | 447.1 | 458.21 | 467.99 | 470.93 | 479.54 |
| **411** | 429.96 | 434.91 | 440.74 | 448.14 | 459.27 | 469.06 | 472 | 480.62 |
| **412** | 430.98 | 435.94 | 441.78 | 449.19 | 460.33 | 470.13 | 473.08 | 481.7 |
| **413** | 432 | 436.97 | 442.81 | 450.23 | 461.38 | 471.2 | 474.15 | 482.79 |
| **414** | 433.03 | 438 | 443.85 | 451.28 | 462.44 | 472.27 | 475.22 | 483.87 |
| **415** | 434.05 | 439.03 | 444.89 | 452.32 | 463.5 | 473.34 | 476.29 | 484.95 |
| **416** | 435.08 | 440.06 | 445.92 | 453.37 | 464.55 | 474.4 | 477.36 | 486.03 |
| **417** | 436.1 | 441.09 | 446.96 | 454.41 | 465.61 | 475.47 | 478.43 | 487.11 |
| **418** | 437.12 | 442.12 | 447.99 | 455.46 | 466.67 | 476.54 | 479.5 | 488.19 |
| **419** | 438.15 | 443.15 | 449.03 | 456.5 | 467.73 | 477.61 | 480.57 | 489.27 |
| **420** | 439.17 | 444.18 | 450.06 | 457.54 | 468.78 | 478.68 | 481.65 | 490.35 |
| **421** | 440.19 | 445.21 | 451.1 | 458.59 | 469.84 | 479.74 | 482.72 | 491.43 |
| **422** | 441.21 | 446.24 | 452.14 | 459.63 | 470.9 | 480.81 | 483.79 | 492.51 |
| **423** | 442.24 | 447.26 | 453.17 | 460.68 | 471.95 | 481.88 | 484.86 | 493.59 |
| **424** | 443.26 | 448.29 | 454.21 | 461.72 | 473.01 | 482.95 | 485.93 | 494.67 |
| **425** | 444.28 | 449.32 | 455.24 | 462.77 | 474.07 | 484.01 | 487 | 495.75 |
| **426** | 445.31 | 450.35 | 456.28 | 463.81 | 475.12 | 485.08 | 488.07 | 496.83 |
| **427** | 446.33 | 451.38 | 457.31 | 464.85 | 476.18 | 486.15 | 489.14 | 497.91 |
| **428** | 447.35 | 452.41 | 458.35 | 465.9 | 477.23 | 487.21 | 490.21 | 498.99 |
| **429** | 448.38 | 453.44 | 459.39 | 466.94 | 478.29 | 488.28 | 491.28 | 500.07 |
| **430** | 449.4 | 454.47 | 460.42 | 467.98 | 479.35 | 489.35 | 492.35 | 501.15 |

| db | 0.25 | 0.2 | 0.15 | 0.1 | 0.05 | 0.025 | 0.02 | 0.01 |
|---|---|---|---|---|---|---|---|---|
| **431** | 450.42 | 455.5 | 461.46 | 469.03 | 480.4 | 490.41 | 493.42 | 502.23 |
| **432** | 451.45 | 456.52 | 462.49 | 470.07 | 481.46 | 491.48 | 494.49 | 503.31 |
| **433** | 452.47 | 457.55 | 463.53 | 471.12 | 482.51 | 492.55 | 495.56 | 504.39 |
| **434** | 453.49 | 458.58 | 464.56 | 472.16 | 483.57 | 493.61 | 496.63 | 505.46 |
| **435** | 454.51 | 459.61 | 465.6 | 473.2 | 484.63 | 494.68 | 497.7 | 506.54 |
| **436** | 455.54 | 460.64 | 466.63 | 474.25 | 485.68 | 495.75 | 498.77 | 507.62 |
| **437** | 456.56 | 461.67 | 467.67 | 475.29 | 486.74 | 496.81 | 499.84 | 508.7 |
| **438** | 457.58 | 462.7 | 468.7 | 476.33 | 487.79 | 497.88 | 500.91 | 509.78 |
| **439** | 458.61 | 463.72 | 469.74 | 477.38 | 488.85 | 498.95 | 501.98 | 510.86 |
| **440** | 459.63 | 464.75 | 470.77 | 478.42 | 489.9 | 500.01 | 503.05 | 511.94 |
| **441** | 460.65 | 465.78 | 471.81 | 479.46 | 490.96 | 501.08 | 504.12 | 513.02 |
| **442** | 461.67 | 466.81 | 472.84 | 480.51 | 492.02 | 502.14 | 505.19 | 514.09 |
