

**ANALISIS RISIKO INVESTASI SAHAM SYARIAH  
DENGAN MODEL GLOSTEN JAGANNATHAN RUNKLE  
THRESHOLD AUTOREGRESSIVE CONDITIONAL  
HETEROSCEDASTICITY  
(GJR-TARCH)**

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

**SKRIPSI**

Untuk Memenuhi Sebagian Persyaratan Mencapai Derajat S-1

Program Studi Matematika



**Disusun Oleh:**

**RIDWAN FARSUDIN ASHARI**

**NIM.11610025**

**PROGRAM STUDI MATEMATIKA  
FAKULTAS SAINS DAN TEKNOLOGI  
UNIVERSITAS ISLAM NEGERI SUNAN KALIJAGA  
YOGYAKARTA  
2015**

## **SURAT PERSETUJUAN SKRIPSI/TUGAS AKHIR**

Hal : Persetujuan skripsi  
Lamp : 3 eksemplar skripsi

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 : Ridwan Farsudin Ashari

NIM : 11610025

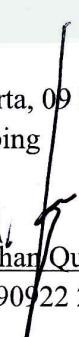
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Sudah dapat diajukan kembali kepada program studi matematika fakultas Sains dan Teknologi UIN Sunan Kalijaga Yogyakarta sebagai salah satu syarat untuk memperoleh gelar sarjana strata satu dalam matematika.

Dengan ini kami mengharap agar skripsi/tugas akhir saudaratersebut diatas dapat segera dimunaqosyahkan. Atas perhatiannya kami ucapan terima kasih.

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Yogyakarta, 09 September 2015  
Pembimbing

  
Moh. Farhan Qudratullah, M.Si  
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.01.1/3258/2015

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: Analisis Risiko Investasi Saham Syariah dengan Model *Glosten Jagannathan Runkle Threshold Autoregressive Conditional Heteroscedasticity* (GJR-TARCH) (Studi Kasus : Indeks Saham JII Periode 4 Maret 2013 sampai dengan 27 Februari 2015)

Yang dipersiapkan dan disusun oleh

: Ridwan Farsudin Ashari

NIM

: 11610025

Telah dimunaqsyahkan pada

: 22 September 2015

Nilai Munaqsyah

: A -

Dan dinyatakan telah diterima oleh Fakultas Sains dan Teknologi UIN Sunan Kalijaga

**TIM MUNAQSYAH :**

Ketua Sidang

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

Pengaji I

Palupi Sri Wijayanti, M.Pd

Pengaji II

Ki Hariyadi, M.Ph  
NIP. 19760515 000000 1 301

Yogyakarta, 19 Oktober 2015

UIN Sunan Kalijaga

Fakultas Sains dan Teknologi

Dekan



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

## SURAT PERNYATAAN KEASLIAN

Yang bertanda tangan di bawah ini :

Nama : Ridwan Farsudin Ashari

NIM : 11610025

Program Studi : Matematika

Fakultas : Sains dan Teknologi

Menyatakan dengan sesungguhnya bahwa skripsi ini merupakan hasil pekerjaan penulis sendiri dan sepanjang pengetahuan penulis tidak berisi materi yang dipublikasikan atau ditulis orang lain, dan atau telah digunakan sebagai persyaratan penyelesaian Tugas Akhir di Perguruan Tinggi lain, kecuali bagian tertentu yang penulis ambil sebagai bahan acuan. Apabila terbukti pernyataan ini tidak benar, sepenuhnya menjadi tanggung jawab penulis.

Yogyakarta, 10 September 2015

Yang menyatakan



Ridwan Farsudin Ashari  
NIM. 11610025

## **HALAMAN PERSEMBAHAN**

*Karya kecil ini Kupersembahkan Untuk  
Kedua Orang Tuaku tercinta Bapak Meseni dan Ibu Tunik  
Serta Adikku Rinda Wahyu Fambudi*

**Keluarga Besar Mahasiswa Matematika Angkatan 2011 dan Mahasiswa  
Fakultas Sains dan Teknologi  
Universitas Islam Negeri (UIN) Sunan Kalijaga Yogyakarta**

**Keluarga Besar IPMKN-Y (Ikatan Pelajar Mahasiswa Kabupaten Natuna  
Yogyakarta) dan Keluarga Besar Pondok Pesantren Sunni Darussalam  
Yogyakarta**

**Keluarga Besar PAL (Lukman, Ridwan, Sulis, Aldi, Fuad, Wachid, Syauqi,  
Juni, Taufan, Dayat, Eruit, Uthe, Fuji dan Dina)**

**Serta Almamaterku Tercinta**

**Program Studi Matematika**

**Fakultas Sains dan Teknologi**

**Universitas Islam Negeri (UIN) Sunan Kalijaga**

**Yogyakarta**

## HALAMAN MOTTO

*Sukses Bukanlah Suatu Kebetulan,*

*Tetapi Sebuah Pilihan*

*(Ridwan Farsudin Ashari)*

Ж Ж Ж Ж

Jika  $A$  Adalah ‘Sukses’, maka rumusnya adalah:

“ $A=X + Y + Z$ ” dimana  $X$  adalah ‘kerja’,  $Y$  adalah ‘bermain’, dan  $Z$  adalah mulut anda agar tetap tertutup.

*(Albert Einstein)*

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NIM. 11610025

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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 GJR-TARCH  
 $\alpha_i$  : parameter model GJR-TARCH  
 $\beta_j$  : parameter model GJR-TARCH  
 $\gamma$  : nilai *threshold non linear*  
 $P_0$  : nilai investasi awal  
 $\psi_k$  : kovariansi pada *lag* k

## **ABSTRAK**

### **ANALISIS RISIKO INVESTASI SAHAM SYARIAH DENGAN MODEL GLOSTEN JAGANNATHAN RUNKLE THRESHOLD AUTOREGRESSIVE CONDITIONAL HETEROSCEDASTICITY (GJR-TARCH)**

(Studi Kasus: Indeks harga saham JII periode 4 Maret 2013 sampai dengan 27 Februari 2015)

**Disusun Oleh:**

**Ridwan Farsudin Ashari  
NIM.11610025**

investasi yang paling populer dikalangan investor adalah saham. Pada data saham, analisis menggunakan model ARIMA tidak dapat diterapkan karena mengasumsikan data deret waktu stasioner terhadap rata-rata dan ragam sisakan yang homoskedastisitas. Oleh kerena itu, perlu dilakukan pemodelan volatilitas menggunakan model ARCH. Kelemahan model ARCH adalah ketidakmampuannya menangkap efek asimetris sisakan. Model yang dapat digunakan untuk memodelkan data yang mencakup efek asimetris adalah model GJR-TARCH. Kemudian pemodelan GJR-TARCH 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.

Pengukuran besar risiko investasi dengan menggunakan VaR-GJR-TARCH (0,1) dengan *Threshold* 1, dengan nilai investasi awal diasumsikan sebesar Rp. 10.000.000,- menghasilkan besar nilai risiko untuk indeks harga saham JII dengan tingkat kepercayaan 95% Dalam periode waktu 1 hari kedepan, 6 hari kedepan, 30 hari kedepan, dan 90 hari kedepan dengan besar risiko berturut-turut sebesar Rp.162.381, Rp. 397.750, Rp. 889.397, Dan Rp. 1.540.481.

**Kata Kunci :** Asimetris, Analisis Risiko, GJR-TARCH, *Value at Risk* (VaR).

## **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).

Saham syariah merupakan deretan observasi variabel random yang dapat dinyatakan sebagai data runtun waktu. Data runtun waktu mempunyai dua sifat penting yaitu adanya heterokesdastisitas dan pengelompokan volatilitas. Heterokesdastisitas adalah perubahan variansi dari eror yang terjadi setiap waktu sedangkan volatilitas didefinisikan sebagai sekumpulan sejumlah eror dengan besar yang relatif sama dalam beberapa waktu yang berdekatan (Hestiningtyas dan Sulandri, 2009: 25).

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 series* 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) 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 goncangan 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).

Pada data keuangan seperti data saham, analisis menggunakan model ARIMA tidak dapat diterapkan karena model ARIMA mengasumsikan data deret waktu stasioner terhadap rata-rata selain itu ragam sisaan yang konstan (homoskedastisitas). Asumsi ini sulit dipenuhi karena pada data keuangan memiliki fluktuasi yang tidak tetap, sehingga ragam sisaannya tidak konstan (heteroskedastisitas). Oleh kerena itu, perlu dilakukan pemodelan ragam

sisaan (volatilitas) menggunakan model ARCH. Model ARCH digunakan untuk memodelkan data yang memiliki ragam sisaan heterogen. Kelemahan model ARCH adalah ketidakmampuannya menangkap efek asimetris sisaan (pengaruh sisaan positif dan sisaan negatif tidak sama terhadap volatilitas). Selanjutnya, pemodelan ragam sisaan (volatilitas) dapat dimodelkan dengan model GJR-TARCH (Mubarak, 2014: 2).

Terdapat beberapa model yang dapat digunakan untuk mengatasi masalah asimetris, salah satunya *Glosten Jagannathan and Runkle Threshold Autoregressive Conditional Heteroscedasticity* (GJR-TARCH), dimana model tersebut menggunakan variebel *dummy* untuk *shock negatif* dalam persamaan volatilitas.

Berdasarkan latar belakang tersebut diatas, maka penulis mengambil judul “**Analisis Risiko Investasi Saham Syariah Dengan Model Glosten Jagannathan Runkle Threshold Autoregressive Conditional Heteroscedasticity (GJR-TARCH)**”

## 1.2. Batasan Masalah

Pada penelitian ini terdapat beberapa batasan-batasan yang akan diteliti, batasan-batasan ini digunakan untuk mempermudah peneliti dalam melakukan suatu penelitian, yaitu:

1. Masalah yang dibahas pada tugas akhir ini dibatasi hanya pada model GJR-TARCH.
2. Menghitung estimasi parameter dengan menggunakan metode *Maximum Likelihood*.

3. Data yang digunakan adalah saham JII periode 04 Maret 2013 sampai dengan 27 Februari 2015.
4. *Software* yang digunakan adalah E-Views, MATLAB dan Microsoft Office Excel.

### **1.3. Rumusan Masalah**

Berdasarkan latar belakang tersebut dapat dirumuskan permasalahan sebagai berikut:

1. Bagaimana langkah-langkah analisis risiko investasi dengan menggunakan model GJR-TARCH?
2. Bagaimana bentuk model GJR-TARCH untuk mengukur besar risiko investasi pada indeks harga saham syariah JII?
3. Berapa besar risiko investasi pada indeks harga saham syariah JII?

### **1.4. Tujuan Penelitian**

Berdasarkan rumusan masalah di atas, maka tujuan dari skripsi ini adalah:

1. Mengetahui langkah-langkah analisis risiko investasi dengan menggunakan model GJR-TARCH.
2. Mengetahui bentuk model GJR-TARCH untuk mengukur besar risiko investasi pada indeks harga saham syariah JII.
3. Mengetahui besar risiko investasi pada indeks harga saham syariah JII menggunakan model GJR-TARCH.

### 1.5. Manfaat Penelitian

1. Bagi penulis, untuk memperdalam dan memperluas pengetahuan penulis tentang aplikasi matematika khususnya Statistika serta menerapkannya dalam kenyataan yang ada dilapangan.
2. Bagi bidang matematika, memperkaya dan melengkapi referensi mengenai Model GJR-TARCH.
3. Bagi investor, memberikan informasi serta masukan kepada para investor yang akan berinvestasi dalam pengambilan keputusan, sehingga dapat meminimalisir terjadinya risiko.

### 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	Metode	Objek
1	Nila Nurmala Sari (UIN)	<i>Analisis Resiko Estimasi Value At Risk (VaR) model volatilitas asymmetric Glosten Jagannatilan And Runkle (GJR) pada Jakarta Islamic index.</i>	VaR-GJR	JII
2	Sahrul Mubarak (F.MIPA, Universitas Brawijaya)	Penerapan Model Glosten Jagannathan Runkle <i>Threshold Autoregressive Conditional Heteroscedasticity (GJR-TARCH)</i> Untuk Menduga Volatilitas <i>Return</i> Saham	GJR-TARCH	Saham PGAS, ENRG, dan BP

Terdapat kesamaan dan perbedaan antara dua penelitian di atas dengan penelitian yang sekarang, baik dari segi objek yang diteliti maupun model yang digunakan. pada penelitian yang dilakukan oleh Nila Nurmala Sari, objek yang diteliti adalah sama, sedangkan model yang digunakan berbeda yaitu Model VaR-GJR, pada penelitian Sahrul Mubarak, objek yang diteliti adalah berbeda, tetapi model yang digunakan sama yaitu Model GJR-TARCH.

### **1.7. Sistematika Penulisan**

Tugas akhir ini ditulis dengan beberapa bab yang berisikan sub-sub yang telah disusun sedemikian rupa guna memudahkan para pembaca untuk memahami isi tugas akhir ini.

Adapun sistematika penulisan Tugas Akhir ini adalah:

#### **BAB I: PENDAHULUAN**

Berisikan 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 GJR-TARCH.

#### **BAB III: METODE PENELITIAN**

Berisi berbagai penjelasan mengenai proses pelaksanaan penelitian ini, mulai dari jenis dan sumber data, metode pengumpulan data, variabel penelitian, metodologi penelitian, metode analisis data, dan sampai pada alat pegolahan data.

#### **BAB IV: ANALISIS RISIKO INVESTASI DENGAN GJR-TARCH**

Berisi tentang pembahasan mengenai model analisis risiko investasi dengan GJR-TARCH.

## BAB V: STUDI KASUS

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

## BAB VI: KESIMPULAN DAN SARAN

Berisi tentang kesimpulan yang dapat diambil dari pembahasan permasalahan yang ada pemecahan masalah serta 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 Glosten Jagannathan Runkle Threshold Autoregressive Conditional Heterocedasticity* (VaR-GJR-TARCH) pada *return* indeks saham *Jakarta Islamic Index* (JII) dapat diambil kesimpulan sebagai berikut:

1. Langkah-langkah dalam melakukan analisis risiko investasi saham dengan model GJR-TARCH yaitu sebagai berikut:
  - a. Mengumpulkan data indeks saham JII (periode 4 Maret 2013 sampai 27 Februari 2015)
  - b. Menentukan nilai *return* indeks saham JII
  - c. Statistik diskriptif
  - d. Menguji kestasioneran data
  - e. Menguji kenormalan data, karena data tidak normal maka nilai  $\alpha$  yang digunakan dikoreksi menggunakan *Cornish fisher Expansion*
  - f. Menentukan model *mean* (ARIMA) yang sesuai
  - g. Menguji ada tidak efek ARCH
  - h. Uji asimetris
  - i. Menentukan model GJR-TARCH yang sesuai
  - j. Menghitung VaR-GJR-TARCH
  - k. Menguji validitas VaR-GJR-TARCH

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

a. Model ARIMA (0,0,3)

$$Y_t = -0,133262e_{t-3}$$

b. Model GJR-TARCH (0,1) dengan *Threshold* 1

$$e_t^2 = 0,00000000579 + 0,095644 d_{t-1} \varepsilon_{t-1}^2 + 0,934584 \sigma_{t-1}^2$$

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

a. Dalam periode waktu 1 hari kedepan sebesar Rp.162.381

b. Dalam periode waktu 6 hari kedepan sebesar Rp. 397.750

c. Dalam periode waktu 30 hari kedepan sebesar Rp. 889.397

d. Dalam periode waktu 90 hari kedepan sebesar Rp. 1.540.481

## 6.2. SARAN

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

1. Berdasarkan hasil penelitian data *time series* yang memiliki efek asimetris oleh Ding, Granger dan Engle telah mengembangkan suatu model yang digunakan untuk memperbaiki kelemahan dari model ARCH dan GARCH dalam menangkap fenomena ketidaksimetrisan (*asymmetric shocks*) *good news* dan *bad news* dalam volatilitas yaitu *Asymmetric Power Autoregressive Conditional Heteroscedasticity* (APARCH). Berdasarkan hasil penelitian data *time series* yang memiliki efek asimetris oleh Petra Posedel, M.Sc. yaitu model NGARCH memiliki keunggulan untuk Perbaikan yang disediakan oleh NGARCH Model adalah bahwa harga opsi adalah fungsi dari premi risiko tertanam dalam mendasari aset. Berdasarkan hasil penelitian data *time series* yang memiliki efek asimetris oleh Dian Febriana, dkk. *Integrated Generalized Autoregressive Conditional Heteroskedasticity* (IGARCH) digunakan apabila dalam model GARCH terdapat akar unit.
2. Dalam penelitian ini uji normalitas Model terbaik GJR-TARCH (0,1) *Threshold 1* dilanggar, sehingga dalam penelitian selanjutnya peneliti menyarankan untuk asumsi normalitas data terpenuhi.

## DAFTAR PUSTAKA

- Anton, (2006), *Analisis Model Volatilitas Return Saham*, Tesis, Universitas Diponegoro, Semarang.
- Arifianto, M. D. 2012, *Ekonometrka: Esensi dan Aplikasi dengan menggunakan EViews*. Jakarta : Erlangga.
- Aziz, A. 2010, *Ekonometrika : teori dan Praktik Eksperimen dengan Matlab*. Malang : UIN-Maliki Press.
- Boedijowono, N. 2012. *Pengantar Statistika Ekonomi dan Bisnis*. Sekolah Tinggi Ilmu Manajemen YKPN.
- Bollerslev, T. 1986. *Generalized Autoregressive Conditional Heteroskedasticity*, Journal of Econometrics, vol 31, hal 307-327.
- Mulyono, S. 2000, *Peramalan Bisnis dan Ekonometrika*. Yogyakarta : BPFE-YOGYAKARTA.
- Mubarak, S. 2014, *Penerapan Model Glosten Jagannathan Runkle Threshold Autoregressive Conditional Heteroscedasticity (GJR-TARCH) Untuk Menduga Volatilitas Return Saham*. Jurnal F. MIPA, Universitas Brawijaya.
- Nurharyanto, 2011. *Analisis Risiko pasar Portofolio Investasi Saham Dengan metode Value at Risk (Studi kasus pada dana pensiun SRT)*, Tesis. Fakultas Ekonomi Program studi magister manajemen Jakarta.
- Osei-Wusu, E, 2011. *Relationship Between Return, Volume and Volatility in the Ghana Stock Market*, Thesis. Departmen of Financial and Statistics, Hanken School of Econometrics.
- Qudratullah, M. F. 2013. *Analisis Portofolio Optimum Saham Syariah dan Prospeknya Menggunakan Value at Risk-Capital Asset Pricing model*

(*VaR-CAPM*) dalam rangka Pengembangan Pasar Modal Syariah di Indonesia. Program Studi Matematika Fakultas Sains dan Teknologi UIN Sunan Kalijaga.

Qudratullah, M. F. 2009. *Pengantar Statistik Matematik*. Handout Kuliah Program Studi Matematika Fakultas Sains dan Teknologi UIN Sunan Kalijaga.

Rosadi, D. 2006. *Pengantar Analisis Data Runtun Waktu dengan Eviews 4.0*. Yogyakarta : FMIPA-UGM.

Rosadi, D. 2012. *Ekonometri dan Analisis Runtun Waktu Terapan dengan Eviews*. Yogyakarta : C.V Andi Offset.

Taylor, S. J. 2008, *Modelling Financial Time Series, Second Edition*, Singapore : World Scientific Publishing.

Widarjono, A. 2013, *Ekonometrika: Pengantar dan Aplikasinya disertai panduan EViews*, Yogyakarta : UPP STIM YKPN.

Winarno, W. W. 2007. *Analisis Ekonometrika dan Statistika dengan Eviews*. Sekolah Tinggi Ilmu Manajemen YKPN.

## LAMPIRAN

### **Lampiran 1. Data Return Indeks Saham JII**

<b>Tanggal</b>	<b>Open</b>	<b>Close</b>	<b>Return</b>	<b>Residual</b>
3/4/2013	652.28	646.86	0	0.0012
3/5/2013	647.03	648.65	0.0012001	0.00707
3/6/2013	651.66	661.12	0.0082699	-0.00706
3/7/2013	660.63	662.96	0.001207	0.002381
3/8/2013	664.47	668.46	0.0035881	-0.00892
3/11/2013	668.85	660.31	-0.005328	0.002623
3/13/2013	660.58	656.21	-0.002705	-0.00452
3/14/2013	655.01	645.38	-0.007227	0.009416
3/15/2013	649.39	648.64	0.0021882	-0.00062
3/18/2013	648.02	650.99	0.0015706	-0.00222
3/19/2013	653.12	650.02	-0.000648	-0.00197
3/21/2013	651.12	646.12	-0.002614	-0.00794
3/22/2013	644.63	630.61	-0.010552	0.023625
3/26/2013	641.8	649.88	0.0130723	-0.00614
3/27/2013	652.69	660.33	0.0069279	-0.00692
3/28/2013	658.38	660.34	6.583E-06	-0.00152
4/1/2013	658.56	658.05	-0.001509	0.004206
4/2/2013	657.77	662.15	0.0026975	0.002278
4/3/2013	663.65	669.78	0.0049758	-0.0118
4/4/2013	666.49	659.34	-0.006823	0.004974
4/5/2013	660.8	656.54	-0.001848	0.001034
4/8/2013	657.01	655.31	-0.000814	0.0019
4/9/2013	657.11	656.95	0.0010855	-0.00345
4/10/2013	658.32	653.38	-0.002366	0.006804
4/11/2013	655.06	660.09	0.0044373	-0.00404
4/12/2013	659.82	660.7	0.0004011	-0.00368
4/15/2013	658.54	655.73	-0.003279	0.011259
4/16/2013	652.55	667.89	0.0079799	-0.00467
4/17/2013	668.91	673	0.0033101	-0.00265
4/18/2013	669.8	674.02	0.0006577	-0.00171
4/19/2013	670.96	672.39	-0.001052	0.002335
4/22/2013	674.88	674.38	0.0012834	-0.00186
4/23/2013	675.76	673.49	-0.000574	0.00408
4/24/2013	677.14	678.95	0.0035067	-0.00807
4/25/2013	676.95	671.85	-0.004565	-0.00012
4/26/2013	669.89	664.64	-0.004686	0.008783