| **443** | 462.7 | 467.84 | 473.88 | 481.55 | 493.07 | 503.21 | 506.25 | 515.17 |
| **444** | 463.72 | 468.87 | 474.91 | 482.59 | 494.13 | 504.28 | 507.32 | 516.25 |
| **445** | 464.74 | 469.89 | 475.95 | 483.63 | 495.18 | 505.34 | 508.39 | 517.33 |
| **446** | 465.76 | 470.92 | 476.98 | 484.68 | 496.24 | 506.41 | 509.46 | 518.41 |
| **447** | 466.79 | 471.95 | 478.02 | 485.72 | 497.29 | 507.47 | 510.53 | 519.48 |
| **448** | 467.81 | 472.98 | 479.05 | 486.76 | 498.35 | 508.54 | 511.6 | 520.56 |
| **449** | 468.83 | 474.01 | 480.09 | 487.81 | 499.4 | 509.6 | 512.67 | 521.64 |
| **450** | 469.86 | 475.03 | 481.12 | 488.85 | 500.46 | 510.67 | 513.74 | 522.72 |
| **451** | 470.88 | 476.06 | 482.15 | 489.89 | 501.51 | 511.74 | 514.8 | 523.79 |
| **452** | 471.9 | 477.09 | 483.19 | 490.93 | 502.57 | 512.8 | 515.87 | 524.87 |
| **453** | 472.92 | 478.12 | 484.22 | 491.98 | 503.62 | 513.87 | 516.94 | 525.95 |
| **454** | 473.94 | 479.15 | 485.26 | 493.02 | 504.68 | 514.93 | 518.01 | 527.03 |
| **455** | 474.97 | 480.17 | 486.29 | 494.06 | 505.73 | 516 | 519.08 | 528.1 |
| **456** | 475.99 | 481.2 | 487.33 | 495.1 | 506.78 | 517.06 | 520.15 | 529.18 |
| **457** | 477.01 | 482.23 | 488.36 | 496.15 | 507.84 | 518.13 | 521.21 | 530.26 |
| **458** | 478.03 | 483.26 | 489.4 | 497.19 | 508.89 | 519.19 | 522.28 | 531.33 |
| **459** | 479.06 | 484.29 | 490.43 | 498.23 | 509.95 | 520.26 | 523.35 | 532.41 |
| **460** | 480.08 | 485.31 | 491.46 | 499.27 | 511 | 521.32 | 524.42 | 533.49 |
| **461** | 481.1 | 486.34 | 492.5 | 500.32 | 512.06 | 522.38 | 525.48 | 534.56 |
| **462** | 482.12 | 487.37 | 493.53 | 501.36 | 513.11 | 523.45 | 526.55 | 535.64 |
| **463** | 483.15 | 488.4 | 494.57 | 502.4 | 514.16 | 524.51 | 527.62 | 536.72 |
| **464** | 484.17 | 489.42 | 495.6 | 503.44 | 515.22 | 525.58 | 528.69 | 537.79 |
| **465** | 485.19 | 490.45 | 496.63 | 504.49 | 516.27 | 526.64 | 529.75 | 538.87 |
| **466** | 486.21 | 491.48 | 497.67 | 505.53 | 517.33 | 527.71 | 530.82 | 539.95 |

| db | 0.25 | 0.2 | 0.15 | 0.1 | 0.05 | 0.025 | 0.02 | 0.01 |
|---|---|---|---|---|---|---|---|---|
| **467** | 487.23 | 492.51 | 498.7 | 506.57 | 518.38 | 528.77 | 531.89 | 541.02 |
| **468** | 488.26 | 493.54 | 499.74 | 507.61 | 519.43 | 529.83 | 532.96 | 542.1 |
| **469** | 489.28 | 494.56 | 500.77 | 508.65 | 520.49 | 530.9 | 534.02 | 543.18 |
| **470** | 490.3 | 495.59 | 501.8 | 509.69 | 521.54 | 531.96 | 535.09 | 544.25 |
| **471** | 491.32 | 496.62 | 502.84 | 510.74 | 522.6 | 533.03 | 536.16 | 545.33 |
| **472** | 492.34 | 497.64 | 503.87 | 511.78 | 523.65 | 534.09 | 537.22 | 546.4 |
| **473** | 493.37 | 498.67 | 504.91 | 512.82 | 524.7 | 535.15 | 538.29 | 547.48 |
| **474** | 494.39 | 499.7 | 505.94 | 513.86 | 525.76 | 536.22 | 539.36 | 548.55 |
| **475** | 495.41 | 500.73 | 506.97 | 514.9 | 526.81 | 537.28 | 540.42 | 549.63 |