<b>Tanggal</b>	<b>Open</b>	<b>Close</b>	<b>Return</b>	<b>Residual</b>
4/29/2013	666.14	670.94	0.0040972	0.003544
5/1/2013	678.79	682.85	0.0076416	-0.01269
5/2/2013	679.84	674.96	-0.005047	-0.00114
5/3/2013	674.11	665.41	-0.006189	0.011469
5/6/2013	666.2	673.55	0.0052805	-0.00304
5/7/2013	671.1	677.04	0.0022445	0.001988
5/8/2013	677.47	683.67	0.0042322	-0.00349
5/10/2013	683.1	684.84	0.0007426	-0.00426
5/13/2013	684.2	679.32	-0.003515	0.005358
5/14/2013	678.02	682.21	0.0018437	-0.00216
5/15/2013	682.21	681.71	-0.000318	0.000178
5/16/2013	682.96	681.49	-0.00014	0.009652
5/17/2013	681.25	696.58	0.0095115	-0.00533
5/21/2013	710.63	703.32	0.004182	-0.00124
5/22/2013	702.87	708.1	0.0029416	-0.01118
5/23/2013	704.76	694.79	-0.008241	0.01226
5/24/2013	698.51	701.25	0.0040193	-0.01398
5/27/2013	697.45	685.35	-0.00996	0.022834
5/29/2013	704.87	705.97	0.0128738	-0.02281
5/30/2013	700.14	690	-0.009937	0.001407
5/31/2013	691.9	676.58	-0.00853	0.001444
6/3/2013	672.56	665.63	-0.007086	0.014667
6/4/2013	666.08	677.35	0.0075802	-0.00948
6/5/2013	673.18	674.4	-0.001896	-0.01593
6/7/2013	670.42	647.28	-0.017825	0.009021
6/10/2013	654.82	634.29	-0.008804	-0.00895
6/11/2013	636.32	608.88	-0.017756	0.036067
6/12/2013	604.26	635.1	0.0183104	-0.02976
6/13/2013	622.39	618.57	-0.011453	0.026394
6/14/2013	624.16	640.22	0.0149404	-0.0132
6/17/2013	638.93	642.79	0.0017399	0.00267
6/18/2013	646.91	649.35	0.0044097	-0.00907
6/19/2013	650.52	642.42	-0.00466	-0.0119
6/20/2013	630.79	618.39	-0.016557	0.001028
6/21/2013	600.75	596.67	-0.015528	0.005761
6/25/2013	591.72	583.4	-0.009768	0.046075
6/27/2013	629.65	634.27	0.0363077	-0.01893
6/28/2013	643.57	660.16	0.017375	-0.02528
7/1/2013	641.63	648.25	-0.007907	0.003002
7/2/2013	654.55	640.97	-0.004905	-0.01051

<b>Tanggal</b>	<b>Open</b>	<b>Close</b>	<b>Return</b>	<b>Residual</b>
7/3/2013	637.91	618.62	-0.015414	0.0158
7/4/2013	623.32	619.17	0.0003859	0.00476
7/5/2013	627.52	626.55	0.0051458	-0.02307
7/8/2013	621.36	601.22	-0.017922	0.015372
7/9/2013	606	597.7	-0.00255	0.014292
7/10/2013	600.57	614.08	0.0117417	0.001458
7/11/2013	617.95	633.03	0.0131993	-0.0105
7/12/2013	633.41	636.97	0.0026946	-0.0022
7/15/2013	637.37	637.7	0.0004975	-0.00063
7/16/2013	636.32	637.51	-0.000129	0.00313
7/17/2013	639.27	641.93	0.0030007	0.000181
7/19/2013	643.61	646.65	0.0031816	-0.00971
7/22/2013	648.87	637	-0.00653	0.016611
7/23/2013	640.56	651.96	0.0100815	-0.01649
7/24/2013	648.49	642.41	-0.006409	0.001493
7/25/2013	643.77	635.18	-0.004915	0.001325
7/26/2013	636.51	629.95	-0.003591	0.001642
7/30/2013	622.93	627.13	-0.001949	-0.0004
7/31/2013	629.36	623.75	-0.002347	0.007318
8/1/2013	627.81	630.93	0.0049706	-0.0055
8/2/2013	634.68	630.16	-0.00053	-0.00447
8/12/2013	629.41	622.95	-0.004998	0.012209
8/13/2013	625.09	633.38	0.0072111	-0.0027
8/14/2013	634.99	639.99	0.0045088	-0.0082
8/15/2013	634.31	634.57	-0.003694	-0.00658
8/16/2013	628.34	619.73	-0.010277	-0.0184
8/19/2013	611.45	580.13	-0.028677	0.014393
8/20/2013	567.61	561.36	-0.014284	0.022917
8/21/2013	564.07	572.63	0.0086326	-0.0092
8/22/2013	561.48	571.88	-0.000569	0.001116
8/23/2013	575.49	572.6	0.0005464	-0.00789
8/26/2013	574.79	563	-0.007343	-0.00994
8/27/2013	559.41	541.03	-0.017287	0.026099
8/28/2013	528.27	552.12	0.0088121	0.004206
8/29/2013	555.99	568.92	0.0130177	0.004253
8/30/2013	568.19	592	0.0172705	-0.03023
9/2/2013	591.35	574.59	-0.012964	0.020784
9/3/2013	576.54	585.03	0.0078201	-0.02037
9/4/2013	579.79	568.37	-0.012547	0.008123
9/5/2013	571.1	562.61	-0.004424	0.009557

<b>Tanggal</b>	<b>Open</b>	<b>Close</b>	<b>Return</b>	<b>Residual</b>
9/6/2013	564.89	569.3	0.0051337	0.008444
9/9/2013	575.94	587.38	0.013578	0.00358
9/10/2013	593.74	611.05	0.0171576	-0.02088
9/11/2013	615.06	605.83	-0.003726	4.72E-05
9/12/2013	601.65	600.72	-0.003679	0.003621
9/13/2013	597.68	600.64	-5.78E-05	0.018753
9/16/2013	606.81	627.06	0.0186948	-0.01944
9/17/2013	625.05	625.98	-0.000749	-0.00468
9/18/2013	623.64	618.2	-0.005431	0.027162
9/19/2013	638.97	649.92	0.0217309	-0.0312
9/20/2013	646.67	635.91	-0.009464	0.007699
9/23/2013	626.1	633.33	-0.001766	-0.01202
9/24/2013	628.95	613.54	-0.013787	0.006398
9/25/2013	599.21	603.19	-0.007389	0.006675
9/26/2013	602.62	602.2	-0.000713	0.003725
9/27/2013	607.58	606.39	0.0030113	-0.01817
9/30/2013	599.35	585.59	-0.015158	0.020678
10/1/2013	586.7	593.08	0.0055196	-2.6E-05
10/2/2013	597.68	600.63	0.0054937	-0.00196
10/3/2013	602.58	605.54	0.0035358	-0.00717
10/4/2013	604.21	600.5	-0.00363	0.002652
10/7/2013	600.66	599.15	-0.000977	0.00628
10/8/2013	594.86	606.51	0.0053024	-0.00028
10/9/2013	605.98	613.56	0.0050191	-0.00186
10/10/2013	619.46	618.04	0.0031595	0.00377
10/11/2013	626.31	627.98	0.0069292	-0.01105
10/16/2013	627.64	622.05	-0.004121	0.007854
10/17/2013	630.04	627.42	0.0037331	0.000743
10/18/2013	627.33	633.92	0.0044761	-0.00132
10/21/2013	636.54	638.54	0.0031537	-0.01371
10/22/2013	632.3	623.21	-0.010554	0.013228
10/23/2013	627.37	627.06	0.0026747	0.000933
10/24/2013	624.1	632.29	0.0036072	-0.00695
10/25/2013	629.28	627.44	-0.003344	0.005037
10/28/2013	630.81	629.89	0.0016925	-0.00381
10/29/2013	629.68	626.83	-0.002115	0.003208
10/30/2013	626.98	628.41	0.0010933	-0.00996
10/31/2013	618.83	615.71	-0.008867	0.000175
11/1/2013	608.61	603.51	-0.008692	0.008987
11/4/2013	602.55	603.92	0.0002949	0.003764

<b>Tanggal</b>	<b>Open</b>	<b>Close</b>	<b>Return</b>	<b>Residual</b>
11/6/2013	602.73	609.59	0.0040585	0.000562
11/7/2013	610.83	616.11	0.0046204	-0.00496
11/8/2013	611.68	615.63	-0.000338	-0.0033
11/11/2013	613.42	610.5	-0.003634	-0.00062
11/12/2013	612.73	604.55	-0.004253	-0.00564
11/13/2013	600.44	590.93	-0.009896	0.016077
11/14/2013	595.37	599.4	0.0061807	-0.01251
11/15/2013	602.69	590.73	-0.006328	0.017117
11/18/2013	595.74	605.59	0.0107897	-0.00889
11/19/2013	605.15	608.25	0.0019034	-0.00949
11/20/2013	610.46	597.71	-0.007592	0.005713
11/21/2013	594.04	595.13	-0.001879	0.000241
11/22/2013	600.02	592.89	-0.001638	0.001513
11/25/2013	592.58	592.72	-0.000125	-0.01414
11/26/2013	591.63	573.57	-0.014263	0.019254
11/27/2013	579.65	580.2	0.0049913	-0.00596
11/28/2013	582.94	578.91	-0.000967	0.001686
11/29/2013	575.35	579.87	0.0007196	0.008213
12/2/2013	582.06	591.92	0.0089324	-0.01425
12/3/2013	590.82	584.71	-0.005322	-0.00015
12/4/2013	580.15	577.39	-0.005471	0.002823
12/5/2013	576.64	573.88	-0.002648	-0.00106
12/6/2013	570.63	569	-0.003709	0.009192
12/9/2013	574.02	576.23	0.0054836	0.002943
12/10/2013	579.98	587.52	0.0084268	-0.00947
12/11/2013	587.18	586.11	-0.001044	-0.00677
12/12/2013	578.36	575.66	-0.007813	0.00211
12/13/2013	577.12	568.15	-0.005703	9.26E-06
12/16/2013	564.7	560.75	-0.005694	0.010898
12/17/2013	565.42	567.51	0.0052042	-0.00169
12/18/2013	570.3	572.12	0.0035136	0.001918
12/19/2013	578.32	579.32	0.0054314	-0.00808
12/20/2013	579.51	575.8	-0.002647	0.000219
12/23/2013	576.86	572.59	-0.002428	0.006617
12/24/2013	573.94	578.14	0.0041892	-0.00381
12/27/2013	579.6	578.64	0.0003754	0.004454
12/30/2013	584.34	585.11	0.0048291	0.003289
1/2/2014	589.45	596.15	0.008118	-0.01584
1/3/2014	589.73	585.64	-0.007725	0.00347
1/6/2014	588.11	579.93	-0.004255	-0.0015

<b>Tanggal</b>	<b>Open</b>	<b>Close</b>	<b>Return</b>	<b>Residual</b>
1/7/2014	580.22	572.29	-0.005759	0.008875
1/8/2014	573.87	576.41	0.0031153	-0.00472
1/9/2014	576.17	574.28	-0.001608	0.007691
1/10/2014	572.7	582.38	0.0060827	0.00817
1/13/2014	589.55	601.81	0.0142529	-0.00845
1/15/2014	603.1	609.9	0.0057992	-0.008
1/16/2014	612.87	606.82	-0.002199	-0.0005
1/17/2014	605.48	603.06	-0.002699	0.006471
1/20/2014	608.32	608.32	0.0037716	-0.00321
1/21/2014	611.6	609.11	0.0005636	0.003199
1/22/2014	607.33	614.41	0.0037625	-0.00337
1/23/2014	616.21	614.97	0.0003957	-0.00795
1/24/2014	610.78	604.37	-0.007551	-0.00743
1/27/2014	589.78	583.88	-0.014979	0.018232
1/28/2014	582.86	588.27	0.0032531	0.006435
1/29/2014	591.29	601.54	0.0096878	-0.00873
1/30/2014	592.88	602.87	0.0009592	-0.00621
2/3/2014	598.28	595.62	-0.005254	-0.00071
2/4/2014	584.99	587.49	-0.005969	0.01112
2/5/2014	592.87	594.5	0.0051514	-0.00039
2/6/2014	595.68	601.06	0.004766	-0.00105
2/7/2014	604.05	606.22	0.0037124	-0.00579
2/10/2014	610.28	603.33	-0.002075	0.00306
2/11/2014	602.26	604.7	0.000985	0.002149
2/12/2014	607.72	609.08	0.0031344	-0.00446
2/13/2014	607.74	607.22	-0.001328	0.002578
2/14/2014	609.62	608.97	0.0012498	0.00346
2/17/2014	611.85	615.61	0.0047098	-0.00507
2/18/2014	616.38	615.1	-0.00036	0.005016
2/19/2014	615.82	621.73	0.0046561	-0.00436
2/20/2014	619.53	622.16	0.0003003	0.003044
2/21/2014	625.16	626.97	0.0033447	-0.00684
2/24/2014	627.5	621.94	-0.003498	-0.00174
2/25/2014	623.01	614.48	-0.005241	-0.00077
2/26/2014	610.65	606.03	-0.006014	0.010867
2/27/2014	606.84	612.84	0.004853	0.00497
2/28/2014	615.57	626.86	0.0098234	-0.01532
3/3/2014	619.14	618.98	-0.005494	0.006244
3/4/2014	618.2	620.05	0.0007501	0.004783
3/5/2014	624.02	628	0.0055329	-0.00346

<b>Tanggal</b>	<b>Open</b>	<b>Close</b>	<b>Return</b>	<b>Residual</b>
3/6/2014	629.44	631	0.0020697	-0.00156
3/7/2014	633.77	631.74	0.000509	0.000295
3/10/2014	626.81	632.91	0.0008036	0.000868
3/11/2014	631.91	635.35	0.0016711	-0.00316
3/12/2014	630.1	633.17	-0.001493	0.00704
3/13/2014	635.18	641.31	0.0055477	0.008072
3/14/2014	635.1	661.74	0.0136194	-0.01223
3/17/2014	665.13	663.86	0.0013891	-0.00967
3/18/2014	664.25	651.32	-0.008282	0.011027
3/19/2014	653.84	655.45	0.0027452	-0.01708
3/20/2014	652.72	634.17	-0.014334	0.015961
3/21/2014	636.65	636.55	0.0016268	-0.00078
3/24/2014	638	637.79	0.0008452	-0.0045
3/25/2014	633.66	632.44	-0.003658	0.006424
3/26/2014	632.59	636.48	0.0027654	-0.00376
3/27/2014	634.27	635.02	-0.000997	0.004668
3/28/2014	636.84	640.41	0.0036707	0.007496
4/1/2014	645.36	657.09	0.0111668	-0.01237
4/2/2014	658.39	655.27	-0.001205	0.00336
4/3/2014	657	658.53	0.0021553	-0.00564
4/4/2014	659.07	653.27	-0.003483	0.012659
4/7/2014	652.95	667.22	0.0091763	-0.00963
4/8/2014	666.37	666.52	-0.000456	0.000456
4/9/2014	666.37	666.52	0	-0.0155
4/10/2014	652.72	643.15	-0.015501	0.022288
4/11/2014	636.66	653.28	0.0067871	-0.00253
4/14/2014	652.68	659.71	0.0042537	-0.00421
4/15/2014	662	659.78	4.609E-05	-0.00131
4/16/2014	662.82	657.86	-0.001266	0.005032
4/17/2014	662.91	663.59	0.0037664	-0.00381
4/21/2014	666.93	663.52	-4.58E-05	0.000445
4/22/2014	664.25	664.13	0.0003991	-0.00039
4/23/2014	663.95	664.14	6.546E-06	-0.00063
4/24/2014	663.54	663.18	-0.000628	0.000648
4/25/2014	664.87	663.21	1.967E-05	-0.00854
4/28/2014	661.1	650.32	-0.008524	0.005125
4/29/2014	646.01	645.25	-0.003399	0.005025
4/30/2014	648.63	647.67	0.0016258	-0.00258
5/2/2014	646.05	646.25	-0.000953	0.002295
5/5/2014	647.2	648.25	0.001342	-0.00215

<b>Tanggal</b>	<b>Open</b>	<b>Close</b>	<b>Return</b>	<b>Residual</b>
5/6/2014	649.72	647.04	-0.000811	0.003948
5/7/2014	647.27	651.73	0.0031366	-0.00242
5/8/2014	654.38	652.8	0.0007124	0.001378
5/9/2014	653.28	655.95	0.0020906	0.002205
5/12/2014	658	662.47	0.0042955	-0.00523
5/13/2014	666.66	661.05	-0.000932	0.008454
5/14/2014	664.45	672.6	0.0075225	-0.00237
5/16/2014	671.16	680.63	0.0051542	-0.00678
5/19/2014	683.85	678.08	-0.00163	-0.01005
5/20/2014	677.01	660.08	-0.011684	0.014766
5/21/2014	658.13	664.78	0.0030814	0.001939
5/22/2014	668.67	672.51	0.0050208	-0.00528
5/23/2014	673.63	672.11	-0.000258	7.1E-05
5/26/2014	674.64	671.82	-0.000187	0.001569
5/28/2014	671.35	673.96	0.0013812	-0.01256
5/30/2014	676.41	656.83	-0.011181	0.012548
6/2/2014	655.78	658.9	0.0013665	0.001072
6/3/2014	660.85	662.61	0.0024385	-0.00309
6/4/2014	661.38	661.62	-0.000649	0.001574
6/5/2014	662.09	663.03	0.0009246	0.001277
6/6/2014	663.56	666.4	0.0022018	-0.00706
6/9/2014	668.29	658.99	-0.004856	0.01152
6/10/2014	660.6	669.18	0.0066641	-0.0042
6/11/2014	669.96	672.99	0.0024657	-0.00658
6/12/2014	670.77	666.65	-0.004111	0.003211
6/13/2014	665.11	665.27	-0.0009	-0.00526
6/16/2014	664.66	655.9	-0.00616	0.009859
6/17/2014	656.93	661.51	0.0036988	-0.00598
6/18/2014	661.43	658.05	-0.002278	-0.00016
6/19/2014	660.05	654.36	-0.002442	0.001519
6/20/2014	655.7	652.97	-0.000924	0.001236
6/23/2014	654.37	653.44	0.0003125	0.000491
6/24/2014	654.86	654.65	0.0008035	-0.00281
6/25/2014	654.45	651.63	-0.002008	0.005367
6/26/2014	651.6	656.69	0.0033593	-0.00655
6/27/2014	656.02	651.89	-0.003186	0.005253
6/30/2014	652.51	655	0.002067	-0.00117
7/1/2014	655.62	656.35	0.0008942	0.004047
7/2/2014	656.57	663.86	0.004941	-0.0063
7/3/2014	663.39	661.79	-0.001356	0.002562

<b>Tanggal</b>	<b>Open</b>	<b>Close</b>	<b>Return</b>	<b>Residual</b>
7/4/2014	660.35	663.63	0.0012058	0.009
7/7/2014	665.83	679.41	0.0102059	-0.00773
7/8/2014	682.79	683.29	0.0024731	0.003561
7/10/2014	694.85	692.85	0.0060342	-0.01426
7/11/2014	687.68	679.85	-0.008226	0.008137
7/14/2014	681.41	679.71	-8.94E-05	0.00548
7/15/2014	682.31	688.2	0.005391	-0.00144
7/16/2014	688.25	694.49	0.0039513	-0.00934
7/17/2014	697.31	685.93	-0.005386	0.007823
7/18/2014	681.78	689.79	0.0024371	0.002147
7/21/2014	694.12	697.11	0.0045844	-0.00757
7/22/2014	699.93	692.33	-0.002988	0.002869
7/23/2014	696.24	692.14	-0.000119	0.00032
7/24/2014	696.21	692.46	0.0002007	-0.00149
7/25/2014	694.37	690.4	-0.001294	0.008054
8/4/2014	683.62	701.23	0.0067597	-0.00929
8/5/2014	702.17	697.15	-0.002534	-0.00328
8/6/2014	693.8	687.88	-0.005814	0.007395
8/7/2014	687.2	690.39	0.0015818	-0.00389
8/8/2014	690.09	686.73	-0.002308	0.008973
8/11/2014	693.79	697.35	0.0066648	-0.0049
8/12/2014	700.13	700.19	0.0017651	0.002672
8/13/2014	702.52	707.38	0.0044369	-0.00663
8/14/2014	706.88	703.81	-0.002197	0.000732
8/15/2014	703.63	701.44	-0.001465	0.002102
8/18/2014	702.62	702.47	0.0006372	-0.00132
8/19/2014	704.65	701.37	-0.000681	0.003673
8/20/2014	701.27	706.22	0.0029928	-0.00224
8/21/2014	705.27	707.44	0.0007496	-0.00274
8/22/2014	709.35	704.21	-0.001987	5.9E-05
8/25/2014	703.24	701.09	-0.001928	-0.00124
8/26/2014	703.31	696	-0.003165	0.004977
8/27/2014	695.68	698.91	0.001812	-0.00019
8/28/2014	699.99	701.52	0.0016188	-0.0081
8/29/2014	699.51	691.13	-0.00648	0.011708
9/1/2014	693.75	699.5	0.005228	-0.00303
9/2/2014	699.32	703.05	0.0021985	0.00037
9/3/2014	703.61	707.22	0.0025683	-0.00564
9/4/2014	707.02	702.23	-0.003075	0.003458
9/5/2014	699.29	702.85	0.0003833	0.002775

<b>Tanggal</b>	<b>Open</b>	<b>Close</b>	<b>Return</b>	<b>Residual</b>
9/8/2014	706.17	707.98	0.0031583	-0.00919
9/9/2014	708.38	698.21	-0.006035	4.74E-05
9/10/2014	695.75	688.65	-0.005988	0.002613
9/11/2014	689.87	683.32	-0.003374	0.006768
9/12/2014	686.21	688.68	0.0033933	-0.00156
9/15/2014	686.03	691.6	0.0018375	-0.00221
9/16/2014	694.34	691	-0.000377	0.005432
9/17/2014	696.45	699.09	0.0050551	-0.00281
9/18/2014	701.36	702.72	0.0022492	-0.00102
9/19/2014	703.92	704.71	0.0012282	-0.00264
9/22/2014	702.66	702.42	-0.001414	-0.00246
9/23/2014	699.13	696.19	-0.003869	0.00158
9/24/2014	697.63	692.53	-0.002289	0.003835
9/25/2014	697.55	695	0.0015462	-0.00618
9/26/2014	685.36	687.63	-0.00463	0.005797
9/29/2014	685.84	689.48	0.0011668	-0.00234
9/30/2014	685.38	687.62	-0.001173	-0.00214
10/1/2014	686.43	682.39	-0.003316	-0.01006
10/2/2014	676.51	661.7	-0.013372	0.011589
10/3/2014	664.51	658.99	-0.001782	0.005804
10/6/2014	665.05	665.12	0.0040212	-0.00019
10/7/2014	667.07	671.01	0.003829	-0.01144
10/8/2014	662.84	659.35	-0.007613	0.009893
10/9/2014	665.05	662.82	0.0022796	-0.00678
10/10/2014	654.96	655.99	-0.004498	-0.00133
10/13/2014	651.64	647.24	-0.005832	0.007907
10/14/2014	645.71	650.34	0.0020751	-0.00046
10/15/2014	654.32	652.77	0.0016197	-0.00215
10/16/2014	646.84	651.98	-0.000526	0.008178
10/17/2014	653.35	663.57	0.0076525	-0.00827
10/20/2014	670.18	662.62	-0.000622	0.000137
10/21/2014	667.31	661.88	-0.000485	0.004567
10/22/2014	667.11	668.13	0.0040817	-0.00217
10/23/2014	668.1	671.07	0.0019069	-0.00493
10/24/2014	669.81	666.41	-0.003026	-0.00203
10/27/2014	668.28	658.7	-0.005054	0.001027
10/28/2014	658.05	652.62	-0.004027	0.014013
10/29/2014	656.24	667.8	0.009986	-0.01063
10/30/2014	668.58	666.81	-0.000644	0.003002
10/31/2014	669.78	670.44	0.0023578	-0.00252

<b>Tanggal</b>	<b>Open</b>	<b>Close</b>	<b>Return</b>	<b>Residual</b>
11/3/2014	672.89	670.19	-0.000162	-0.00357
11/4/2014	669.46	664.45	-0.003736	0.004376
11/5/2014	665.88	665.43	0.0006401	-0.00279
11/6/2014	665.81	662.14	-0.002153	-0.00321
11/7/2014	661.58	654.02	-0.005359	0.002447
11/10/2014	655.07	649.65	-0.002912	0.01088
11/11/2014	650.85	661.68	0.0079685	-0.0065
11/12/2014	664.74	663.92	0.0014677	-0.0003
11/13/2014	663.63	665.7	0.0011628	-0.00107
11/14/2014	666.07	665.84	9.134E-05	0.001647
11/17/2014	662.1	668.51	0.001738	0.002947
11/18/2014	672.06	675.76	0.0046846	-0.00284
11/19/2014	677.63	678.64	0.001847	-0.00574
11/20/2014	678.09	672.59	-0.003889	0.007061
11/21/2014	671.9	677.52	0.0031717	0.00254
11/24/2014	681.71	686.49	0.0057121	-0.00977
11/25/2014	684.17	680.1	-0.004061	0.005018
11/26/2014	681.19	681.6	0.0009568	0.00102
11/27/2014	684.71	684.71	0.0019771	-0.00305
11/28/2014	682.72	683.02	-0.001073	0.002584
12/1/2014	682.37	685.4	0.0015107	-0.00118
12/2/2014	686.05	685.92	0.0003293	-0.00298
12/3/2014	687.72	681.74	-0.002655	0.005797
12/4/2014	686.69	686.69	0.003142	-0.00214
12/5/2014	687.83	688.28	0.0010044	-0.00577
12/8/2014	691.93	680.77	-0.004765	0.003449
12/9/2014	678.46	678.71	-0.001316	0.003875
12/10/2014	682.72	682.72	0.0025583	-0.00451
12/11/2014	678.93	679.66	-0.001951	0.002417
12/12/2014	679.67	680.39	0.0004662	-0.00438
12/15/2014	675.11	674.28	-0.003918	-0.00315
12/16/2014	666.53	663.39	-0.007071	0.005898
12/17/2014	661.6	661.6	-0.001173	0.010197
12/18/2014	675.49	675.49	0.0090234	-0.00666
12/19/2014	681.05	679.18	0.002366	0.001872
12/29/2014	684.32	685.84	0.0042379	-0.00096
12/30/2014	685.57	691.04	0.0032803	-0.00328
12/31/2014	685.57	691.04	0	0.00215
1/2/2015	693.37	694.47	0.0021503	-0.00553
1/5/2015	692.67	689.09	-0.003378	-0.00171

<b>Tanggal</b>	<b>Open</b>	<b>Close</b>	<b>Return</b>	<b>Residual</b>
1/6/2015	681.86	681.07	-0.005084	0.009171
1/7/2015	682.22	687.51	0.0040873	-0.00369
1/8/2015	689.99	688.14	0.0003978	0.000113
1/9/2015	690.24	688.95	0.0005109	-0.00378
1/12/2015	687.46	683.78	-0.003271	0.008555
1/13/2015	686.95	692.15	0.0052838	-0.01192
1/14/2015	692.12	681.66	-0.006632	0.010382
1/15/2015	685.71	687.57	0.0037491	-0.00748
1/16/2015	686.9	681.69	-0.00373	0.003698
1/19/2015	682.89	681.64	-3.18E-05	0.004456
1/20/2015	682.95	688.62	0.0044246	0.003995
1/21/2015	690.41	702.1	0.0084193	-0.00427
1/22/2015	701.01	708.84	0.0041493	0.000658
1/23/2015	713.74	716.73	0.0048073	-0.01171
1/26/2015	714.64	705.43	-0.006902	0.008303
1/27/2015	704.14	707.71	0.0014014	-0.0024
1/28/2015	705.96	706.09	-0.000995	-0.00085
1/29/2015	704.25	703.1	-0.001843	0.004049
1/30/2015	708.16	706.68	0.0022057	-0.0054
2/2/2015	703.97	701.5	-0.003195	0.005135
2/3/2015	703.37	704.64	0.0019396	0.000568
2/4/2015	709.52	708.72	0.0025074	-0.00764
2/5/2015	706.71	700.4	-0.005129	0.011969
2/6/2015	702.88	711.52	0.006841	-0.00723
2/9/2015	710.89	710.89	-0.000385	-0.00199
2/10/2015	707.01	707.01	-0.002377	0.005517
2/11/2015	712.14	712.14	0.0031398	-0.00202
2/12/2015	713.98	713.98	0.0011206	0.003448
2/13/2015	716.72	721.53	0.0045684	-0.01181
2/16/2015	709.6	709.6	-0.007241	0.010132
2/17/2015	714.34	714.34	0.0028914	-0.00026
2/18/2015	719.11	718.68	0.0026306	-0.00263
2/19/2015	719.11	718.68	0	-0.00201
2/20/2015	717.32	715.36	-0.002011	0.003847
2/23/2015	718.39	718.39	0.0018356	-0.0006
2/24/2015	720.43	720.43	0.0012315	0.002974
2/25/2015	727.44	727.44	0.0042054	-0.00425
2/26/2015	727.37	727.37	-4.18E-05	-0.00312
2/27/2015	727.17	722.1	-0.003158	0.003158

## Lampiran 2. Out Put Statistika Deskriptif

	SKRIPSI	
Mean	0.000101	
Median	0.000396	
Maximum	0.036308	
Minimum	-0.028677	
Std. Dev.	0.006269	
Skewness	0.112026	
Kurtosis	6.709711	
Jarque-Bera	273.3655	
Probability	0.000000	
Sum	0.047787	
Sum Sq. Dev.	0.018627	
Observations	475	

## Lampiran 3. Out Put Estimasi Model Kondisional Mean

### 1. ARIMA (1,0,0)

#### a. Dengan konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 20:39				
Sample (adjusted): 2 475				
Included observations: 474 after adjustments				
Convergence achieved after 3 iterations				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000101	0.000299	0.336623	0.7366
AR(1)	0.034854	0.046014	0.757460	0.4492
R-squared	0.001214	Mean dependent var	0.000101	
Adjusted R-squared	-0.000902	S.D. dependent var	0.006275	
S.E. of regression	0.006278	Akaike info criterion	-7.299269	
Sum squared resid	0.018604	Schwarz criterion	-7.281711	
Log likelihood	1731.927	F-statistic	0.573745	
Durbin-Watson stat	1.991647	Prob(F-statistic)	0.449153	
Inverted AR Roots	.03			

b. Tanpa konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 20:41				
Sample (adjusted): 2 475				
Included observations: 474 after adjustments				
Convergence achieved after 2 iterations				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	0.035119	0.045964	0.764060	0.4452
R-squared	0.000974	Mean dependent var	0.000101	
Adjusted R-squared	0.000974	S.D. dependent var	0.006275	
S.E. of regression	0.006272	Akaike info criterion	-7.303248	
Sum squared resid	0.018608	Schwarz criterion	-7.294470	
Log likelihood	1731.870	Durbin-Watson stat	1.991641	
Inverted AR Roots	.04			

## 2. ARIMA (0,0,1)

a. Dengan konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 20:48				
Sample: 1 475				
Included observations: 475				
Convergence achieved after 5 iterations				
Backcast: 0				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000100	0.000300	0.334186	0.7384
MA(1)	0.043229	0.045950	0.940776	0.3473
R-squared	0.001522	Mean dependent var	0.000101	
Adjusted R-squared	-0.000589	S.D. dependent var	0.006269	
S.E. of regression	0.006271	Akaike info criterion	-7.301702	
Sum squared resid	0.018598	Schwarz criterion	-7.284172	
Log likelihood	1736.154	F-statistic	0.721038	
Durbin-Watson stat	2.007374	Prob(F-statistic)	0.396233	
Inverted MA Roots	-.04			

b. Tanpa konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 20:45				
Sample: 1475				
Included observations: 475				
Convergence achieved after 5 iterations				
Backcast: 0				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MA(1)	0.043519	0.045900	0.948123	0.3436
R-squared	0.001286	Mean dependent var	0.000101	
Adjusted R-squared	0.001286	S.D. dependent var	0.006269	
S.E. of regression	0.006265	Akaike info criterion	-7.305677	
Sum squared resid	0.018603	Schwarz criterion	-7.296912	
Log likelihood	1736.098	Durbin-Watson stat	2.007427	
Inverted MA Roots	- .04			

### 3. ARIMA (1,0,1)

a. Dengan konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 20:50				
Sample (adjusted): 2475				
Included observations: 474 after adjustments				
Convergence achieved after 15 iterations				
Backcast: 1				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000100	0.000300	0.334324	0.7383
AR(1)	-0.237441	0.853503	-0.278196	0.7810
MA(1)	0.285611	0.841981	0.339213	0.7346
R-squared	0.002461	Mean dependent var	0.000101	
Adjusted R-squared	-0.001775	S.D. dependent var	0.006275	
S.E. of regression	0.006281	Akaike info criterion	-7.296299	
Sum squared resid	0.018581	Schwarz criterion	-7.269962	
Log likelihood	1732.223	F-statistic	0.580930	
Durbin-Watson stat	2.020321	Prob(F-statistic)	0.559778	
Inverted AR Roots	- .24			
Inverted MA Roots	- .29			

b. Tanpa konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 20:51				
Sample (adjusted): 2 475				
Included observations: 474 after adjustments				
Convergence achieved after 15 iterations				
Backcast: 1				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	-0.236876	0.848505	-0.279169	0.7802
MA(1)	0.285244	0.837031	0.340781	0.7334
R-squared	0.002224	Mean dependent var	0.000101	
Adjusted R-squared	0.000110	S.D. dependent var	0.006275	
S.E. of regression	0.006275	Akaike info criterion	-7.300281	
Sum squared resid	0.018585	Schwarz criterion	-7.282723	
Log likelihood	1732.167	Durbin-Watson stat	2.020189	
Inverted AR Roots	-.24			
Inverted MA Roots	-.29			

#### 4. ARIMA (2,0,1)

a. Dengan konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 20:53				
Sample (adjusted): 3 475				
Included observations: 473 after adjustments				
Convergence achieved after 8 iterations				
Backcast: 2				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.96E-05	0.000264	0.376410	0.7068
AR(2)	-0.106206	0.045878	-2.314952	0.0210
MA(1)	0.017053	0.046130	0.369663	0.7118
R-squared	0.012208	Mean dependent var	9.85E-05	
Adjusted R-squared	0.008005	S.D. dependent var	0.006282	
S.E. of regression	0.006257	Akaike info criterion	-7.304045	
Sum squared resid	0.018398	Schwarz criterion	-7.277665	
Log likelihood	1730.407	F-statistic	2.904409	
Durbin-Watson stat	1.996314	Prob(F-statistic)	0.055765	
Inverted MA Roots	-.02			

b. Tanpa konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 20:54				
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)	-0.105847	0.045830	-2.309557	0.0213
MA(1)	0.017393	0.046080	0.377444	0.7060
R-squared	0.011911	Mean dependent var	9.85E-05	
Adjusted R-squared	0.009813	S.D. dependent var	0.006282	
S.E. of regression	0.006251	Akaike info criterion	-7.307972	
Sum squared resid	0.018404	Schwarz criterion	-7.290386	
Log likelihood	1730.335	Durbin-Watson stat	1.996261	
Inverted MA Roots	-0.02			

## 5. ARIMA (3,0,1)

a. Dengan konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 20:55				
Sample (adjusted): 4 475				
Included observations: 472 after adjustments				
Convergence achieved after 6 iterations				
Backcast: 3				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.42E-05	0.000235	0.357871	0.7206
AR(3)	-0.206224	0.045377	-4.544659	0.0000
MA(1)	0.002279	0.046439	0.049066	0.9609
R-squared	0.042766	Mean dependent var	8.12E-05	
Adjusted R-squared	0.038684	S.D. dependent var	0.006277	
S.E. of regression	0.006155	Akaike info criterion	-7.336924	
Sum squared resid	0.017765	Schwarz criterion	-7.310503	
Log likelihood	1734.514	F-statistic	10.47661	
Durbin-Watson stat	1.999872	Prob(F-statistic)	0.000035	
Inverted AR Roots	.30-.51i	.30+.51i	-.59	
Inverted MA Roots	-0.00			

b. Tanpa konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 20:56				
Sample (adjusted): 4 475				
Included observations: 472 after adjustments				
Convergence achieved after 6 iterations				
Backcast: 3				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(3)	-0.205908	0.045329	-4.542554	0.0000
MA(1)	0.002692	0.046387	0.058028	0.9538
R-squared	0.042505	Mean dependent var	8.12E-05	
Adjusted R-squared	0.040467	S.D. dependent var	0.006277	
S.E. of regression	0.006149	Akaike info criterion	-7.340888	
Sum squared resid	0.017770	Schwarz criterion	-7.323274	
Log likelihood	1734.450	Durbin-Watson stat	1.999972	
Inverted AR Roots	.30+.51i	.30-.51i	-.59	
Inverted MA Roots	-.00			

## 6. ARIMA (2,0,0)

a. Dengan konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 20:57				
Sample (adjusted): 3 475				
Included observations: 473 after adjustments				
Convergence achieved after 3 iterations				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.94E-05	0.000259	0.383670	0.7014
AR(2)	-0.109273	0.045813	-2.385185	0.0175
R-squared	0.011935	Mean dependent var	9.85E-05	
Adjusted R-squared	0.009837	S.D. dependent var	0.006282	
S.E. of regression	0.006251	Akaike info criterion	-7.307996	
Sum squared resid	0.018403	Schwarz criterion	-7.290410	
Log likelihood	1730.341	F-statistic	5.689108	
Durbin-Watson stat	1.963486	Prob(F-statistic)	0.017465	

b. Tanpa konstanta

Dependent Variable: SKRIPSI Method: Least Squares Date: 06/08/15 Time: 20:58 Sample (adjusted): 3 475 Included observations: 473 after adjustments Convergence achieved after 3 iterations				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(2)	-0.108972	0.045765	-2.381098	0.0177
R-squared	0.011626	Mean dependent var	9.85E-05	
Adjusted R-squared	0.011626	S.D. dependent var	0.006282	
S.E. of regression	0.006245	Akaike info criterion	-7.311912	
Sum squared resid	0.018409	Schwarz criterion	-7.303119	
Log likelihood	1730.267	Durbin-Watson stat	1.962772	

## 7. ARIMA (0,0,2)

a. Dengan konstanta

Dependent Variable: SKRIPSI Method: Least Squares Date: 06/08/15 Time: 21:00 Sample: 1 475 Included observations: 475 Convergence achieved after 6 iterations Backcast: -1 0				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000101	0.000251	0.401576	0.6882
MA(2)	-0.123550	0.045633	-2.707448	0.0070
R-squared	0.013516	Mean dependent var	0.000101	
Adjusted R-squared	0.011431	S.D. dependent var	0.006269	
S.E. of regression	0.006233	Akaike info criterion	-7.313787	
Sum squared resid	0.018375	Schwarz criterion	-7.296258	
Log likelihood	1739.025	F-statistic	6.480823	
Durbin-Watson stat	1.975423	Prob(F-statistic)	0.011221	
Inverted MA Roots	.35			

b. Tanpa konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:00				
Sample: 1 475				
Included observations: 475				
Convergence achieved after 6 iterations				
Backcast: -1 0				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MA(2)	-0.123138	0.045587	-2.701175	0.0072
R-squared	0.013180	Mean dependent var	0.000101	
Adjusted R-squared	0.013180	S.D. dependent var	0.006269	
S.E. of regression	0.006227	Akaike info criterion	-7.317657	
Sum squared resid	0.018381	Schwarz criterion	-7.308892	
Log likelihood	1738.944	Durbin-Watson stat	1.974593	
Inverted MA Roots	.35		-.35	

## 8. ARIMA (1,0,2)

a. Dengan konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:02				
Sample (adjusted): 2 475				
Included observations: 474 after adjustments				
Convergence achieved after 8 iterations				
Backcast: 0 1				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.87E-05	0.000255	0.386611	0.6992
AR(1)	0.012437	0.046084	0.269875	0.7874
MA(2)	-0.121818	0.045737	-2.663429	0.0080
R-squared	0.013771	Mean dependent var	0.000101	
Adjusted R-squared	0.009583	S.D. dependent var	0.006275	
S.E. of regression	0.006245	Akaike info criterion	-7.307701	
Sum squared resid	0.018370	Schwarz criterion	-7.281365	
Log likelihood	1734.925	F-statistic	3.288342	
Durbin-Watson stat	1.999634	Prob(F-statistic)	0.038174	
Inverted AR Roots	.01			
Inverted MA Roots	.35		-.35	

b. Tanpa konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:02				
Sample (adjusted): 2 475				
Included observations: 474 after adjustments				
Convergence achieved after 8 iterations				
Backcast: 0 1				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	0.012866	0.046033	0.279495	0.7800
MA(2)	-0.121399	0.045690	-2.657012	0.0082
R-squared	0.013458	Mean dependent var	0.000101	
Adjusted R-squared	0.011368	S.D. dependent var	0.006275	
S.E. of regression	0.006240	Akaike info criterion	-7.311604	
Sum squared resid	0.018376	Schwarz criterion	-7.294046	
Log likelihood	1734.850	Durbin-Watson stat	1.999669	
Inverted AR Roots	.01			
Inverted MA Roots	.35	-.35		

## 9. ARIMA (2,0,2)

a. Dengan konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:03				
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	8.56E-05	0.000212	0.402921	0.6872
AR(2)	0.572231	0.195772	2.922946	0.0036
MA(2)	-0.685955	0.173878	-3.945044	0.0001
R-squared	0.020805	Mean dependent var	9.85E-05	
Adjusted R-squared	0.016639	S.D. dependent var	0.006282	
S.E. of regression	0.006229	Akaike info criterion	-7.312786	
Sum squared resid	0.018238	Schwarz criterion	-7.286407	
Log likelihood	1732.474	F-statistic	4.993133	
Durbin-Watson stat	1.977924	Prob(F-statistic)	0.007149	
Inverted AR Roots	.76	-.76		
Inverted MA Roots	.83	-.83		

b. Tanpa konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:04				
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)	0.571111	0.196597	2.904976	0.0038
MA(2)	-0.684421	0.174805	-3.915342	0.0001
R-squared	0.020468	Mean dependent var	9.85E-05	
Adjusted R-squared	0.018388	S.D. dependent var	0.006282	
S.E. of regression	0.006224	Akaike info criterion	-7.316669	
Sum squared resid	0.018244	Schwarz criterion	-7.299083	
Log likelihood	1732.392	Durbin-Watson stat	1.977011	
Inverted AR Roots	.76			
Inverted MA Roots	.83			

## 10. ARIMA (3,0,2)

a. Dengan konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:05				
Sample (adjusted): 4 475				
Included observations: 472 after adjustments				
Convergence achieved after 6 iterations				
Backcast: 2 3				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.37E-05	0.000209	0.400847	0.6887
AR(3)	-0.199652	0.045186	-4.418437	0.0000
MA(2)	-0.111059	0.045898	-2.419669	0.0159
R-squared	0.053213	Mean dependent var	8.12E-05	
Adjusted R-squared	0.049176	S.D. dependent var	0.006277	
S.E. of regression	0.006121	Akaike info criterion	-7.347898	
Sum squared resid	0.017571	Schwarz criterion	-7.321476	
Log likelihood	1737.104	F-statistic	13.17978	
Durbin-Watson stat	1.993810	Prob(F-statistic)	0.000003	
Inverted AR Roots	.29-.51i	.29+.51i	-.58	
Inverted MA Roots	.33			

b. Tanpa konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:06				
Sample (adjusted): 4 475				
Included observations: 472 after adjustments				
Convergence achieved after 6 iterations				
Backcast: 2 3				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(3)	-0.199357	0.045139	-4.416537	0.0000
MA(2)	-0.110676	0.045851	-2.413817	0.0162
R-squared	0.052889	Mean dependent var	8.12E-05	
Adjusted R-squared	0.050874	S.D. dependent var	0.006277	
S.E. of regression	0.006115	Akaike info criterion	-7.351793	
Sum squared resid	0.017577	Schwarz criterion	-7.334179	
Log likelihood	1737.023	Durbin-Watson stat	1.993088	
Inverted AR Roots	.29-.51i	.29+.51i	-.58	
Inverted MA Roots	.33	-.33		

## 11. ARIMA (3,0,0)

a. Dengan konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:08				
Sample (adjusted): 4 475				
Included observations: 472 after adjustments				
Convergence achieved after 3 iterations				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.43E-05	0.000235	0.359219	0.7196
AR(3)	-0.206563	0.045080	-4.582130	0.0000
R-squared	0.042762	Mean dependent var	8.12E-05	
Adjusted R-squared	0.040725	S.D. dependent var	0.006277	
S.E. of regression	0.006148	Akaike info criterion	-7.341157	
Sum squared resid	0.017765	Schwarz criterion	-7.323543	
Log likelihood	1734.513	F-statistic	20.99592	
Durbin-Watson stat	1.995871	Prob(F-statistic)	0.000006	
Inverted AR Roots	.30-.51i	.30+.51i	-.59	

b. Tanpa konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:08				
Sample (adjusted): 4 475				
Included observations: 472 after adjustments				
Convergence achieved after 3 iterations				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(3)	-0.206308	0.045033	-4.581268	0.0000
R-squared	0.042499	Mean dependent var	8.12E-05	
Adjusted R-squared	0.042499	S.D. dependent var	0.006277	
S.E. of regression	0.006142	Akaike info criterion	-7.345120	
Sum squared resid	0.017770	Schwarz criterion	-7.336313	
Log likelihood	1734.448	Durbin-Watson stat	1.995244	
Inverted AR Roots	.30+.51i	.30-.51i	-.59	

## 12. ARIMA (0,0,3)

a. Dengan konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:10				
Sample: 1 475				
Included observations: 475				
Convergence achieved after 7 iterations				
Backcast: -2 0				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.61E-05	0.000228	0.420855	0.6741
MA(3)	-0.191630	0.045148	-4.244463	0.0000
R-squared	0.040331	Mean dependent var	0.000101	
Adjusted R-squared	0.038302	S.D. dependent var	0.006269	
S.E. of regression	0.006147	Akaike info criterion	-7.341345	
Sum squared resid	0.017875	Schwarz criterion	-7.323816	
Log likelihood	1745.570	F-statistic	19.87814	
Durbin-Watson stat	1.988145	Prob(F-statistic)	0.000010	
Inverted MA Roots	.58	-.29-.50i	-.29+.50i	

b. Tanpa konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:10				
Sample: 1 475				
Included observations: 475				
Convergence achieved after 8 iterations				
Backcast: -2 0				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
MA(3)	-0.191337	0.045103	-4.242184	0.0000
R-squared	0.039971	Mean dependent var	0.000101	
Adjusted R-squared	0.039971	S.D. dependent var	0.006269	
S.E. of regression	0.006142	Akaike info criterion	-7.345182	
Sum squared resid	0.017882	Schwarz criterion	-7.336417	
Log likelihood	1745.481	Durbin-Watson stat	1.987290	
Inverted MA Roots	.58	-.29+.50i	-.29-.50i	

### 13. ARIMA (1,0,3)

a. Dengan konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:11				
Sample (adjusted): 2 475				
Included observations: 474 after adjustments				
Convergence achieved after 8 iterations				
Backcast: -1 1				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.61E-05	0.000231	0.416436	0.6773
AR(1)	0.005787	0.046293	0.125010	0.9006
MA(3)	-0.190868	0.045451	-4.199450	0.0000
R-squared	0.040362	Mean dependent var	0.000101	
Adjusted R-squared	0.036287	S.D. dependent var	0.006275	
S.E. of regression	0.006160	Akaike info criterion	-7.335034	
Sum squared resid	0.017875	Schwarz criterion	-7.308697	
Log likelihood	1741.403	F-statistic	9.905107	
Durbin-Watson stat	1.998222	Prob(F-statistic)	0.000061	
Inverted AR Roots	.01			
Inverted MA Roots	.58	-.29+.50i	-.29-.50i	

b. Tanpa konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:12				
Sample (adjusted): 2 475				
Included observations: 474 after adjustments				
Convergence achieved after 8 iterations				
Backcast: -1 1				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	0.006234	0.046241	0.134818	0.8928
MA(3)	-0.190522	0.045404	-4.196140	0.0000
R-squared	0.040009	Mean dependent var	0.000101	
Adjusted R-squared	0.037975	S.D. dependent var	0.006275	
S.E. of regression	0.006155	Akaike info criterion	-7.338886	
Sum squared resid	0.017881	Schwarz criterion	-7.321328	
Log likelihood	1741.316	Durbin-Watson stat	1.998183	
Inverted AR Roots	.01			
Inverted MA Roots	.58	-.29-.50i	-.29+.50i	

#### 14. ARIMA (2,0,3)

a. Dengan konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:13				
Sample (adjusted): 3 475				
Included observations: 473 after adjustments				
Convergence achieved after 7 iterations				
Backcast: 0 2				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	9.42E-05	0.000208	0.453097	0.6507
AR(2)	-0.101366	0.045900	-2.208417	0.0277
MA(3)	-0.189996	0.045308	-4.193399	0.0000
R-squared	0.050249	Mean dependent var	9.85E-05	
Adjusted R-squared	0.046208	S.D. dependent var	0.006282	
S.E. of regression	0.006135	Akaike info criterion	-7.343317	
Sum squared resid	0.017690	Schwarz criterion	-7.316938	
Log likelihood	1739.694	F-statistic	12.43332	
Durbin-Watson stat	1.986658	Prob(F-statistic)	0.000005	
Inverted MA Roots	.57	-.29+.50i	-.29-.50i	

b. Tanpa konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:14				
Sample (adjusted): 3 475				
Included observations: 473 after adjustments				
Convergence achieved after 7 iterations				
Backcast: 0 2				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(2)	-0.100952	0.045851	-2.201725	0.0282
MA(3)	-0.189655	0.045264	-4.190029	0.0000
R-squared	0.049835	Mean dependent var	9.85E-05	
Adjusted R-squared	0.047817	S.D. dependent var	0.006282	
S.E. of regression	0.006130	Akaike info criterion	-7.347109	
Sum squared resid	0.017697	Schwarz criterion	-7.329523	
Log likelihood	1739.591	Durbin-Watson stat	1.985718	
Inverted MA Roots	.57	.29-.50i	-.29+.50i	

## 15. ARIMA (3,0,3)

a. Dengan konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:16				
Sample (adjusted): 4 475				
Included observations: 472 after adjustments				
Convergence achieved after 229 iterations				
Backcast: 1 3				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8.41E-05	0.000234	0.358964	0.7198
AR(3)	-0.194492	0.210275	-0.924942	0.3555
MA(3)	-0.012766	0.214729	-0.059454	0.9526
R-squared	0.042776	Mean dependent var	8.12E-05	
Adjusted R-squared	0.038694	S.D. dependent var	0.006277	
S.E. of regression	0.006154	Akaike info criterion	-7.336935	
Sum squared resid	0.017765	Schwarz criterion	-7.310513	
Log likelihood	1734.517	F-statistic	10.47923	
Durbin-Watson stat	1.995867	Prob(F-statistic)	0.000035	
Inverted AR Roots	.29+.50i	.29-.50i	-.58	
Inverted MA Roots	.23	-.12-.20i	-.12+.20i	

b. Tanpa konstanta

Dependent Variable: SKRIPSI				
Method: Least Squares				
Date: 06/08/15 Time: 21:17				
Sample (adjusted): 4 475				
Included observations: 472 after adjustments				
Convergence achieved after 219 iterations				
Backcast: 1 3				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(3)	-0.194330	0.210080	-0.925027	0.3554
MA(3)	-0.012664	0.214534	-0.059029	0.9530
R-squared	0.042513	Mean dependent var	8.12E-05	
Adjusted R-squared	0.040476	S.D. dependent var	0.006277	
S.E. of regression	0.006149	Akaike info criterion	-7.340897	
Sum squared resid	0.017770	Schwarz criterion	-7.323283	
Log likelihood	1734.452	Durbin-Watson stat	1.995238	
Inverted AR Roots	.29+.50i	.29-.50i	-.58	
Inverted MA Roots	.23	-.12-.20i	-.12+.20i	

#### Lampiran 4.Uji ARCH-LM

##### 1. Uji ARCH-LM Model ARIMA (3,0,1) Tanpa Konstanta

ARCH Test:				
F-statistic	20.31824	Probability	0.000008	
Obs*R-squared	19.55760	Probability	0.000010	
Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Date: 06/10/15 Time: 19:06				
Sample (adjusted): 5 475				
Included observations: 471 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.00E-05	4.28E-06	7.021222	0.0000
RESID^2(-1)	0.203760	0.045204	4.507576	0.0000
R-squared	0.041524	Mean dependent var	3.77E-05	
Adjusted R-squared	0.039480	S.D. dependent var	8.69E-05	
S.E. of regression	8.52E-05	Akaike info criterion	-15.89966	
Sum squared resid	3.40E-06	Schwarz criterion	-15.88201	
Log likelihood	3746.369	F-statistic	20.31824	
Durbin-Watson stat	2.043891	Prob(F-statistic)	0.000008	

## 2. Uji ARCH-LM Model ARIMA (3,0,2) Tanpa Konstanta

ARCH Test:																																		
F-statistic	22.82345	Probability	0.000002																															
Obs*R-squared	21.85712	Probability	0.000003																															
 Test Equation: Dependent Variable: RESID^2 Method: Least Squares Date: 06/10/15 Time: 19:08 Sample (adjusted): 5 475 Included observations: 471 after adjustments																																		
<table border="1"> <thead> <tr> <th>Variable</th><th>Coefficient</th><th>Std. Error</th><th>t-Statistic</th><th>Prob.</th></tr> </thead> <tbody> <tr> <td>C</td><td>2.93E-05</td><td>4.22E-06</td><td>6.939696</td><td>0.0000</td></tr> <tr> <td>RESID^2(-1)</td><td>0.215410</td><td>0.045090</td><td>4.777389</td><td>0.0000</td></tr> </tbody> </table>					Variable	Coefficient	Std. Error	t-Statistic	Prob.	C	2.93E-05	4.22E-06	6.939696	0.0000	RESID^2(-1)	0.215410	0.045090	4.777389	0.0000															
Variable	Coefficient	Std. Error	t-Statistic	Prob.																														
C	2.93E-05	4.22E-06	6.939696	0.0000																														
RESID^2(-1)	0.215410	0.045090	4.777389	0.0000																														
<table border="1"> <thead> <tr> <th>R-squared</th><th>0.046406</th><th>Mean dependent var</th><th>3.73E-05</th><th></th></tr> </thead> <tbody> <tr> <td>Adjusted R-squared</td><td>0.044373</td><td>S.D. dependent var</td><td>8.59E-05</td><td></td></tr> <tr> <td>S.E. of regression</td><td>8.40E-05</td><td>Akaike info criterion</td><td>-15.92790</td><td></td></tr> <tr> <td>Sum squared resid</td><td>3.31E-06</td><td>Schwarz criterion</td><td>-15.91026</td><td></td></tr> <tr> <td>Log likelihood</td><td>3753.021</td><td>F-statistic</td><td>22.82345</td><td></td></tr> <tr> <td>Durbin-Watson stat</td><td>2.033800</td><td>Prob(F-statistic)</td><td>0.000002</td><td></td></tr> </tbody> </table>					R-squared	0.046406	Mean dependent var	3.73E-05		Adjusted R-squared	0.044373	S.D. dependent var	8.59E-05		S.E. of regression	8.40E-05	Akaike info criterion	-15.92790		Sum squared resid	3.31E-06	Schwarz criterion	-15.91026		Log likelihood	3753.021	F-statistic	22.82345		Durbin-Watson stat	2.033800	Prob(F-statistic)	0.000002	
R-squared	0.046406	Mean dependent var	3.73E-05																															
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Sum squared resid	3.31E-06	Schwarz criterion	-15.91026																															
Log likelihood	3753.021	F-statistic	22.82345																															
Durbin-Watson stat	2.033800	Prob(F-statistic)	0.000002																															

## 3. Uji ARCH-LM Model ARIMA (3,0,0) Tanpa Konstanta

ARCH Test:																																		
F-statistic	20.53336	Probability	0.000007																															
Obs*R-squared	19.75598	Probability	0.000009																															
 Test Equation: Dependent Variable: RESID^2 Method: Least Squares Date: 06/10/15 Time: 11:09 Sample (adjusted): 5 475 Included observations: 471 after adjustments																																		
<table border="1"> <thead> <tr> <th>Variable</th><th>Coefficient</th><th>Std. Error</th><th>t-Statistic</th><th>Prob.</th></tr> </thead> <tbody> <tr> <td>C</td><td>3.00E-05</td><td>4.28E-06</td><td>7.014511</td><td>0.0000</td></tr> <tr> <td>RESID^2(-1)</td><td>0.204791</td><td>0.045194</td><td>4.531375</td><td>0.0000</td></tr> </tbody> </table>					Variable	Coefficient	Std. Error	t-Statistic	Prob.	C	3.00E-05	4.28E-06	7.014511	0.0000	RESID^2(-1)	0.204791	0.045194	4.531375	0.0000															
Variable	Coefficient	Std. Error	t-Statistic	Prob.																														
C	3.00E-05	4.28E-06	7.014511	0.0000																														
RESID^2(-1)	0.204791	0.045194	4.531375	0.0000																														
<table border="1"> <thead> <tr> <th>R-squared</th><th>0.041945</th><th>Mean dependent var</th><th>3.77E-05</th><th></th></tr> </thead> <tbody> <tr> <td>Adjusted R-squared</td><td>0.039902</td><td>S.D. dependent var</td><td>8.69E-05</td><td></td></tr> <tr> <td>S.E. of regression</td><td>8.51E-05</td><td>Akaike info criterion</td><td>-15.90037</td><td></td></tr> <tr> <td>Sum squared resid</td><td>3.40E-06</td><td>Schwarz criterion</td><td>-15.88273</td><td></td></tr> <tr> <td>Log likelihood</td><td>3746.537</td><td>F-statistic</td><td>20.53336</td><td></td></tr> <tr> <td>Durbin-Watson stat</td><td>2.043966</td><td>Prob(F-statistic)</td><td>0.000007</td><td></td></tr> </tbody> </table>					R-squared	0.041945	Mean dependent var	3.77E-05		Adjusted R-squared	0.039902	S.D. dependent var	8.69E-05		S.E. of regression	8.51E-05	Akaike info criterion	-15.90037		Sum squared resid	3.40E-06	Schwarz criterion	-15.88273		Log likelihood	3746.537	F-statistic	20.53336		Durbin-Watson stat	2.043966	Prob(F-statistic)	0.000007	
R-squared	0.041945	Mean dependent var	3.77E-05																															
Adjusted R-squared	0.039902	S.D. dependent var	8.69E-05																															
S.E. of regression	8.51E-05	Akaike info criterion	-15.90037																															
Sum squared resid	3.40E-06	Schwarz criterion	-15.88273																															
Log likelihood	3746.537	F-statistic	20.53336																															
Durbin-Watson stat	2.043966	Prob(F-statistic)	0.000007																															

#### 4. Uji ARCH-LM Model ARIMA (0,0,3) Tanpa Konstanta

ARCH Test:				
F-statistic	21.42768	Probability	0.000005	
Obs*R-squared	20.58401	Probability	0.000006	
 Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Date: 06/10/15 Time: 11:13				
Sample (adjusted): 2 475				
Included observations: 474 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.99E-05	4.27E-06	6.987935	0.0000
RESID^2(-1)	0.208373	0.045015	4.629005	0.0000
R-squared	0.043426	Mean dependent var	3.77E-05	
Adjusted R-squared	0.041400	S.D. dependent var	8.72E-05	
S.E. of regression	8.54E-05	Akaike info criterion	-15.89408	
Sum squared resid	3.44E-06	Schwarz criterion	-15.87653	
Log likelihood	3768.898	F-statistic	21.42768	
Durbin-Watson stat	2.046636	Prob(F-statistic)	0.000005	

#### 5. Uji ARCH-LM Model ARIMA (1,0,3) Tanpa Konstanta

ARCH Test:				
F-statistic	20.78285	Probability	0.000007	
Obs*R-squared	19.98908	Probability	0.000008	
 Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Date: 06/10/15 Time: 19:11				
Sample (adjusted): 3 475				
Included observations: 473 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.00E-05	4.29E-06	7.006360	0.0000
RESID^2(-1)	0.205559	0.045090	4.558821	0.0000
R-squared	0.042260	Mean dependent var	3.78E-05	
Adjusted R-squared	0.040227	S.D. dependent var	8.73E-05	
S.E. of regression	8.56E-05	Akaike info criterion	-15.89072	
Sum squared resid	3.45E-06	Schwarz criterion	-15.87314	
Log likelihood	3760.156	F-statistic	20.78285	
Durbin-Watson stat	2.045148	Prob(F-statistic)	0.000007	

## 6. Uji ARCH-LM Model ARIMA (2,0,3) Tanpa Konstanta

ARCH Test:																																		
F-statistic	23.41461	Probability	0.000002																															
Obs*R-squared	22.39839	Probability	0.000002																															
 Test Equation: Dependent Variable: RESID^2 Method: Least Squares Date: 06/10/15 Time: 19:13 Sample (adjusted): 4 475 Included observations: 472 after adjustments																																		
<table border="1"> <thead> <tr> <th>Variable</th><th>Coefficient</th><th>Std. Error</th><th>t-Statistic</th><th>Prob.</th></tr> </thead> <tbody> <tr> <td>C</td><td>2.92E-05</td><td>4.24E-06</td><td>6.890938</td><td>0.0000</td></tr> <tr> <td>RESID^2(-1)</td><td>0.217847</td><td>0.045020</td><td>4.838864</td><td>0.0000</td></tr> </tbody> </table>					Variable	Coefficient	Std. Error	t-Statistic	Prob.	C	2.92E-05	4.24E-06	6.890938	0.0000	RESID^2(-1)	0.217847	0.045020	4.838864	0.0000															
Variable	Coefficient	Std. Error	t-Statistic	Prob.																														
C	2.92E-05	4.24E-06	6.890938	0.0000																														
RESID^2(-1)	0.217847	0.045020	4.838864	0.0000																														
<table border="1"> <tbody> <tr> <td>R-squared</td><td>0.047454</td><td>Mean dependent var</td><td>3.74E-05</td><td></td></tr> <tr> <td>Adjusted R-squared</td><td>0.045428</td><td>S.D. dependent var</td><td>8.64E-05</td><td></td></tr> <tr> <td>S.E. of regression</td><td>8.44E-05</td><td>Akaike info criterion</td><td>-15.91720</td><td></td></tr> <tr> <td>Sum squared resid</td><td>3.35E-06</td><td>Schwarz criterion</td><td>-15.89958</td><td></td></tr> <tr> <td>Log likelihood</td><td>3758.459</td><td>F-statistic</td><td>23.41461</td><td></td></tr> <tr> <td>Durbin-Watson stat</td><td>2.033441</td><td>Prob(F-statistic)</td><td>0.000002</td><td></td></tr> </tbody> </table>					R-squared	0.047454	Mean dependent var	3.74E-05		Adjusted R-squared	0.045428	S.D. dependent var	8.64E-05		S.E. of regression	8.44E-05	Akaike info criterion	-15.91720		Sum squared resid	3.35E-06	Schwarz criterion	-15.89958		Log likelihood	3758.459	F-statistic	23.41461		Durbin-Watson stat	2.033441	Prob(F-statistic)	0.000002	
R-squared	0.047454	Mean dependent var	3.74E-05																															
Adjusted R-squared	0.045428	S.D. dependent var	8.64E-05																															
S.E. of regression	8.44E-05	Akaike info criterion	-15.91720																															
Sum squared resid	3.35E-06	Schwarz criterion	-15.89958																															
Log likelihood	3758.459	F-statistic	23.41461																															
Durbin-Watson stat	2.033441	Prob(F-statistic)	0.000002																															

## Lampiran 5. Estimasi Model GJR-TARCH

### 1. Model GJR-TARCH (0,1)

#### a. Dengan threshold 1

Dependent Variable: SKRIPSI Method: ML - ARCH (Marquardt) - Normal distribution Date: 06/29/15 Time: 12:44 Sample: 1 475 Included observations: 475 Convergence achieved after 14 iterations MA backcast: -2 0, Variance backcast: ON GARCH = C(2) + C(3)*RESID(-1)^2*(RESID(-1)<0) + C(4)*GARCH(-1)																													
	Coefficient	Std. Error	z-Statistic	Prob.																									
MA(3)	-0.133262	0.045857	-2.906037	0.0037																									
 Variance Equation																													
<table border="1"> <tbody> <tr> <td>C</td><td>5.79E-07</td><td>2.27E-07</td><td>2.555259</td><td>0.0106</td></tr> <tr> <td>RESID(-1)^2*(RESID(-1)&lt;0)</td><td>0.095644</td><td>0.021761</td><td>4.395240</td><td>0.0000</td></tr> <tr> <td>GARCH(-1)</td><td>0.934584</td><td>0.013055</td><td>71.58785</td><td>0.0000</td></tr> </tbody> </table>					C	5.79E-07	2.27E-07	2.555259	0.0106	RESID(-1)^2*(RESID(-1)<0)	0.095644	0.021761	4.395240	0.0000	GARCH(-1)	0.934584	0.013055	71.58785	0.0000										
C	5.79E-07	2.27E-07	2.555259	0.0106																									
RESID(-1)^2*(RESID(-1)<0)	0.095644	0.021761	4.395240	0.0000																									
GARCH(-1)	0.934584	0.013055	71.58785	0.0000																									
<table border="1"> <tbody> <tr> <td>R-squared</td><td>0.036092</td><td>Mean dependent var</td><td>0.000101</td><td></td></tr> <tr> <td>Adjusted R-squared</td><td>0.029952</td><td>S.D. dependent var</td><td>0.006269</td><td></td></tr> <tr> <td>S.E. of regression</td><td>0.006174</td><td>Akaike info criterion</td><td>-7.554535</td><td></td></tr> <tr> <td>Sum squared resid</td><td>0.017954</td><td>Schwarz criterion</td><td>-7.519476</td><td></td></tr> <tr> <td>Log likelihood</td><td>1798.202</td><td>Durbin-Watson stat</td><td>1.969029</td><td></td></tr> </tbody> </table>					R-squared	0.036092	Mean dependent var	0.000101		Adjusted R-squared	0.029952	S.D. dependent var	0.006269		S.E. of regression	0.006174	Akaike info criterion	-7.554535		Sum squared resid	0.017954	Schwarz criterion	-7.519476		Log likelihood	1798.202	Durbin-Watson stat	1.969029	
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Inverted MA Roots																													
.51      -.26+.44i      -.26-.44i																													

b. Dengan threshold 2

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 12:45				
Sample: 1475				
Included observations: 475				
Convergence achieved after 13 iterations				
MA backcast: -2 0, 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.
MA(3)	-0.133419	0.045798	-2.913174	0.0036
Variance Equation				
C	4.56E-07	2.30E-07	1.983981	0.0473
RESID(-1)^2*(RESID(-1)<0)	0.312322	0.107381	2.908541	0.0036
RESID(-2)^2*(RESID(-2)<0)	-0.231747	0.107914	-2.147506	0.0318
GARCH(-1)	0.946365	0.014203	66.62967	0.0000
R-squared	0.036112	Mean dependent var	0.000101	
Adjusted R-squared	0.027909	S.D. dependent var	0.006269	
S.E. of regression	0.006181	Akaike info criterion	-7.561419	
Sum squared resid	0.017954	Schwarz criterion	-7.517595	
Log likelihood	1800.837	Durbin-Watson stat	1.969077	
Inverted MA Roots	.51	-.26+.44i	-.26-.44i	

c. Dengan threshold 3

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 12:46				
Sample: 1475				
Included observations: 475				
Convergence achieved after 13 iterations				
MA backcast: -2 0, Variance backcast: ON				
GARCH = C(2) + C(3)*RESID(-1)^2*(RESID(-1)<0) + C(4)*RESID(-2)^2 *(RESID(-2)<0) + C(5)*RESID(-3)^2*(RESID(-3)<0) + C(6) *GARCH(-1)				
	Coefficient	Std. Error	z-Statistic	Prob.
MA(3)	-0.126681	0.045111	-2.808210	0.0050
Variance Equation				
C	3.20E-07	1.83E-07	1.753638	0.0795
RESID(-1)^2*(RESID(-1)<0)	0.303963	0.107361	2.831227	0.0046
RESID(-2)^2*(RESID(-2)<0)	-0.111974	0.141091	-0.793630	0.4274
RESID(-3)^2*(RESID(-3)<0)	-0.124456	0.080417	-1.547625	0.1217
GARCH(-1)	0.956884	0.012110	79.01570	0.0000
R-squared	0.035177	Mean dependent var	0.000101	
Adjusted R-squared	0.024892	S.D. dependent var	0.006269	
S.E. of regression	0.006190	Akaike info criterion	-7.563618	
Sum squared resid	0.017971	Schwarz criterion	-7.511029	
Log likelihood	1802.359	Durbin-Watson stat	1.967016	
Inverted MA Roots	.50	-.25-.43i	-.25+.43i	

## 2. Model GJR-TARCH (0,2)

### a. Dengan threshold 1

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 12:50				
Sample: 1475				
Included observations: 475				
Convergence achieved after 21 iterations				
MA backcast: -2 0, 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.	
MA(3)	0.046204	-2.894210	0.0038	
Variance Equation				
C	7.82E-07	4.69E-07	1.668152	0.0953
RESID(-1)^2*(RESID(-1)<0)	0.127958	0.053241	2.403369	0.0162
GARCH(-1)	0.589666	0.509912	1.156408	0.2475
GARCH(-2)	0.322536	0.476642	0.676684	0.4986
R-squared	0.036152	Mean dependent var	0.000101	
Adjusted R-squared	0.027949	S.D. dependent var	0.006269	
S.E. of regression	0.006180	Akaike info criterion	-7.552480	
Sum squared resid	0.017953	Schwarz criterion	-7.508656	
Log likelihood	1798.714	Durbin-Watson stat	1.969171	
Inverted MA Roots	.51	-.26-.44i	-.26+.44i	

### b. Dengan threshold 2

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 12:51				
Sample: 1475				
Included observations: 475				
Convergence not achieved after 500 iterations				
MA backcast: -2 0, 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.	
MA(3)	0.045569	-2.828134	0.0047	
Variance Equation				
C	2.34E-07	1.93E-07	1.210758	0.2260
RESID(-1)^2*(RESID(-1)<0)	0.324332	0.110826	2.926490	0.0034
RESID(-2)^2*(RESID(-2)<0)	-0.276380	0.102779	-2.689062	0.0072
GARCH(-1)	1.238819	0.266824	4.642829	0.0000
GARCH(-2)	-0.269668	0.250777	-1.075331	0.2822
R-squared	0.035493	Mean dependent var	0.000101	
Adjusted R-squared	0.025210	S.D. dependent var	0.006269	
S.E. of regression	0.006189	Akaike info criterion	-7.561303	
Sum squared resid	0.017966	Schwarz criterion	-7.508714	
Log likelihood	1801.810	Durbin-Watson stat	1.967686	
Inverted MA Roots	.51	-.25-.44i	-.25+.44i	

c. Dengan threshold 3

Dependent Variable: SKRIPSI Method: ML - ARCH (Marquardt) - Normal distribution Date: 06/29/15 Time: 12:51 Sample: 1 475 Included observations: 475 Convergence achieved after 20 iterations MA backcast: -2 0, Variance backcast: ON GARCH = C(2) + C(3)*RESID(-1)^2*(RESID(-1)<0) + C(4)*RESID(-2)^2*(RESID(-2)<0) + C(5)*RESID(-3)^2*(RESID(-3)<0) + C(6)*GARCH(-1) + C(7)*GARCH(-2)				
	Coefficient	Std. Error	z-Statistic	Prob.
MA(3)	-0.123637	0.042810	-2.888064	0.0039
Variance Equation				
C	4.92E-07	3.31E-07	1.488567	0.1366
RESID(-1)^2*(RESID(-1)<0)	0.328597	0.111325	2.951683	0.0032
RESID(-2)^2*(RESID(-2)<0)	0.042115	0.128593	0.327509	0.7433
RESID(-3)^2*(RESID(-3)<0)	-0.262435	0.091961	-2.853760	0.0043
GARCH(-1)	0.528615	0.332888	1.587965	0.1123
GARCH(-2)	0.403941	0.309621	1.304630	0.1920
R-squared	0.034723	Mean dependent var	0.000101	
Adjusted R-squared	0.022347	S.D. dependent var	0.006269	
S.E. of regression	0.006198	Akaike info criterion	-7.562898	
Sum squared resid	0.017980	Schwarz criterion	-7.501544	
Log likelihood	1803.188	Durbin-Watson stat	1.966088	
Inverted MA Roots	.50	-.25-.43i	-.25+.43i	

3. Model GJR-TARCH (0,3)

a. Dengan threshold 1

Dependent Variable: SKRIPSI Method: ML - ARCH (Marquardt) - Normal distribution Date: 06/29/15 Time: 12:54 Sample: 1 475 Included observations: 475 Convergence not achieved after 500 iterations MA backcast: -2 0, 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.
MA(3)	-0.131094	0.044944	-2.916824	0.0035
Variance Equation				
C	1.09E-06	5.16E-07	2.120084	0.0340
RESID(-1)^2*(RESID(-1)<0)	0.196871	0.050902	3.867646	0.0001
GARCH(-1)	0.528078	0.217687	2.425861	0.0153
GARCH(-2)	-0.182529	0.318737	-0.572664	0.5669
GARCH(-3)	0.523990	0.218592	2.397110	0.0165
R-squared	0.035801	Mean dependent var	0.000101	
Adjusted R-squared	0.025521	S.D. dependent var	0.006269	
S.E. of regression	0.006188	Akaike info criterion	-7.555588	
Sum squared resid	0.017960	Schwarz criterion	-7.502999	
Log likelihood	1800.452	Durbin-Watson stat	1.968365	
Inverted MA Roots	.51	-.25-.44i	-.25+.44i	

b. Dengan threshold 2

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 12:55				
Sample: 1 475				
Included observations: 475				
Convergence achieved after 59 iterations				
MA backcast: -2 0, 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.	
MA(3)	-0.097836	0.032512	-3.009258	0.0026
Variance Equation				
C	8.76E-07	3.91E-07	2.240731	0.0250
RESID(-1)^2*(RESID(-1)<0)	0.406564	0.076083	5.343672	0.0000
RESID(-2)^2*(RESID(-2)<0)	-0.251115	0.084347	-2.977187	0.0029
GARCH(-1)	1.106396	0.072366	15.28900	0.0000
GARCH(-2)	-0.715269	0.123756	-5.779657	0.0000
GARCH(-3)	0.510450	0.116573	4.378823	0.0000
R-squared	0.030071	Mean dependent var	0.000101	
Adjusted R-squared	0.017636	S.D. dependent var	0.006269	
S.E. of regression	0.006213	Akaike info criterion	-7.564828	
Sum squared resid	0.018067	Schwarz criterion	-7.503474	
Log likelihood	1803.647	Durbin-Watson stat	1.958288	
Inverted MA Roots	.46	- .23+.40i	- .23-.40i	

c. Dengan threshold 3

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 12:56				
Sample: 1 475				
Included observations: 475				
Convergence not achieved after 500 iterations				
MA backcast: -2 0, Variance backcast: ON				
GARCH = C(2) + C(3)*RESID(-1)^2*(RESID(-1)<0) + C(4)*RESID(-2)^2 *(RESID(-2)<0) + C(5)*RESID(-3)^2*(RESID(-3)<0) + C(6) *GARCH(-1) + C(7)*GARCH(-2) + C(8)*GARCH(-3)				
Coefficient	Std. Error	z-Statistic	Prob.	
MA(3)	-0.117732	0.040783	-2.886765	0.0039
Variance Equation				
C	6.08E-07	3.67E-07	1.659184	0.0971
RESID(-1)^2*(RESID(-1)<0)	0.336487	0.112299	2.996364	0.0027
RESID(-2)^2*(RESID(-2)<0)	0.021686	0.156348	0.138703	0.8897
RESID(-3)^2*(RESID(-3)<0)	-0.222219	0.121269	-1.832443	0.0669
GARCH(-1)	0.522906	0.318849	1.639977	0.1010
GARCH(-2)	0.215628	0.486386	0.443328	0.6575
GARCH(-3)	0.177642	0.233702	0.760121	0.4472
R-squared	0.033784	Mean dependent var	0.000101	
Adjusted R-squared	0.019301	S.D. dependent var	0.006269	
S.E. of regression	0.006208	Akaike info criterion	-7.560894	
Sum squared resid	0.017997	Schwarz criterion	-7.490775	
Log likelihood	1803.712	Durbin-Watson stat	1.964292	
Inverted MA Roots	.49	- .25-.42i	- .25+.42i	

#### 4. Model GJR-TARCH (1,0)

##### a. Dengan threshold 1

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:06				
Sample: 1475				
Included observations: 475				
Convergence achieved after 17 iterations				
MA backcast: -2 0, 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.	
MA(3)	-0.137199	0.030941	-4.434227	0.0000
Variance Equation				
C	2.31E-05	1.69E-06	13.67309	0.0000
RESID(-1)^2	0.209454	0.088009	2.379915	0.0173
RESID(-1)^2*(RESID(-1)<0)	0.512658	0.131084	3.910911	0.0001
R-squared	0.036593	Mean dependent var	0.000101	
Adjusted R-squared	0.030457	S.D. dependent var	0.006269	
S.E. of regression	0.006173	Akaike info criterion	-7.454899	
Sum squared resid	0.017945	Schwarz criterion	-7.419839	
Log likelihood	1774.538	Durbin-Watson stat	1.970238	
Inverted MA Roots	.52	-.26-.45i	-.26+.45i	

##### b. Dengan threshold 2

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:07				
Sample: 1475				
Included observations: 475				
Convergence achieved after 15 iterations				
MA backcast: -2 0, 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.	
MA(3)	-0.116157	0.036915	-3.146576	0.0017
Variance Equation				
C	2.21E-05	1.60E-06	13.82295	0.0000
RESID(-1)^2	0.163772	0.073970	2.214040	0.0268
RESID(-1)^2*(RESID(-1)<0)	0.412505	0.129755	3.179098	0.0015
RESID(-2)^2*(RESID(-2)<0)	0.169805	0.090415	1.878062	0.0604
R-squared	0.033521	Mean dependent var	0.000101	
Adjusted R-squared	0.025295	S.D. dependent var	0.006269	
S.E. of regression	0.006189	Akaike info criterion	-7.466919	
Sum squared resid	0.018002	Schwarz criterion	-7.423095	
Log likelihood	1778.393	Durbin-Watson stat	1.963815	
Inverted MA Roots	.49	-.24+.42i	-.24-.42i	

c. Dengan threshold 3

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:07				
Sample: 1 475				
Included observations: 475				
Convergence not achieved after 500 iterations				
MA backcast: -2 0, 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)*RESID(-3)^2*(RESID(-3)<0)				
	Coefficient	Std. Error	z-Statistic	Prob.
MA(3)	-0.104720	0.041733	-2.509282	0.0121
Variance Equation				
C	2.12E-05	1.69E-06	12.54339	0.0000
RESID(-1)^2	0.089145	0.063733	1.398716	0.1619
RESID(-1)^2*(RESID(-1)<0)	0.424116	0.122292	3.468066	0.0005
RESID(-2)^2*(RESID(-2)<0)	0.167742	0.096783	1.733182	0.0831
RESID(-3)^2*(RESID(-3)<0)	0.162461	0.062710	2.590667	0.0096
R-squared	0.031451	Mean dependent var	0.000101	
Adjusted R-squared	0.021126	S.D. dependent var	0.006269	
S.E. of regression	0.006202	Akaike info criterion	-7.476312	
Sum squared resid	0.018041	Schwarz criterion	-7.423723	
Log likelihood	1781.624	Durbin-Watson stat	1.960358	
Inverted MA Roots	.47	-.24+.41i	-.24-.41i	

5. Model GJR-TARCH (2,0)

a. Dengan threshold 1

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:08				
Sample: 1 475				
Included observations: 475				
Convergence achieved after 26 iterations				
MA backcast: -2 0, 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.
MA(3)	-0.126660	0.036005	-3.517872	0.0004
Variance Equation				
C	2.23E-05	1.68E-06	13.29887	0.0000
RESID(-1)^2	0.174868	0.082941	2.108338	0.0350
RESID(-1)^2*(RESID(-1)<0)	0.482694	0.133107	3.626370	0.0003
RESID(-2)^2	0.053914	0.050352	1.070755	0.2843
R-squared	0.035174	Mean dependent var	0.000101	
Adjusted R-squared	0.026963	S.D. dependent var	0.006269	
S.E. of regression	0.006184	Akaike info criterion	-7.455170	
Sum squared resid	0.017971	Schwarz criterion	-7.411346	
Log likelihood	1775.603	Durbin-Watson stat	1.967009	
Inverted MA Roots	.50	-.25-.43i	-.25+.43i	

b. Dengan threshold 2

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:08				
Sample: 1475				
Included observations: 475				
Convergence achieved after 34 iterations				
MA backcast: -2 0, 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.	
MA(3)	-0.117617	0.037095	-3.170728	0.0015
Variance Equation				
C	2.23E-05	1.64E-06	13.58978	0.0000
RESID(-1)^2	0.176941	0.077067	2.295930	0.0217
RESID(-1)^2*(RESID(-1)<0)	0.400643	0.130183	3.077539	0.0021
RESID(-2)^2	-0.018096	0.046416	-0.389860	0.6966
RESID(-2)^2*(RESID(-2)<0)	0.182891	0.095136	1.922419	0.0546
R-squared	0.033765	Mean dependent var	0.000101	
Adjusted R-squared	0.023464	S.D. dependent var	0.006269	
S.E. of regression	0.006195	Akaike info criterion	-7.463424	
Sum squared resid	0.017998	Schwarz criterion	-7.410834	
Log likelihood	1778.563	Durbin-Watson stat	1.964257	
Inverted MA Roots	.49	-.24-.42i	-.24+.42i	

c. Dengan threshold 3

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:09				
Sample: 1475				
Included observations: 475				
Convergence achieved after 45 iterations				
MA backcast: -2 0, 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)*RESID(-3)^2*(RESID(-3)<0)				
Coefficient	Std. Error	z-Statistic	Prob.	
MA(3)	-0.105498	0.041980	-2.513014	0.0120
Variance Equation				
C	2.13E-05	1.73E-06	12.35956	0.0000
RESID(-1)^2	0.096827	0.066256	1.461412	0.1439
RESID(-1)^2*(RESID(-1)<0)	0.412565	0.122267	3.374298	0.0007
RESID(-2)^2	-0.014712	0.048154	-0.305526	0.7600
RESID(-2)^2*(RESID(-2)<0)	0.178185	0.102346	1.741018	0.0817
RESID(-3)^2*(RESID(-3)<0)	0.165482	0.064232	2.576303	0.0100
R-squared	0.031601	Mean dependent var	0.000101	
Adjusted R-squared	0.019185	S.D. dependent var	0.006269	
S.E. of regression	0.006208	Akaike info criterion	-7.472588	
Sum squared resid	0.018038	Schwarz criterion	-7.411234	
Log likelihood	1781.740	Durbin-Watson stat	1.960593	
Inverted MA Roots	.47	-.24+.41i	-.24-.41i	

## 6. Model GJR-TARCH (3,0)

### a. Dengan threshold 1

Dependent Variable: SKRIPSI Method: ML - ARCH (Marquardt) - Normal distribution Date: 06/29/15 Time: 13:10 Sample: 1 475 Included observations: 475 Convergence achieved after 15 iterations MA backcast: -2 0, 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.
MA(3)	-0.088890	0.050837	-1.748520	0.0804
Variance Equation				
C	1.90E-05	1.68E-06	11.30489	0.0000
RESID(-1)^2	0.103065	0.070182	1.468551	0.1420
RESID(-1)^2*(RESID(-1)<0)	0.383013	0.117670	3.254969	0.0011
RESID(-2)^2	0.045405	0.046842	0.969319	0.3324
RESID(-3)^2	0.181421	0.050707	3.577810	0.0003
R-squared	0.028128	Mean dependent var	0.000101	
Adjusted R-squared	0.017767	S.D. dependent var	0.006269	
S.E. of regression	0.006213	Akaike info criterion	-7.485216	
Sum squared resid	0.018103	Schwarz criterion	-7.432627	
Log likelihood	1783.739	Durbin-Watson stat	1.955607	
Inverted MA Roots	.45	-.22-.39i	-.22+.39i	

### b. Dengan threshold 2

Dependent Variable: SKRIPSI Method: ML - ARCH (Marquardt) - Normal distribution Date: 06/29/15 Time: 13:10 Sample: 1 475 Included observations: 475 Convergence achieved after 39 iterations MA backcast: -2 0, 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.
MA(3)	-0.091343	0.051961	-1.757909	0.0788
Variance Equation				
C	1.91E-05	1.72E-06	11.15413	0.0000
RESID(-1)^2	0.096327	0.063976	1.505683	0.1321
RESID(-1)^2*(RESID(-1)<0)	0.346592	0.112078	3.092423	0.0020
RESID(-2)^2	-0.011783	0.054631	-0.215679	0.8292
RESID(-2)^2*(RESID(-2)<0)	0.139305	0.094985	1.466610	0.1425
RESID(-3)^2	0.176340	0.050751	3.474611	0.0005
R-squared	0.028678	Mean dependent var	0.000101	
Adjusted R-squared	0.016225	S.D. dependent var	0.006269	
S.E. of regression	0.006218	Akaike info criterion	-7.489236	
Sum squared resid	0.018092	Schwarz criterion	-7.427882	
Log likelihood	1785.694	Durbin-Watson stat	1.956342	
Inverted MA Roots	.45	-.23+.39i	-.23-.39i	

c. Dengan threshold 3

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:11				
Sample: 1475				
Included observations: 475				
Convergence achieved after 38 iterations				
MA backcast: -2 0, 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)*RESID(-3)^2*(RESID(-3)<0)				
Coefficient	Std. Error	z-Statistic	Prob.	
MA(3)	-0.091680	0.052103	-1.759605	0.0785
Variance Equation				
C	1.92E-05	1.74E-06	11.07268	0.0000
RESID(-1)^2	0.090537	0.063959	1.415540	0.1569
RESID(-1)^2*(RESID(-1)<0)	0.343081	0.110822	3.095779	0.0020
RESID(-2)^2	-0.012986	0.054364	-0.238875	0.8112
RESID(-2)^2*(RESID(-2)<0)	0.137069	0.095895	1.429369	0.1529
RESID(-3)^2	0.147383	0.061337	2.402853	0.0163
RESID(-3)^2*(RESID(-3)<0)	0.068412	0.088409	0.773810	0.4390
R-squared	0.028753	Mean dependent var	0.000101	
Adjusted R-squared	0.014194	S.D. dependent var	0.006269	
S.E. of regression	0.006224	Akaike info criterion	-7.485778	
Sum squared resid	0.018091	Schwarz criterion	-7.415659	
Log likelihood	1785.872	Durbin-Watson stat	1.956442	
Inverted MA Roots	.45	-.23-.39i	-.23+.39i	

7. Model GJR-TARCH (1,1)

a. Dengan threshold 1

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:12				
Sample: 1475				
Included observations: 475				
Convergence achieved after 13 iterations				
MA backcast: -2 0, 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.	
MA(3)	-0.133083	0.047541	-2.799350	0.0051
Variance Equation				
C	5.67E-07	2.41E-07	2.354331	0.0186
RESID(-1)^2	0.027524	0.021863	1.258920	0.2081
RESID(-1)^2*(RESID(-1)<0)	0.065433	0.031550	2.073916	0.0381
GARCH(-1)	0.922877	0.016944	54.46551	0.0000
R-squared	0.036068	Mean dependent var	0.000101	
Adjusted R-squared	0.027864	S.D. dependent var	0.006269	
S.E. of regression	0.006181	Akaike info criterion	-7.553815	
Sum squared resid	0.017955	Schwarz criterion	-7.509990	
Log likelihood	1799.031	Durbin-Watson stat	1.968974	
Inverted MA Roots	.51	-.26+.44i	-.26-.44i	

b. Dengan threshold 2

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:12				
Sample: 1475				
Included observations: 475				
Convergence achieved after 13 iterations				
MA backcast: -2 0, 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.	
MA(3)	0.046880	-2.775254	0.0055	
Variance Equation				
C	4.60E-07	2.77E-07	1.661205	0.0967
RESID(-1)^2	0.032771	0.021222	1.544202	0.1225
RESID(-1)^2*(RESID(-1)<0)	0.310968	0.110619	2.811165	0.0049
RESID(-2)^2*(RESID(-2)<0)	-0.266366	0.111395	-2.391196	0.0168
GARCH(-1)	0.932285	0.020726	44.98241	0.0000
R-squared	0.035665	Mean dependent var	0.000101	
Adjusted R-squared	0.025384	S.D. dependent var	0.006269	
S.E. of regression	0.006189	Akaike info criterion	-7.563063	
Sum squared resid	0.017962	Schwarz criterion	-7.510474	
Log likelihood	1802.227	Durbin-Watson stat	1.968062	
Inverted MA Roots	.51	-.25+.44i	-.25-.44i	

c. Dengan threshold 3

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:13				
Sample: 1475				
Included observations: 475				
Convergence achieved after 12 iterations				
MA backcast: -2 0, 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)*RESID(-3)^2*(RESID(-3)<0) + C(7)*GARCH(-1)				
Coefficient	Std. Error	z-Statistic	Prob.	
MA(3)	0.046352	-2.681602	0.0073	
Variance Equation				
C	2.95E-07	2.00E-07	1.476935	0.1397
RESID(-1)^2	0.022952	0.017763	1.292178	0.1963
RESID(-1)^2*(RESID(-1)<0)	0.297412	0.111443	2.668738	0.0076
RESID(-2)^2*(RESID(-2)<0)	-0.150863	0.147527	-1.022616	0.3065
RESID(-3)^2*(RESID(-3)<0)	-0.109605	0.081905	-1.338195	0.1808
GARCH(-1)	0.950260	0.015822	60.06066	0.0000
R-squared	0.034823	Mean dependent var	0.000101	
Adjusted R-squared	0.022449	S.D. dependent var	0.006269	
S.E. of regression	0.006198	Akaike info criterion	-7.563349	
Sum squared resid	0.017978	Schwarz criterion	-7.501995	
Log likelihood	1803.295	Durbin-Watson stat	1.966289	
Inverted MA Roots	.50	-.25-.43i	-.25+.43i	

## 8. Model GJR-TARCH (1,2)

### a. Dengan threshold 1

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:13				
Sample: 1 475				
Included observations: 475				
Convergence not achieved after 500 iterations				
MA backcast: -2 0, 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.	
MA(3)	-0.132833	0.048078	-2.762889	0.0057
Variance Equation				
C	8.89E-07	5.15E-07	1.726576	0.0842
RESID(-1)^2	0.047132	0.037926	1.242731	0.2140
RESID(-1)^2*(RESID(-1)<0)	0.093051	0.049217	1.890635	0.0587
GARCH(1)	0.430780	0.425960	1.011315	0.3119
GARCH(2)	0.449205	0.386574	1.162016	0.2452
R-squared	0.036035	Mean dependent var	0.000101	
Adjusted R-squared	0.025758	S.D. dependent var	0.006269	
S.E. of regression	0.006187	Akaike info criterion	-7.552651	
Sum squared resid	0.017955	Schwarz criterion	-7.500061	
Log likelihood	1799.755	Durbin-Watson stat	1.968898	
Inverted MA Roots	.51	-.26+.44i	-.26-.44i	

### b. Dengan threshold 2

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:14				
Sample: 1 475				
Included observations: 475				
Convergence not achieved after 500 iterations				
MA backcast: -2 0, 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.	
MA(3)	-0.126722	0.046904	-2.701730	0.0069
Variance Equation				
C	2.42E-07	2.11E-07	1.146782	0.2515
RESID(-1)^2	0.019481	0.016400	1.187831	0.2349
RESID(-1)^2*(RESID(-1)<0)	0.314072	0.111721	2.811222	0.0049
RESID(-2)^2*(RESID(-2)<0)	-0.286747	0.106962	-2.680835	0.0073
GARCH(1)	1.186946	0.278371	4.263900	0.0000
GARCH(2)	-0.226881	0.257610	-0.880715	0.3785
R-squared	0.035183	Mean dependent var	0.000101	
Adjusted R-squared	0.022814	S.D. dependent var	0.006269	
S.E. of regression	0.006197	Akaike info criterion	-7.561645	
Sum squared resid	0.017971	Schwarz criterion	-7.500291	
Log likelihood	1802.891	Durbin-Watson stat	1.967028	
Inverted MA Roots	.50	-.25-.43i	-.25+.43i	

c. Dengan threshold 3

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:14				
Sample: 1475				
Included observations: 475				
Convergence achieved after 23 iterations				
MA backcast: -2 0, 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)*RESID(-3)^2*(RESID(-3)<0) + C(7)*GARCH(-1) + C(8)*GARCH(-2)				
	Coefficient	Std. Error	z-Statistic	Prob.
MA(3)	-0.121379	0.043187	-2.810520	0.0049
Variance Equation				
C	4.82E-07	3.79E-07	1.270448	0.2039
RESID(-1)^2	0.042881	0.032224	1.330717	0.1833
RESID(-1)^2*(RESID(-1)<0)	0.319781	0.118056	2.708713	0.0068
RESID(-2)^2*(RESID(-2)<0)	0.025455	0.120707	0.210884	0.8330
RESID(-3)^2*(RESID(-3)<0)	-0.286213	0.093345	-3.066180	0.0022
GARCH(-1)	0.458844	0.311267	1.474118	0.1404
GARCH(-2)	0.456918	0.281605	1.622548	0.1047
R-squared	0.034373	Mean dependent var	0.000101	
Adjusted R-squared	0.019899	S.D. dependent var	0.006269	
S.E. of regression	0.006206	Akaike info criterion	-7.564180	
Sum squared resid	0.017986	Schwarz criterion	-7.494061	
Log likelihood	1804.493	Durbin-Watson stat	1.965400	
Inverted MA Roots	.50	-.25-.43i	-.25+.43i	

9. Model GJR-TARCH (1,3)

a. Dengan threshold 1

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:15				
Sample: 1475				
Included observations: 475				
Convergence achieved after 43 iterations				
MA backcast: -2 0, 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.
MA(3)	-0.150550	0.044958	-3.348697	0.0008
Variance Equation				
C	1.11E-06	6.49E-07	1.702920	0.0886
RESID(-1)^2	0.080761	0.036286	2.225697	0.0260
RESID(-1)^2*(RESID(-1)<0)	0.091677	0.038906	2.356403	0.0185
GARCH(-1)	0.147517	0.045429	3.247201	0.0012
GARCH(-2)	-0.145376	0.039118	-3.716354	0.0002
GARCH(-3)	0.839085	0.034443	24.36173	0.0000
R-squared	0.038041	Mean dependent var	0.000101	
Adjusted R-squared	0.025708	S.D. dependent var	0.006269	
S.E. of regression	0.006188	Akaike info criterion	-7.562587	
Sum squared resid	0.017918	Schwarz criterion	-7.501233	
Log likelihood	1803.114	Durbin-Watson stat	1.974365	
Inverted MA Roots	.53	-.27-.46i	-.27+.46i	

b. Dengan threshold 2

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:16				
Sample: 1 475				
Included observations: 475				
Convergence achieved after 28 iterations				
MA backcast: -2 0, 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.
MA(3)	-0.121978	0.040855	-2.985675	0.0028
Variance Equation				
C	5.38E-07	3.36E-07	1.599666	0.1097
RESID(-1)^2	0.030020	0.024068	1.247255	0.2123
RESID(-1)^2*(RESID(-1)<0)	0.379144	0.113059	3.353502	0.0008
RESID(-2)^2*(RESID(-2)<0)	-0.302760	0.123204	-2.457393	0.0140
GARCH(-1)	1.084505	0.118805	9.128415	0.0000
GARCH(-2)	-0.498771	0.215610	-2.313298	0.0207
GARCH(-3)	0.333360	0.170887	1.950768	0.0511
R-squared	0.034467	Mean dependent var	0.000101	
Adjusted R-squared	0.019994	S.D. dependent var	0.006269	
S.E. of regression	0.006206	Akaike info criterion	-7.563509	
Sum squared resid	0.017985	Schwarz criterion	-7.493390	
Log likelihood	1804.333	Durbin-Watson stat	1.965583	
Inverted MA Roots	.50	.25+.43i	-.25-.43i	

c. Dengan threshold 3

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:16				
Sample: 1 475				
Included observations: 475				
Convergence achieved after 25 iterations				
MA backcast: -2 0, Variance backcast: ON				
$GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-1)^2*(RESID(-1)<0)$				
$+ C(5)*RESID(-2)^2*(RESID(-2)<0) + C(6)*RESID(-3)^2*(RESID(-3)<0) + C(7)*GARCH(-1) + C(8)*GARCH(-2) + C(9)*GARCH(-3)$				
	Coefficient	Std. Error	z-Statistic	Prob.
MA(3)	-0.119554	0.041112	-2.908022	0.0036
Variance Equation				
C	6.98E-07	5.03E-07	1.388033	0.1651
RESID(-1)^2	0.054073	0.040051	1.350092	0.1770
RESID(-1)^2*(RESID(-1)<0)	0.322770	0.119871	2.692649	0.0071
RESID(-2)^2*(RESID(-2)<0)	0.011738	0.140182	0.083734	0.9333
RESID(-3)^2*(RESID(-3)<0)	-0.250303	0.110998	-2.255027	0.0241
GARCH(-1)	0.368680	0.313386	1.176441	0.2394
GARCH(-2)	0.374053	0.361272	1.035376	0.3005
GARCH(-3)	0.143926	0.160288	0.897920	0.3692
R-squared	0.034082	Mean dependent var	0.000101	
Adjusted R-squared	0.017499	S.D. dependent var	0.006269	
S.E. of regression	0.006214	Akaike info criterion	-7.562204	
Sum squared resid	0.017992	Schwarz criterion	-7.483321	
Log likelihood	1805.024	Durbin-Watson stat	1.964845	
Inverted MA Roots	.49	.25+.43i	-.25-.43i	

## 10. Model GJR-TARCH (2,1)

### a. Dengan threshold 1

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:17				
Sample: 1475				
Included observations: 475				
Convergence achieved after 13 iterations				
MA backcast: -2 0, 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.	
MA(3)	-0.131859	0.047058	-2.802052	0.0051
Variance Equation				
C	4.66E-07	2.28E-07	2.044073	0.0409
RESID(-1)^2	0.112986	0.072777	1.552483	0.1205
RESID(-1)^2*(RESID(-1)<0)	0.053856	0.029299	1.838168	0.0660
RESID(-2)^2	-0.086443	0.065534	-1.319051	0.1872
GARCH(-1)	0.932788	0.017304	53.90631	0.0000
R-squared	0.035905	Mean dependent var	0.000101	
Adjusted R-squared	0.025626	S.D. dependent var	0.006269	
S.E. of regression	0.006188	Akaike info criterion	-7.553182	
Sum squared resid	0.017958	Schwarz criterion	-7.500593	
Log likelihood	1799.881	Durbin-Watson stat	1.968599	
Inverted MA Roots	.51	-.25-.44i	-.25+.44i	

### b. Dengan threshold 2

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:19				
Sample: 1475				
Included observations: 475				
Convergence not achieved after 500 iterations				
MA backcast: -2 0, 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.	
MA(3)	-0.130082	0.046818	-2.778457	0.0055
Variance Equation				
C	4.48E-07	2.73E-07	1.643148	0.1004
RESID(-1)^2	0.039053	0.075617	0.516455	0.6055
RESID(-1)^2*(RESID(-1)<0)	0.308046	0.121073	2.544301	0.0109
RESID(-2)^2	-0.007326	0.073323	-0.099909	0.9204
RESID(-2)^2*(RESID(-2)<0)	-0.263539	0.122907	-2.144212	0.0320
GARCH(-1)	0.933711	0.020416	45.73535	0.0000
R-squared	0.035662	Mean dependent var	0.000101	
Adjusted R-squared	0.023298	S.D. dependent var	0.006269	
S.E. of regression	0.006195	Akaike info criterion	-7.558883	
Sum squared resid	0.017962	Schwarz criterion	-7.497529	
Log likelihood	1802.235	Durbin-Watson stat	1.968055	
Inverted MA Roots	.51	-.25-.44i	-.25+.44i	

c. Dengan threshold 3

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:19				
Sample: 1475				
Included observations: 475				
Convergence achieved after 25 iterations				
MA backcast: -2 0, 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)*RESID(-3)^2*(RESID(-3)<0) + C(8)*GARCH(-1)				
	Coefficient	Std. Error	z-Statistic	Prob.
MA(3)	-0.124487	0.046480	-2.678289	0.0074
Variance Equation				
C	2.96E-07	2.01E-07	1.476439	0.1398
RESID(-1)^2	0.019371	0.070417	0.275092	0.7832
RESID(-1)^2*(RESID(-1)<0)	0.298823	0.118052	2.531293	0.0114
RESID(-2)^2	0.003821	0.067607	0.056523	0.9549
RESID(-2)^2*(RESID(-2)<0)	-0.151351	0.150420	-1.006185	0.3143
RESID(-3)^2*(RESID(-3)<0)	-0.110559	0.083191	-1.328974	0.1839
GARCH(-1)	0.950003	0.015916	59.69035	0.0000
R-squared	0.034852	Mean dependent var	0.000101	
Adjusted R-squared	0.020385	S.D. dependent var	0.006269	
S.E. of regression	0.006204	Akaike info criterion	-7.559150	
Sum squared resid	0.017977	Schwarz criterion	-7.489031	
Log likelihood	1803.298	Durbin-Watson stat	1.966347	
Inverted MA Roots	.50	-.25-.43i	-.25+.43i	

11. Model GJR-TARCH (2,2)

a. Dengan threshold 1

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:23				
Sample: 1475				
Included observations: 475				
Convergence not achieved after 500 iterations				
MA backcast: -2 0, 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.
MA(3)	-0.133456	0.047487	-2.810369	0.0049
Variance Equation				
C	6.73E-07	4.70E-07	1.431804	0.1522
RESID(-1)^2	0.099260	0.079169	1.253763	0.2099
RESID(-1)^2*(RESID(-1)<0)	0.073614	0.047877	1.537542	0.1242
RESID(-2)^2	-0.063743	0.078229	-0.814827	0.4152
GARCH(-1)	0.673505	0.486386	1.384713	0.1661
GARCH(-2)	0.234284	0.442287	0.529710	0.5963
R-squared	0.036117	Mean dependent var	0.000101	
Adjusted R-squared	0.023760	S.D. dependent var	0.006269	
S.E. of regression	0.006194	Akaike info criterion	-7.549926	
Sum squared resid	0.017954	Schwarz criterion	-7.488571	
Log likelihood	1800.107	Durbin-Watson stat	1.969088	
Inverted MA Roots	.51	-.26+.44i	-.26-.44i	

b. Dengan threshold 2

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:23				
Sample: 1475				
Included observations: 475				
Convergence achieved after 21 iterations				
MA backcast: -2 0, 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.	
MA(3)	-0.127086	0.047190	-2.693074	0.0071
Variance Equation				
C	2.42E-07	2.13E-07	1.137339	0.2554
RESID(-1)^2	0.014285	0.065579	0.217837	0.8276
RESID(-1)^2*(RESID(-1)<0)	0.315556	0.118093	2.672090	0.0075
RESID(-2)^2	0.005362	0.062886	0.085259	0.9321
RESID(-2)^2*(RESID(-2)<0)	-0.288597	0.114341	-2.524010	0.0116
GARCH(-1)	1.193528	0.283826	4.205141	0.0000
GARCH(-2)	-0.233448	0.262667	-0.888760	0.3741
R-squared	0.035236	Mean dependent var	0.000101	
Adjusted R-squared	0.020775	S.D. dependent var	0.006269	
S.E. of regression	0.006203	Akaike info criterion	-7.557459	
Sum squared resid	0.017970	Schwarz criterion	-7.487340	
Log likelihood	1802.897	Durbin-Watson stat	1.967139	
Inverted MA Roots	.50	- .25+.44i	- .25-.44i	

c. Dengan threshold 3

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:24				
Sample: 1475				
Included observations: 475				
Convergence achieved after 22 iterations				
MA backcast: -2 0, 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)*RESID(-3)^2*(RESID(-3)<0) + C(8)*GARCH(-1) + C(9)*GARCH(-2)				
Coefficient	Std. Error	z-Statistic	Prob.	
MA(3)	-0.121125	0.043355	-2.793795	0.0052
Variance Equation				
C	4.82E-07	3.80E-07	1.270558	0.2039
RESID(-1)^2	0.055970	0.070132	0.798061	0.4248
RESID(-1)^2*(RESID(-1)<0)	0.313338	0.126892	2.469334	0.0135
RESID(-2)^2	-0.014100	0.067047	-0.210304	0.8334
RESID(-2)^2*(RESID(-2)<0)	0.034505	0.127328	0.270990	0.7864
RESID(-3)^2*(RESID(-3)<0)	-0.287661	0.093863	-3.064702	0.0022
GARCH(-1)	0.454538	0.306746	1.481807	0.1384
GARCH(-2)	0.461675	0.277759	1.662143	0.0965
R-squared	0.034333	Mean dependent var	0.000101	
Adjusted R-squared	0.017755	S.D. dependent var	0.006269	
S.E. of regression	0.006213	Akaike info criterion	-7.560101	
Sum squared resid	0.017987	Schwarz criterion	-7.481217	
Log likelihood	1804.524	Durbin-Watson stat	1.965323	
Inverted MA Roots	.49	- .25+.43i	- .25-.43i	

## 12. Model GJR-TARCH (2,3)

### a. Dengan threshold 1

Dependent Variable: SKRIPSI Method: ML - ARCH (Marquardt) - Normal distribution Date: 06/29/15 Time: 13:24 Sample: 1475 Included observations: 475 Convergence achieved after 26 iterations MA backcast: -2 0, 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.
MA(3)	-0.141375	0.046523	-3.038852	0.0024
Variance Equation				
C	1.13E-06	7.26E-07	1.560828	0.1186
RESID(-1)^2	0.075630	0.030972	2.441888	0.0146
RESID(-1)^2*(RESID(-1)<0)	0.068157	0.038285	1.780238	0.0750
RESID(-2)^2	0.039962	0.028226	1.415784	0.1568
GARCH(-1)	0.110488	0.036399	3.035492	0.0024
GARCH(-2)	-0.155254	0.033938	-4.574659	0.0000
GARCH(-3)	0.862337	0.033945	25.40366	0.0000
R-squared	0.037088	Mean dependent var	0.000101	
Adjusted R-squared	0.022655	S.D. dependent var	0.006269	
S.E. of regression	0.006197	Akaike info criterion	-7.562929	
Sum squared resid	0.017936	Schwarz criterion	-7.492810	
Log likelihood	1804.196	Durbin-Watson stat	1.971524	
Inverted MA Roots	.52	-.26+.45i	-.26-.45i	

### b. Dengan threshold 2

Dependent Variable: SKRIPSI Method: ML - ARCH (Marquardt) - Normal distribution Date: 06/29/15 Time: 13:25 Sample: 1475 Included observations: 475 Convergence achieved after 47 iterations MA backcast: -2 0, 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.
MA(3)	-0.122217	0.041472	-2.946954	0.0032
Variance Equation				
C	7.05E-07	4.29E-07	1.642152	0.1006
RESID(-1)^2	0.006198	0.039274	0.157806	0.8746
RESID(-1)^2*(RESID(-1)<0)	0.375817	0.101318	3.709269	0.0002
RESID(-2)^2	0.030986	0.039970	0.775229	0.4382
RESID(-2)^2*(RESID(-2)<0)	-0.282047	0.113097	-2.493864	0.0126
GARCH(-1)	1.066932	0.112511	9.482888	0.0000
GARCH(-2)	-0.576304	0.195116	-2.953652	0.0031
GARCH(-3)	0.408672	0.167256	2.443386	0.0146
R-squared	0.034504	Mean dependent var	0.000101	
Adjusted R-squared	0.017929	S.D. dependent var	0.006269	
S.E. of regression	0.006212	Akaike info criterion	-7.560122	
Sum squared resid	0.017984	Schwarz criterion	-7.481239	
Log likelihood	1804.529	Durbin-Watson stat	1.965655	
Inverted MA Roots	.50	-.25-.43i	-.25+.43i	

c. Dengan threshold 3

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:26				
Sample: 1 475				
Included observations: 475				
Convergence achieved after 21 iterations				
MA backcast: -2 0, 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)*RESID(-3)^2*(RESID(-3)<0) + C(8)*GARCH(-1) + C(9)*GARCH(-2) + C(10)*GARCH(-3)				
Coefficient	Std. Error	z-Statistic	Prob.	
MA(3)	-0.118942	0.041313	-2.879042	0.0040
Variance Equation				
C	6.92E-07	4.99E-07	1.386763	0.1655
RESID(-1)^2	0.071682	0.073476	0.975587	0.3293
RESID(-1)^2*(RESID(-1)<0)	0.311968	0.126890	2.458566	0.0139
RESID(-2)^2	-0.019715	0.068062	-0.289667	0.7721
RESID(-2)^2*(RESID(-2)<0)	0.021577	0.140535	0.153537	0.8780
RESID(-3)^2*(RESID(-3)<0)	-0.248723	0.111809	-2.224540	0.0261
GARCH(-1)	0.372886	0.311572	1.196790	0.2314
GARCH(-2)	0.366592	0.358143	1.023593	0.3060
GARCH(-3)	0.149126	0.155396	0.959651	0.3372
R-squared	0.033982	Mean dependent var	0.000101	
Adjusted R-squared	0.015285	S.D. dependent var	0.006269	
S.E. of regression	0.006221	Akaike info criterion	-7.558241	
Sum squared resid	0.017994	Schwarz criterion	-7.470593	
Log likelihood	1805.082	Durbin-Watson stat	1.964660	
Inverted MA Roots	.49	-.25+.43i	-.25-.43i	

13. Model GJR-TARCH (3,1)

a. Dengan threshold 1

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:26				
Sample: 1 475				
Included observations: 475				
Convergence achieved after 21 iterations				
MA backcast: -2 0, 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.	
MA(3)	-0.133880	0.047616	-2.811659	0.0049
Variance Equation				
C	5.08E-07	2.50E-07	2.029483	0.0424
RESID(-1)^2	0.114656	0.073946	1.550533	0.1210
RESID(-1)^2*(RESID(-1)<0)	0.054494	0.029767	1.830661	0.0672
RESID(-2)^2	-0.101784	0.081822	-1.243961	0.2135
RESID(-3)^2	0.016333	0.047289	0.345387	0.7298
GARCH(-1)	0.928590	0.019912	46.63501	0.0000
R-squared	0.036173	Mean dependent var	0.000101	
Adjusted R-squared	0.023816	S.D. dependent var	0.006269	
S.E. of regression	0.006194	Akaike info criterion	-7.549256	
Sum squared resid	0.017953	Schwarz criterion	-7.487901	
Log likelihood	1799.948	Durbin-Watson stat	1.969218	
Inverted MA Roots	.51	-.26-.44i	-.26+.44i	

b. Dengan threshold 2

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:27				
Sample: 1 475				
Included observations: 475				
Convergence not achieved after 500 iterations				
MA backcast: -2 0, 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.
MA(3)	-0.131139	0.047169	-2.780168	0.0054
Variance Equation				
C	5.03E-07	3.13E-07	1.605261	0.1084
RESID(-1)^2	0.041330	0.076945	0.537145	0.5912
RESID(-1)^2*(RESID(-1)<0)	0.309263	0.121835	2.538363	0.0111
RESID(-2)^2	-0.019418	0.093535	-0.207603	0.8355
RESID(-2)^2*(RESID(-2)<0)	-0.262995	0.122762	-2.142313	0.0322
RESID(-3)^2	0.012878	0.051779	0.248714	0.8036
GARCH(-1)	0.928272	0.024687	37.60168	0.0000
R-squared	0.035807	Mean dependent var	0.000101	
Adjusted R-squared	0.021354	S.D. dependent var	0.006269	
S.E. of regression	0.006201	Akaike info criterion	-7.554812	
Sum squared resid	0.017960	Schwarz criterion	-7.484693	
Log likelihood	1802.268	Durbin-Watson stat	1.968378	
Inverted MA Roots	.51	- .25+.44i	- .25-.44i	

c. Dengan threshold 3

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:28				
Sample: 1 475				
Included observations: 475				
Convergence achieved after 27 iterations				
MA backcast: -2 0, 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)*RESID(-3)^2*(RESID(-3)<0) + C(9)*GARCH(-1)				
	Coefficient	Std. Error	z-Statistic	Prob.
MA(3)	-0.126689	0.047026	-2.694010	0.0071
Variance Equation				
C	3.49E-07	2.34E-07	1.491679	0.1358
RESID(-1)^2	0.022593	0.072958	0.309676	0.7568
RESID(-1)^2*(RESID(-1)<0)	0.292603	0.119304	2.452583	0.0142
RESID(-2)^2	-0.034646	0.080994	-0.427760	0.6688
RESID(-2)^2*(RESID(-2)<0)	-0.123390	0.154444	-0.798929	0.4243
RESID(-3)^2	0.041780	0.046672	0.895190	0.3707
RESID(-3)^2*(RESID(-3)<0)	-0.135956	0.089447	-1.519963	0.1285
GARCH(-1)	0.943726	0.018529	50.93137	0.0000
R-squared	0.035179	Mean dependent var	0.000101	
Adjusted R-squared	0.018615	S.D. dependent var	0.006269	
S.E. of regression	0.006210	Akaike info criterion	-7.557147	
Sum squared resid	0.017971	Schwarz criterion	-7.478264	
Log likelihood	1803.822	Durbin-Watson stat	1.967018	
Inverted MA Roots	.50	- .25-.43i	- .25+.43i	

## 14. Model GJR-TARCH (3,2)

### a. Dengan threshold 1

Dependent Variable: SKRIPSI Method: ML - ARCH (Marquardt) - Normal distribution Date: 06/29/15 Time: 13:28 Sample: 1 475 Included observations: 475 Convergence achieved after 28 iterations MA backcast: -2 0, 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.
MA(3)	-0.133038	0.047912	-2.776705	0.0055
Variance Equation				
C	6.74E-07	7.40E-07	0.910481	0.3626
RESID(-1)^2	0.100400	0.084174	1.192779	0.2330
RESID(-1)^2*(RESID(-1)<0)	0.075453	0.072640	1.038731	0.2989
RESID(-2)^2	-0.056082	0.191960	-0.292155	0.7702
RESID(-3)^2	-0.008686	0.118243	-0.073458	0.9414
GARCH(-1)	0.632387	1.205513	0.524579	0.5999
GARCH(-2)	0.274352	1.119101	0.245154	0.8063
R-squared	0.036062	Mean dependent var	0.000101	
Adjusted R-squared	0.021613	S.D. dependent var	0.006269	
S.E. of regression	0.006201	Akaike info criterion	-7.545751	
Sum squared resid	0.017955	Schwarz criterion	-7.475632	
Log likelihood	1800.116	Durbin-Watson stat	1.968960	
Inverted MA Roots	.51	-.26-.44i	-.26+.44i	

### b. Dengan threshold 2

Dependent Variable: SKRIPSI Method: ML - ARCH (Marquardt) - Normal distribution Date: 06/29/15 Time: 13:29 Sample: 1 475 Included observations: 475 Convergence achieved after 37 iterations MA backcast: -2 0, 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.
MA(3)	-0.122450	0.046800	-2.616441	0.0089
Variance Equation				
C	1.29E-06	7.66E-07	1.690175	0.0910
RESID(-1)^2	0.045614	0.078943	0.577804	0.5634
RESID(-1)^2*(RESID(-1)<0)	0.367474	0.105325	3.488961	0.0005
RESID(-2)^2	-0.063264	0.098557	-0.641903	0.5209
RESID(-2)^2*(RESID(-2)<0)	-0.349047	0.057949	-3.563567	0.0004
RESID(-3)^2	0.107028	0.056852	1.882584	0.0598
GARCH(-1)	1.168010	0.223303	5.230600	0.0000
GARCH(-2)	-0.300331	0.190068	-1.580122	0.1141
R-squared	0.034540	Mean dependent var	0.000101	
Adjusted R-squared	0.017966	S.D. dependent var	0.006269	
S.E. of regression	0.006212	Akaike info criterion	-7.554477	
Sum squared resid	0.017983	Schwarz criterion	-7.475593	
Log likelihood	1803.188	Durbin-Watson stat	1.965726	
Inverted MA Roots	.50	-.25-.43i	-.25+.43i	

c. Dengan threshold 3

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:29				
Sample: 1 475				
Included observations: 475				
Convergence achieved after 23 iterations				
MA backcast: -2 0, 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)*RESID(-3)^2*(RESID(-3)<0) + C(9)*GARCH(-1) + C(10)*GARCH(-2)				
Coefficient	Std. Error	z-Statistic	Prob.	
MA(3)	-0.121498	0.044019	-2.760148	0.0058
Variance Equation				
C	5.56E-07	4.15E-07	1.339441	0.1804
RESID(-1)^2	0.018523	0.068518	0.270336	0.7869
RESID(-1)^2*(RESID(-1)<0)	0.335206	0.122939	2.726606	0.0064
RESID(-2)^2	-0.021390	0.051737	-0.413440	0.6793
RESID(-2)^2*(RESID(-2)<0)	0.067447	0.118384	0.569731	0.5689
RESID(-3)^2	0.056177	0.053184	1.056277	0.2908
RESID(-3)^2*(RESID(-3)<0)	-0.342750	0.093733	-3.656653	0.0003
GARCH(-1)	0.446566	0.267199	1.671291	0.0947
GARCH(-2)	0.457121	0.239610	1.907768	0.0564
R-squared	0.034391	Mean dependent var	0.000101	
Adjusted R-squared	0.015702	S.D. dependent var	0.006269	
S.E. of regression	0.006219	Akaike info criterion	-7.558615	
Sum squared resid	0.017986	Schwarz criterion	-7.470967	
Log likelihood	1805.171	Durbin-Watson stat	1.965437	
Inverted MA Roots	.50	-.25-.43i	-.25+.43i	

15. Model GJR-TARCH (3,3)

a. Dengan threshold 1

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:30				
Sample: 1 475				
Included observations: 475				
Convergence achieved after 21 iterations				
MA backcast: -2 0, 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.	
MA(3)	-0.106145	0.054379	-1.951964	0.0509
Variance Equation				
C	5.04E-06	1.47E-06	3.429512	0.0006
RESID(-1)^2	-0.032738	0.022124	-1.479734	0.1389
RESID(-1)^2*(RESID(-1)<0)	0.314434	0.043425	7.240874	0.0000
RESID(-2)^2	0.006122	0.028410	0.215499	0.8294
RESID(-3)^2	0.218087	0.044187	4.935562	0.0000
GARCH(-1)	0.497645	0.056562	8.798261	0.0000
GARCH(-2)	-0.524590	0.066388	-7.901917	0.0000
GARCH(-3)	0.560064	0.072327	7.743503	0.0000
R-squared	0.031724	Mean dependent var	0.000101	
Adjusted R-squared	0.015102	S.D. dependent var	0.006269	
S.E. of regression	0.006221	Akaike info criterion	-7.571646	
Sum squared resid	0.018036	Schwarz criterion	-7.492762	
Log likelihood	1807.266	Durbin-Watson stat	1.960788	
Inverted MA Roots	.47	-.24+.41i	-.24-.41i	

b. Dengan threshold 2

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:31				
Sample: 1-475				
Included observations: 475				
Convergence achieved after 13 iterations				
MA backcast: -2 0, 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.
MA(3)	-0.097912	0.053289	-1.837384	0.0662
Variance Equation				
C	6.12E-06	1.74E-06	3.517182	0.0004
RESID(-1)^2	-0.012525	0.026800	-0.467358	0.6402
RESID(-1)^2*(RESID(-1)<0)	0.305609	0.050711	6.026506	0.0000
RESID(-2)^2	-0.009804	0.031907	-0.307255	0.7586
RESID(-2)^2*(RESID(-2)<0)	0.039790	0.065773	0.604964	0.5452
RESID(-3)^2	0.229394	0.010568	21.70656	0.0000
GARCH(-1)	0.463012	0.064338	7.196508	0.0000
GARCH(-2)	-0.521074	0.055798	-9.338627	0.0000
GARCH(-3)	0.524331	0.045652	11.48551	0.0000
R-squared	0.030087	Mean dependent var	0.000101	
Adjusted R-squared	0.011315	S.D. dependent var	0.006269	
S.E. of regression	0.006233	Akaike info criterion	-7.568432	
Sum squared resid	0.018066	Schwarz criterion	-7.480783	
Log likelihood	1807.503	Durbin-Watson stat	1.958311	
Inverted MA Roots	.46	-.23+.40i	-.23-.40i	

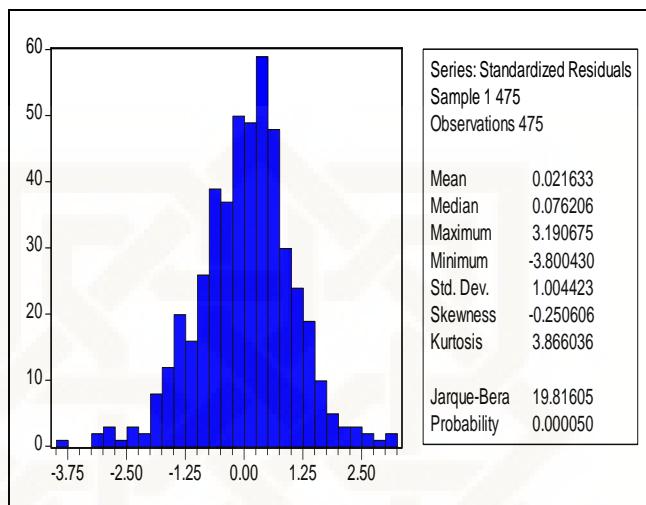
c. Dengan threshold 3

Dependent Variable: SKRIPSI				
Method: ML - ARCH (Marquardt) - Normal distribution				
Date: 06/29/15 Time: 13:31				
Sample: 1-475				
Included observations: 475				
Convergence achieved after 38 iterations				
MA backcast: -2 0, 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)*RESID(-3)^2*(RESID(-3)<0) + C(9)*GARCH(-1) + C(10)*GARCH(-2) + C(11)*GARCH(-3)				
	Coefficient	Std. Error	z-Statistic	Prob.
MA(3)	-0.090319	0.045619	-1.979856	0.0477
Variance Equation				
C	4.18E-06	1.37E-06	3.047278	0.0023
RESID(-1)^2	0.010816	0.044484	0.243133	0.8079
RESID(-1)^2*(RESID(-1)<0)	0.389627	0.092700	4.202026	0.0000
RESID(-2)^2	-0.040985	0.032061	-1.278334	0.2011
RESID(-2)^2*(RESID(-2)<0)	-0.008825	0.106306	-0.083013	0.9338
RESID(-3)^2	0.237374	0.073398	3.234531	0.0012
RESID(-3)^2*(RESID(-3)<0)	-0.222875	0.089859	-2.480289	0.0131
GARCH(-1)	0.498477	0.090973	5.479417	0.0000
GARCH(-2)	-0.393318	0.094733	-4.151842	0.0000
GARCH(-3)	0.513848	0.076959	6.676913	0.0000
R-squared	0.028450	Mean dependent var	0.000101	
Adjusted R-squared	0.007511	S.D. dependent var	0.006269	
S.E. of regression	0.006245	Akaike info criterion	-7.564908	
Sum squared resid	0.018097	Schwarz criterion	-7.468494	
Log likelihood	1807.666	Durbin-Watson stat	1.956035	
Inverted MA Roots	.45	-.22+.39i	-.22-.39i	

## Lampiran 6. Uji Diagnosa Model GJR-TARCH

### 1. Model GJR-TARCH (0,1) dengan *Threshold* 1

#### a. Uji Normalitas



#### b. Uji Autokorelasi

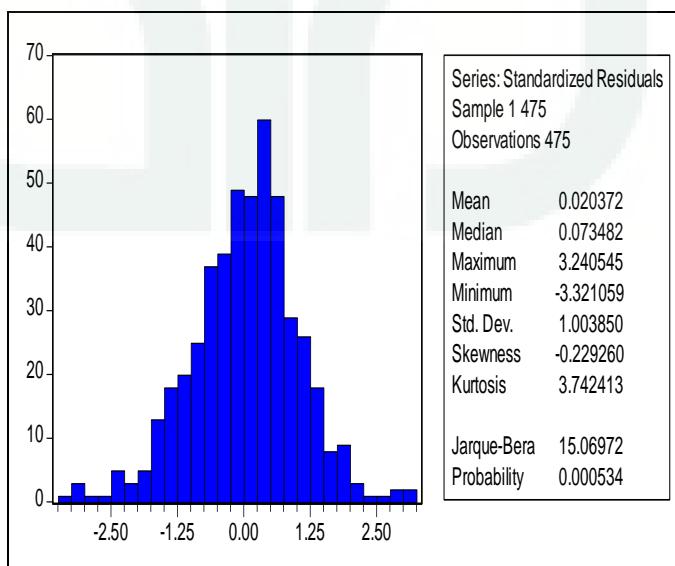
Date: 09/06/15 Time: 13:12 Sample: 1 475 Included observations: 475 Q-statistic probabilities adjusted for 1 ARMA term(s)						
Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob	
1	1	1	0.050	0.050	1.1911	
2	1	2	0.014	0.012	1.2868	0.257
3	1	3	0.013	0.012	1.3697	0.504
4	1	4	0.018	0.017	1.5251	0.676
5	1	5	-0.040	-0.042	2.2835	0.684
6	1	6	0.004	0.007	2.2899	0.808
7	1	7	0.116	0.117	8.7991	0.185
8	1	8	-0.032	-0.044	9.2948	0.232
9	1	9	0.047	0.050	10.386	0.239
10	1	10	0.009	0.000	10.423	0.317
11	1	11	0.047	0.043	11.498	0.320
12	1	12	0.006	0.012	11.517	0.401
13	1	13	-0.075	-0.084	14.239	0.286
14	1	14	0.073	0.074	16.865	0.206
15	1	15	-0.006	-0.005	16.883	0.262
16	1	16	0.029	0.021	17.297	0.301
17	1	17	-0.006	-0.004	17.316	0.365
18	1	18	0.007	-0.016	17.342	0.431
19	1	19	-0.001	0.009	17.342	0.500
20	1	20	-0.008	0.003	17.374	0.565

c. Uji Heteroskedastisitas

ARCH Test:				
F-statistic	1.180115	Prob. F(1,472)	0.277887	
Obs*R-squared	1.182160	Prob. Chi-Square(1)	0.276917	
<hr/>				
Test Equation:				
Dependent Variable: WGT_RESID^2				
Method: Least Squares				
Date: 09/06/15 Time: 13:14				
Sample (adjusted): 2 475				
Included observations: 474 after adjustments				
<hr/>				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.959003	0.090838	10.55735	0.0000
WGT_RESID^2(-1)	0.049925	0.045957	1.086331	0.2779
<hr/>				
R-squared	0.002494	Mean dependent var	1.009334	
Adjusted R-squared	0.000381	S.D. dependent var	1.701421	
S.E. of regression	1.701097	Akaike info criterion	3.904635	
Sum squared resid	1365.842	Schwarz criterion	3.922192	
Log likelihood	-923.3984	F-statistic	1.180115	
Durbin-Watson stat	2.001788	Prob(F-statistic)	0.277887	
<hr/>				

2. Model GJR-TARCH (0,1) dengan *Threshold* 2

a. Uji Normalitas



b. Uji Autokorelasi

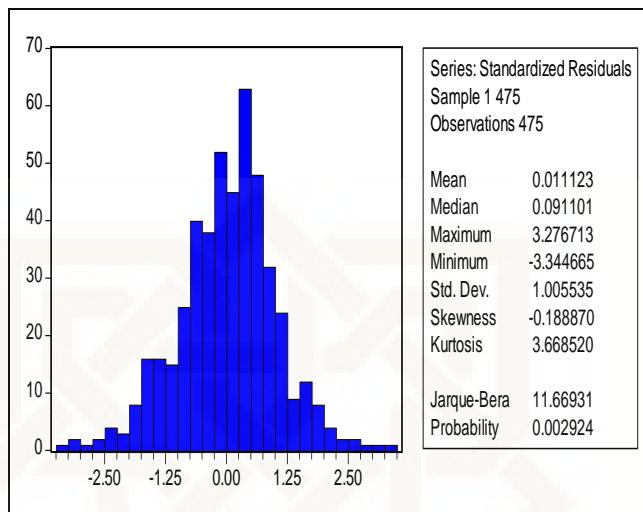
Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob
1	1	1 -0.013	-0.013	0.0748	
2	1	2 0.021	0.021	0.2858	0.593
3	1	3 0.023	0.024	0.5421	0.763
4	1	4 0.039	0.039	1.2766	0.735
5	1	5 -0.031	-0.031	1.7458	0.782
6	1	6 -0.022	-0.025	1.9784	0.852
7	1	7 0.163	0.163	14.899	0.021
8	1	8 -0.049	-0.045	16.044	0.025
9	1	9 0.046	0.043	17.081	0.029
10	1	10 0.017	0.013	17.218	0.045
11	1	11 0.062	0.050	19.112	0.039
12	1	12 0.025	0.038	19.415	0.054
13	1	13 -0.074	-0.078	22.069	0.037
14	1	14 0.095	0.068	26.469	0.015
15	1	15 -0.020	-0.005	26.674	0.021
16	1	16 0.015	0.001	26.789	0.031
17	1	17 -0.000	0.007	26.789	0.044
18	1	18 0.014	-0.015	26.892	0.060
19	1	19 0.004	0.004	26.900	0.081
20	1	20 -0.010	0.012	26.949	0.106

c. Uji Heteroskedastisitas

ARCH Test:				
F-statistic	0.073975	Prob. F(1,472)	0.785754	
Obs*R-squared	0.074277	Prob. Chi-Square(1)	0.785208	
Test Equation:				
Dependent Variable: WGT_RESID^2				
Method: Least Squares				
Date: 09/06/15 Time: 13:24				
Sample (adjusted): 2 475				
Included observations: 474 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.020730	0.089397	11.41792	0.0000
WGT_RESID^2(-1)	-0.012514	0.046010	-0.271984	0.7858
R-squared	0.000157	Mean dependent var	1.008130	
Adjusted R-squared	-0.001962	S.D. dependent var	1.662984	
S.E. of regression	1.664614	Akaike info criterion	3.861274	
Sum squared resid	1307.884	Schwarz criterion	3.878832	
Log likelihood	-913.1220	F-statistic	0.073975	
Durbin-Watson stat	2.000121	Prob(F-statistic)	0.785754	

### 3. Model GJR-TARCH (0,3) dengan *Threshold* 2

#### a. Uji Normalitas



#### b. Uji Autokorelasi

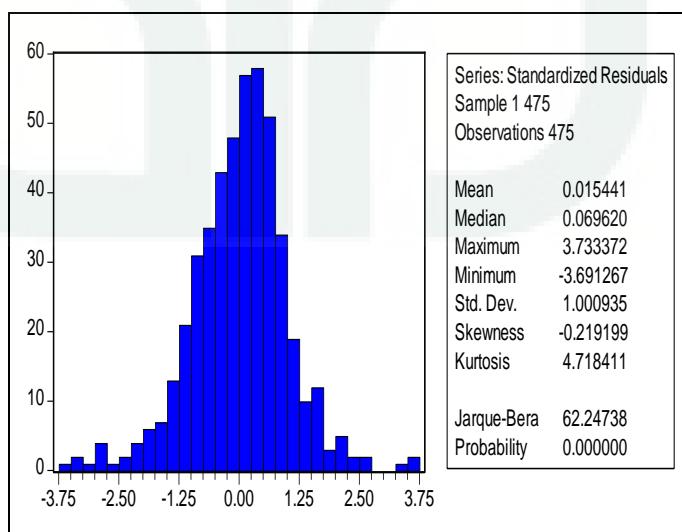
Date: 09/06/15 Time: 13:28						
Sample: 1 475						
Included observations: 475						
Q-statistic probabilities adjusted for 1 ARMA term(s)						
Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
			1 -0.017	-0.017	0.1403	
			2 -0.037	-0.038	0.8125	0.367
			3 0.067	0.065	2.9380	0.230
			4 0.063	0.064	4.8304	0.185
			5 -0.069	-0.062	7.1162	0.130
			6 -0.044	-0.046	8.0308	0.155
			7 0.172	0.161	22.369	0.001
			8 -0.049	-0.044	23.550	0.001
			9 0.041	0.065	24.368	0.002
			10 0.009	-0.013	24.409	0.004
			11 0.060	0.046	26.166	0.004
			12 0.028	0.049	26.553	0.005
			13 -0.059	-0.056	28.262	0.005
			14 0.068	0.041	30.528	0.004
			15 -0.035	-0.030	31.118	0.005
			16 0.001	-0.006	31.119	0.008
			17 -0.009	0.004	31.160	0.013
			18 0.008	-0.021	31.190	0.019
			19 0.003	0.003	31.196	0.027
			20 -0.011	0.006	31.252	0.038

c. Uji Heteroskedastisitas

ARCH Test:				
F-statistic	0.138670	Prob. F(1,472)	0.709774	
Obs*R-squared	0.139217	Prob. Chi-Square(1)	0.709061	
 Test Equation:				
Dependent Variable: WGT_RESID^2				
Method: Least Squares				
Date: 09/06/15 Time: 13:29				
Sample (adjusted): 2 475				
Included observations: 474 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.028528	0.088901	11.56930	0.0000
WGT_RESID^2(-1)	-0.017132	0.046007	-0.372384	0.7098
R-squared	0.000294	Mean dependent var	1.011225	
Adjusted R-squared	-0.001824	S.D. dependent var	1.648605	
S.E. of regression	1.650108	Akaike info criterion	3.843769	
Sum squared resid	1285.188	Schwarz criterion	3.861327	
Log likelihood	-908.9732	F-statistic	0.138670	
Durbin-Watson stat	2.001939	Prob(F-statistic)	0.709774	

4. Model GJR-TARCH (1,0) dengan *Threshold* 1

a. Uji Normalitas



b. Uji Autokorelasi

Autocorrelation		Partial Correlation		AC	PAC	Q-Stat	Prob
				1 -0.060	-0.060	1.7083	
				2 0.026	0.022	2.0288	0.154
				3 0.205	0.209	22.293	0.000
				4 0.099	0.130	27.029	0.000
				5 0.002	0.007	27.030	0.000
				6 0.023	-0.029	27.279	0.000
				7 0.300	0.268	70.753	0.000
				8 0.013	0.054	70.840	0.000
				9 0.105	0.105	76.161	0.000
				10 0.172	0.089	90.588	0.000
				11 0.048	0.010	91.711	0.000
				12 0.094	0.067	96.042	0.000
				13 -0.049	-0.110	97.227	0.000
				14 0.151	0.036	108.45	0.000
				15 0.016	-0.014	108.57	0.000
				16 0.061	0.024	110.38	0.000
				17 0.049	-0.046	111.55	0.000
				18 0.012	-0.049	111.63	0.000
				19 0.069	-0.015	113.98	0.000
				20 0.053	0.079	115.40	0.000

c. Uji Heteroskedastisitas

ARCH Test:				
F-statistic	1.694250	Prob. F(1,472)	0.193677	
Obs*R-squared	1.695343	Prob. Chi-Square(1)	0.192898	
Test Equation:				
Dependent Variable: WGT_RESID^2				
Method: Least Squares				
Date: 09/06/15 Time: 13:37				
Sample (adjusted): 2 475				
Included observations: 474 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.061981	0.099736	10.64791	0.0000
WGT_RESID^2(-1)	-0.059795	0.045938	-1.301634	0.1937
R-squared	0.003577	Mean dependent var	1.002109	
Adjusted R-squared	0.001466	S.D. dependent var	1.928108	
S.E. of regression	1.926694	Akaike info criterion	4.153699	
Sum squared resid	1752.135	Schwarz criterion	4.171257	
Log likelihood	-982.4267	F-statistic	1.694250	
Durbin-Watson stat	1.997642	Prob(F-statistic)	0.193677	

### Lampiran 7. Perhitungan Likelihood Ratio Test

<b>Close</b>	<b>Return</b>	<b>Return* 10.000.000</b>	<b>T-1</b>	<b>T-6</b>	<b>T-30</b>	<b>T-90</b>
646.86	0	0	TRUE	TRUE	TRUE	TRUE
648.65	0.0012001	12001.46105	TRUE	TRUE	TRUE	TRUE
661.12	0.0082699	82698.59689	TRUE	TRUE	TRUE	TRUE
662.96	0.001207	12070.43434	TRUE	TRUE	TRUE	TRUE
668.46	0.0035881	35880.9867	TRUE	TRUE	TRUE	TRUE
660.31	-0.005328	-53275.63155	FALSE	FALSE	FALSE	TRUE
656.21	-0.002705	-27050.16892	FALSE	FALSE	TRUE	TRUE
645.38	-0.007227	-72273.54851	FALSE	FALSE	FALSE	TRUE
648.64	0.0021882	21882.30998	TRUE	TRUE	TRUE	TRUE
650.99	0.0015706	15705.76947	TRUE	TRUE	TRUE	TRUE
650.02	-0.000648	-6475.779486	TRUE	TRUE	TRUE	TRUE
646.12	-0.002614	-26135.48306	FALSE	FALSE	TRUE	TRUE
630.61	-0.010552	-105523.3793	FALSE	FALSE	FALSE	FALSE
649.88	0.0130723	130723.2532	TRUE	TRUE	TRUE	TRUE
660.33	0.0069279	69278.6987	TRUE	TRUE	TRUE	TRUE
660.34	6.583E-06	65.8345779	TRUE	TRUE	TRUE	TRUE
658.05	-0.001509	-15087.38265	FALSE	TRUE	TRUE	TRUE
662.15	0.0026975	26975.09644	TRUE	TRUE	TRUE	TRUE
669.78	0.0049758	49757.98073	TRUE	TRUE	TRUE	TRUE
659.34	-0.006823	-68227.51049	FALSE	FALSE	FALSE	TRUE
656.54	-0.001848	-18482.65936	FALSE	TRUE	TRUE	TRUE
655.31	-0.000814	-8143.822716	TRUE	TRUE	TRUE	TRUE
656.95	0.0010855	10855.28262	TRUE	TRUE	TRUE	TRUE
653.38	-0.002366	-23664.87019	FALSE	FALSE	TRUE	TRUE
660.09	0.0044373	44373.36654	TRUE	TRUE	TRUE	TRUE
660.7	0.0004011	4011.401644	TRUE	TRUE	TRUE	TRUE
655.73	-0.003279	-32792.73301	FALSE	FALSE	TRUE	TRUE
667.89	0.0079799	79799.0745	TRUE	TRUE	TRUE	TRUE
673	0.0033101	33101.16693	TRUE	TRUE	TRUE	TRUE
674.02	0.0006577	6577.320835	TRUE	TRUE	TRUE	TRUE
672.39	-0.001052	-10515.44	FALSE	TRUE	TRUE	TRUE
674.38	0.0012834	12834.29685	TRUE	TRUE	TRUE	TRUE
673.49	-0.000574	-5735.367519	TRUE	TRUE	TRUE	TRUE
678.95	0.0035067	35066.53811	TRUE	TRUE	TRUE	TRUE
671.85	-0.004565	-45654.9048	FALSE	FALSE	TRUE	TRUE
664.64	-0.004686	-46858.27183	FALSE	FALSE	TRUE	TRUE
670.94	0.0040972	40972.02962	TRUE	TRUE	TRUE	TRUE

<b>Close</b>	<b>Return</b>	<b>Return * 10.000.000</b>	<b>T-1</b>	<b>T-6</b>	<b>T-30</b>	<b>T-90</b>
682.85	0.0076416	76416.16674	TRUE	TRUE	TRUE	TRUE
674.96	-0.005047	-50472.52057	FALSE	FALSE	FALSE	TRUE
665.41	-0.006189	-61887.45246	FALSE	FALSE	FALSE	TRUE
673.55	0.0052805	52805.30302	TRUE	TRUE	TRUE	TRUE
677.04	0.0022445	22444.81014	TRUE	TRUE	TRUE	TRUE
683.67	0.0042322	42321.95378	TRUE	TRUE	TRUE	TRUE
684.84	0.0007426	7426.272057	TRUE	TRUE	TRUE	TRUE
679.32	-0.003515	-35147.30296	FALSE	FALSE	TRUE	TRUE
682.21	0.0018437	18436.86519	TRUE	TRUE	TRUE	TRUE
681.71	-0.000318	-3184.163944	TRUE	TRUE	TRUE	TRUE
681.49	-0.00014	-1401.963248	TRUE	TRUE	TRUE	TRUE
696.58	0.0095115	95115.3231	TRUE	TRUE	TRUE	TRUE
703.32	0.004182	41819.60169	TRUE	TRUE	TRUE	TRUE
708.1	0.0029416	29416.08516	TRUE	TRUE	TRUE	TRUE
694.79	-0.008241	-82410.35532	FALSE	FALSE	FALSE	TRUE
701.25	0.0040193	40193.27676	TRUE	TRUE	TRUE	TRUE
685.35	-0.00996	-99604.69826	FALSE	FALSE	FALSE	FALSE
705.97	0.0128738	128738.2333	TRUE	TRUE	TRUE	TRUE
690	-0.009937	-99371.37027	FALSE	FALSE	FALSE	FALSE
676.58	-0.00853	-85299.22192	FALSE	FALSE	FALSE	FALSE
665.63	-0.007086	-70862.81133	FALSE	FALSE	FALSE	TRUE
677.35	0.0075802	75802.34905	TRUE	TRUE	TRUE	TRUE
674.4	-0.001896	-18955.47821	FALSE	TRUE	TRUE	TRUE
647.28	-0.017825	-178253.662	FALSE	FALSE	FALSE	FALSE
634.29	-0.008804	-88043.57474	FALSE	FALSE	FALSE	FALSE
608.88	-0.017756	-177561.4189	FALSE	FALSE	FALSE	FALSE
635.1	0.0183104	183103.9013	TRUE	TRUE	TRUE	TRUE
618.57	-0.011453	-114532.3869	FALSE	FALSE	FALSE	FALSE
640.22	0.0149404	149403.5634	TRUE	TRUE	TRUE	TRUE
642.79	0.0017399	17398.81525	TRUE	TRUE	TRUE	TRUE
649.35	0.0044097	44097.33259	TRUE	TRUE	TRUE	TRUE
642.42	-0.00466	-46597.91954	FALSE	FALSE	TRUE	TRUE
618.39	-0.016557	-165565.7454	FALSE	FALSE	FALSE	FALSE
596.67	-0.015528	-155282.7708	FALSE	FALSE	FALSE	FALSE
583.4	-0.009768	-97677.48248	FALSE	FALSE	FALSE	FALSE
634.27	0.0363077	363077.4444	TRUE	TRUE	TRUE	TRUE
660.16	0.017375	173750.0244	TRUE	TRUE	TRUE	TRUE
648.25	-0.007907	-79066.61116	FALSE	FALSE	FALSE	TRUE
640.97	-0.004905	-49048.4252	FALSE	FALSE	FALSE	TRUE

<b>Close</b>	<b>Return</b>	<b>Return * 10.000.000</b>	<b>T-1</b>	<b>T-6</b>	<b>T-30</b>	<b>T-90</b>
618.62	-0.015414	-154137.2628	FALSE	FALSE	FALSE	FALSE
619.17	0.0003859	3859.35092	TRUE	TRUE	TRUE	TRUE
626.55	0.0051458	51458.35652	TRUE	TRUE	TRUE	TRUE
601.22	-0.017922	-179223.298	FALSE	FALSE	FALSE	FALSE
597.7	-0.00255	-25501.34492	FALSE	FALSE	TRUE	TRUE
614.08	0.0117417	117417.041	TRUE	TRUE	TRUE	TRUE
633.03	0.0131993	131993.4559	TRUE	TRUE	TRUE	TRUE
636.97	0.0026946	26946.45182	TRUE	TRUE	TRUE	TRUE
637.7	0.0004975	4974.658276	TRUE	TRUE	TRUE	TRUE
637.51	-0.000129	-1294.154702	TRUE	TRUE	TRUE	TRUE
641.93	0.0030007	30006.57413	TRUE	TRUE	TRUE	TRUE
646.65	0.0031816	31816.29601	TRUE	TRUE	TRUE	TRUE
637	-0.00653	-65298.63006	FALSE	FALSE	FALSE	TRUE
651.96	0.0100815	100815.3207	TRUE	TRUE	TRUE	TRUE
642.41	-0.006409	-64086.91968	FALSE	FALSE	FALSE	TRUE
635.18	-0.004915	-49154.64329	FALSE	FALSE	FALSE	TRUE
629.95	-0.003591	-35907.20943	FALSE	FALSE	TRUE	TRUE
627.13	-0.001949	-19485.10559	FALSE	TRUE	TRUE	TRUE
623.75	-0.002347	-23470.17974	FALSE	FALSE	TRUE	TRUE
630.93	0.0049706	49706.12588	TRUE	TRUE	TRUE	TRUE
630.16	-0.00053	-5303.594337	TRUE	TRUE	TRUE	TRUE
622.95	-0.004998	-49976.14649	FALSE	FALSE	FALSE	TRUE
633.38	0.0072111	72111.48563	TRUE	TRUE	TRUE	TRUE
639.99	0.0045088	45088.35593	TRUE	TRUE	TRUE	TRUE
634.57	-0.003694	-36936.37953	FALSE	FALSE	TRUE	TRUE
619.73	-0.010277	-102770.3729	FALSE	FALSE	FALSE	FALSE
580.13	-0.028677	-286771.8153	FALSE	FALSE	FALSE	FALSE
561.36	-0.014284	-142838.6874	FALSE	FALSE	FALSE	FALSE
572.63	0.0086326	86326.4112	TRUE	TRUE	TRUE	TRUE
571.88	-0.000569	-5691.884004	TRUE	TRUE	TRUE	TRUE
572.6	0.0005464	5464.200122	TRUE	TRUE	TRUE	TRUE
563	-0.007343	-73429.33665	FALSE	FALSE	FALSE	TRUE
541.03	-0.017287	-172870.2346	FALSE	FALSE	FALSE	FALSE
552.12	0.0088121	88121.07919	TRUE	TRUE	TRUE	TRUE
568.92	0.0130177	130177.0679	TRUE	TRUE	TRUE	TRUE
592	0.0172705	172705.2062	TRUE	TRUE	TRUE	TRUE
574.59	-0.012964	-129636.2066	FALSE	FALSE	FALSE	FALSE
585.03	0.0078201	78200.73234	TRUE	TRUE	TRUE	TRUE
568.37	-0.012547	-125470.1259	FALSE	FALSE	FALSE	FALSE

<b>Close</b>	<b>Return</b>	<b>Return * 10.000.000</b>	<b>T-1</b>	<b>T-6</b>	<b>T-30</b>	<b>T-90</b>
562.61	-0.004424	-44237.07244	FALSE	FALSE	TRUE	TRUE
569.3	0.0051337	51337.36723	TRUE	TRUE	TRUE	TRUE
587.38	0.013578	135779.7874	TRUE	TRUE	TRUE	TRUE
611.05	0.0171576	171575.864	TRUE	TRUE	TRUE	TRUE
605.83	-0.003726	-37259.51701	FALSE	FALSE	TRUE	TRUE
600.72	-0.003679	-36787.19995	FALSE	FALSE	TRUE	TRUE
600.64	-5.78E-05	-578.1145935	TRUE	TRUE	TRUE	TRUE
627.06	0.0186948	186948.3995	TRUE	TRUE	TRUE	TRUE
625.98	-0.000749	-7486.542329	TRUE	TRUE	TRUE	TRUE
618.2	-0.005431	-54314.36138	FALSE	FALSE	FALSE	TRUE
649.92	0.0217309	217308.8061	TRUE	TRUE	TRUE	TRUE
635.91	-0.009464	-94642.54315	FALSE	FALSE	FALSE	FALSE
633.33	-0.001766	-17655.59863	FALSE	TRUE	TRUE	TRUE
613.54	-0.013787	-137872.0634	FALSE	FALSE	FALSE	FALSE
603.19	-0.007389	-73887.34882	FALSE	FALSE	FALSE	TRUE
602.2	-0.000713	-7133.745713	TRUE	TRUE	TRUE	TRUE
606.39	0.0030113	30112.7949	TRUE	TRUE	TRUE	TRUE
585.59	-0.015158	-151583.6387	FALSE	FALSE	FALSE	FALSE
593.08	0.0055196	55196.19528	TRUE	TRUE	TRUE	TRUE
600.63	0.0054937	54937.2682	TRUE	TRUE	TRUE	TRUE
605.54	0.0035358	35358.01809	TRUE	TRUE	TRUE	TRUE
600.5	-0.00363	-36298.10423	FALSE	FALSE	TRUE	TRUE
599.15	-0.000977	-9774.335888	FALSE	TRUE	TRUE	TRUE
606.51	0.0053024	53023.94821	TRUE	TRUE	TRUE	TRUE
613.56	0.0050191	50190.65803	TRUE	TRUE	TRUE	TRUE
618.04	0.0031595	31595.31026	TRUE	TRUE	TRUE	TRUE
627.98	0.0069292	69292.28851	TRUE	TRUE	TRUE	TRUE
622.05	-0.004121	-41205.11213	FALSE	FALSE	TRUE	TRUE
627.42	0.0037331	37330.57121	TRUE	TRUE	TRUE	TRUE
633.92	0.0044761	44760.95598	TRUE	TRUE	TRUE	TRUE
638.54	0.0031537	31536.5416	TRUE	TRUE	TRUE	TRUE
623.21	-0.010554	-105536.6699	FALSE	FALSE	FALSE	FALSE
627.06	0.0026747	26746.70795	TRUE	TRUE	TRUE	TRUE
632.29	0.0036072	36072.01411	TRUE	TRUE	TRUE	TRUE
627.44	-0.003344	-33440.97532	FALSE	FALSE	TRUE	TRUE
629.89	0.0016925	16925.1853	TRUE	TRUE	TRUE	TRUE
626.83	-0.002115	-21149.33106	FALSE	TRUE	TRUE	TRUE
628.41	0.0010933	10932.79269	TRUE	TRUE	TRUE	TRUE
615.71	-0.008867	-88668.45384	FALSE	FALSE	FALSE	FALSE

<b>Close</b>	<b>Return</b>	<b>Return * 10.000.000</b>	<b>T-1</b>	<b>T-6</b>	<b>T-30</b>	<b>T-90</b>
603.51	-0.008692	-86917.43479	FALSE	FALSE	FALSE	FALSE
603.92	0.0002949	2949.201479	TRUE	TRUE	TRUE	TRUE
609.59	0.0040585	40584.57412	TRUE	TRUE	TRUE	TRUE
616.11	0.0046204	46203.95385	TRUE	TRUE	TRUE	TRUE
615.63	-0.000338	-3384.756858	TRUE	TRUE	TRUE	TRUE
610.5	-0.003634	-36341.06811	FALSE	FALSE	TRUE	TRUE
604.55	-0.004253	-42534.4996	FALSE	FALSE	TRUE	TRUE
590.93	-0.009896	-98961.87114	FALSE	FALSE	FALSE	FALSE
599.4	0.0061807	61807.21894	TRUE	TRUE	TRUE	TRUE
590.73	-0.006328	-63277.40905	FALSE	FALSE	FALSE	TRUE
605.59	0.0107897	107897.0444	TRUE	TRUE	TRUE	TRUE
608.25	0.0019034	19034.00965	TRUE	TRUE	TRUE	TRUE
597.71	-0.007592	-75915.81203	FALSE	FALSE	FALSE	TRUE
595.13	-0.001879	-18786.93165	FALSE	TRUE	TRUE	TRUE
592.89	-0.001638	-16377.10545	FALSE	TRUE	TRUE	TRUE
592.72	-0.000125	-1245.728957	TRUE	TRUE	TRUE	TRUE
573.57	-0.014263	-142631.243	FALSE	FALSE	FALSE	FALSE
580.2	0.0049913	49912.96461	TRUE	TRUE	TRUE	TRUE
578.91	-0.000967	-9667.028917	FALSE	TRUE	TRUE	TRUE
579.87	0.0007196	7196.117255	TRUE	TRUE	TRUE	TRUE
591.92	0.0089324	89323.58854	TRUE	TRUE	TRUE	TRUE
584.71	-0.005322	-53224.63364	FALSE	FALSE	FALSE	TRUE
577.39	-0.005471	-54712.70827	FALSE	FALSE	FALSE	TRUE
573.88	-0.002648	-26481.75813	FALSE	FALSE	TRUE	TRUE
569	-0.003709	-37088.2324	FALSE	FALSE	TRUE	TRUE
576.23	0.0054836	54835.8354	TRUE	TRUE	TRUE	TRUE
587.52	0.0084268	84268.20034	TRUE	TRUE	TRUE	TRUE
586.11	-0.001044	-10435.46156	FALSE	TRUE	TRUE	TRUE
575.66	-0.007813	-78130.93094	FALSE	FALSE	FALSE	TRUE
568.15	-0.005703	-57030.04417	FALSE	FALSE	FALSE	TRUE
560.75	-0.005694	-56937.44047	FALSE	FALSE	FALSE	TRUE
567.51	0.0052042	52042.43962	TRUE	TRUE	TRUE	TRUE
572.12	0.0035136	35136.03751	TRUE	TRUE	TRUE	TRUE
579.32	0.0054314	54313.99537	TRUE	TRUE	TRUE	TRUE
575.8	-0.002647	-26468.76505	FALSE	FALSE	TRUE	TRUE
572.59	-0.002428	-24278.71231	FALSE	FALSE	TRUE	TRUE
578.14	0.0041892	41892.43861	TRUE	TRUE	TRUE	TRUE
578.64	0.0003754	3754.339645	TRUE	TRUE	TRUE	TRUE
585.11	0.0048291	48290.53599	TRUE	TRUE	TRUE	TRUE

<b>Close</b>	<b>Return</b>	<b>Return * 10.000.000</b>	<b>T-1</b>	<b>T-6</b>	<b>T-30</b>	<b>T-90</b>
596.15	0.008118	81180.49667	TRUE	TRUE	TRUE	TRUE
585.64	-0.007725	-77248.23484	FALSE	FALSE	FALSE	TRUE
579.93	-0.004255	-42551.71317	FALSE	FALSE	TRUE	TRUE
572.29	-0.005759	-57594.25976	FALSE	FALSE	FALSE	TRUE
576.41	0.0031153	31153.41992	TRUE	TRUE	TRUE	TRUE
574.28	-0.001608	-16077.69678	FALSE	TRUE	TRUE	TRUE
582.38	0.0060827	60827.37692	TRUE	TRUE	TRUE	TRUE
601.81	0.0142529	142529.4785	TRUE	TRUE	TRUE	TRUE
609.9	0.0057992	57992.47664	TRUE	TRUE	TRUE	TRUE
606.82	-0.002199	-21987.54309	FALSE	FALSE	TRUE	TRUE
603.06	-0.002699	-26993.69919	FALSE	FALSE	TRUE	TRUE
608.32	0.0037716	37715.78953	TRUE	TRUE	TRUE	TRUE
609.11	0.0005636	5636.200898	TRUE	TRUE	TRUE	TRUE
614.41	0.0037625	37625.31941	TRUE	TRUE	TRUE	TRUE
614.97	0.0003957	3956.546203	TRUE	TRUE	TRUE	TRUE
604.37	-0.007551	-75510.10486	FALSE	FALSE	FALSE	TRUE
583.88	-0.014979	-149792.9914	FALSE	FALSE	FALSE	FALSE
588.27	0.0032531	32531.16655	TRUE	TRUE	TRUE	TRUE
601.54	0.0096878	96877.81034	TRUE	TRUE	TRUE	TRUE
602.87	0.0009592	9591.760135	TRUE	TRUE	TRUE	TRUE
595.62	-0.005254	-52544.0079	FALSE	FALSE	FALSE	TRUE
587.49	-0.005969	-59688.01021	FALSE	FALSE	FALSE	TRUE
594.5	0.0051514	51513.87713	TRUE	TRUE	TRUE	TRUE
601.06	0.004766	47659.6807	TRUE	TRUE	TRUE	TRUE
606.22	0.0037124	37124.11701	TRUE	TRUE	TRUE	TRUE
603.33	-0.002075	-20753.03603	FALSE	TRUE	TRUE	TRUE
604.7	0.000985	9850.406655	TRUE	TRUE	TRUE	TRUE
609.08	0.0031344	31343.77537	TRUE	TRUE	TRUE	TRUE
607.22	-0.001328	-13283.07305	FALSE	TRUE	TRUE	TRUE
608.97	0.0012498	12498.30874	TRUE	TRUE	TRUE	TRUE
615.61	0.0047098	47097.81969	TRUE	TRUE	TRUE	TRUE
615.1	-0.00036	-3599.459609	TRUE	TRUE	TRUE	TRUE
621.73	0.0046561	46560.96776	TRUE	TRUE	TRUE	TRUE
622.16	0.0003003	3002.553268	TRUE	TRUE	TRUE	TRUE
626.97	0.0033447	33446.74907	TRUE	TRUE	TRUE	TRUE
621.94	-0.003498	-34982.50601	FALSE	FALSE	TRUE	TRUE
614.48	-0.005241	-52407.51344	FALSE	FALSE	FALSE	TRUE
606.03	-0.006014	-60135.93108	FALSE	FALSE	FALSE	TRUE
612.84	0.004853	48529.80303	TRUE	TRUE	TRUE	TRUE

<b>Close</b>	<b>Return</b>	<b>Return * 10.000.000</b>	<b>T-1</b>	<b>T-6</b>	<b>T-30</b>	<b>T-90</b>
626.86	0.0098234	98234.26257	TRUE	TRUE	TRUE	TRUE
618.98	-0.005494	-54939.48791	FALSE	FALSE	FALSE	TRUE
620.05	0.0007501	7501.022015	TRUE	TRUE	TRUE	TRUE
628	0.0055329	55329.38907	TRUE	TRUE	TRUE	TRUE
631	0.0020697	20697.15507	TRUE	TRUE	TRUE	TRUE
631.74	0.000509	5090.099514	TRUE	TRUE	TRUE	TRUE
632.91	0.0008036	8035.678156	TRUE	TRUE	TRUE	TRUE
635.35	0.0016711	16710.83576	TRUE	TRUE	TRUE	TRUE
633.17	-0.001493	-14927.04778	FALSE	TRUE	TRUE	TRUE
641.31	0.0055477	55476.96151	TRUE	TRUE	TRUE	TRUE
661.74	0.0136194	136193.6858	TRUE	TRUE	TRUE	TRUE
663.86	0.0013891	13891.14515	TRUE	TRUE	TRUE	TRUE
651.32	-0.008282	-82820.74186	FALSE	FALSE	FALSE	TRUE
655.45	0.0027452	27451.53554	TRUE	TRUE	TRUE	TRUE
634.17	-0.014334	-143338.9465	FALSE	FALSE	FALSE	FALSE
636.55	0.0016268	16268.35877	TRUE	TRUE	TRUE	TRUE
637.79	0.0008452	8451.763223	TRUE	TRUE	TRUE	TRUE
632.44	-0.003658	-36583.61979	FALSE	FALSE	TRUE	TRUE
636.48	0.0027654	27654.17799	TRUE	TRUE	TRUE	TRUE
635.02	-0.000997	-9973.304765	FALSE	TRUE	TRUE	TRUE
640.41	0.0036707	36706.67142	TRUE	TRUE	TRUE	TRUE
657.09	0.0111668	111667.9325	TRUE	TRUE	TRUE	TRUE
655.27	-0.001205	-12045.79196	FALSE	TRUE	TRUE	TRUE
658.53	0.0021553	21552.85745	TRUE	TRUE	TRUE	TRUE
653.27	-0.003483	-34828.56341	FALSE	FALSE	TRUE	TRUE
667.22	0.0091763	91763.0841	TRUE	TRUE	TRUE	TRUE
666.52	-0.000456	-4558.376487	TRUE	TRUE	TRUE	TRUE
666.52	0	0	TRUE	TRUE	TRUE	TRUE
643.15	-0.015501	-155009.112	FALSE	FALSE	FALSE	FALSE
653.28	0.0067871	67870.95043	TRUE	TRUE	TRUE	TRUE
659.71	0.0042537	42536.97886	TRUE	TRUE	TRUE	TRUE
659.78	4.609E-05	460.859204	TRUE	TRUE	TRUE	TRUE
657.86	-0.001266	-12656.92229	FALSE	TRUE	TRUE	TRUE
663.59	0.0037664	37663.78315	TRUE	TRUE	TRUE	TRUE
663.52	-4.58E-05	-458.2130428	TRUE	TRUE	TRUE	TRUE
664.13	0.0003991	3990.674692	TRUE	TRUE	TRUE	TRUE
664.14	6.546E-06	65.45789232	TRUE	TRUE	TRUE	TRUE
663.18	-0.000628	-6282.305114	TRUE	TRUE	TRUE	TRUE
663.21	1.967E-05	196.6520133	TRUE	TRUE	TRUE	TRUE

<b>Close</b>	<b>Return</b>	<b>Return * 10.000.000</b>	<b>T-1</b>	<b>T-6</b>	<b>T-30</b>	<b>T-90</b>
650.32	-0.008524	-85239.61836	FALSE	FALSE	FALSE	FALSE
645.25	-0.003399	-33991.04007	FALSE	FALSE	TRUE	TRUE
647.67	0.0016258	16257.54422	TRUE	TRUE	TRUE	TRUE
646.25	-0.000953	-9532.115363	FALSE	TRUE	TRUE	TRUE
648.25	0.001342	13419.69339	TRUE	TRUE	TRUE	TRUE
647.04	-0.000811	-8114.092905	TRUE	TRUE	TRUE	TRUE
651.73	0.0031366	31365.83131	TRUE	TRUE	TRUE	TRUE
652.8	0.0007124	7124.398112	TRUE	TRUE	TRUE	TRUE
655.95	0.0020906	20906.03928	TRUE	TRUE	TRUE	TRUE
662.47	0.0042955	42954.5331	TRUE	TRUE	TRUE	TRUE
661.05	-0.000932	-9318.933355	FALSE	TRUE	TRUE	TRUE
672.6	0.0075225	75225.47069	TRUE	TRUE	TRUE	TRUE
680.63	0.0051542	51542.37433	TRUE	TRUE	TRUE	TRUE
678.08	-0.00163	-16301.39657	FALSE	TRUE	TRUE	TRUE
660.08	-0.011684	-116843.6057	FALSE	FALSE	FALSE	FALSE
664.78	0.0030814	30813.77495	TRUE	TRUE	TRUE	TRUE
672.51	0.0050208	50207.88234	TRUE	TRUE	TRUE	TRUE
672.11	-0.000258	-2584.023498	TRUE	TRUE	TRUE	TRUE
671.82	-0.000187	-1874.155883	TRUE	TRUE	TRUE	TRUE
673.96	0.0013812	13811.99448	TRUE	TRUE	TRUE	TRUE
656.83	-0.011181	-111811.4079	FALSE	FALSE	FALSE	FALSE
658.9	0.0013665	13665.27011	TRUE	TRUE	TRUE	TRUE
662.61	0.0024385	24384.58611	TRUE	TRUE	TRUE	TRUE
661.62	-0.000649	-6493.543833	TRUE	TRUE	TRUE	TRUE
663.03	0.0009246	9245.739867	TRUE	TRUE	TRUE	TRUE
666.4	0.0022018	22018.02488	TRUE	TRUE	TRUE	TRUE
658.99	-0.004856	-48561.83684	FALSE	FALSE	FALSE	TRUE
669.18	0.0066641	66641.28345	TRUE	TRUE	TRUE	TRUE
672.99	0.0024657	24656.58516	TRUE	TRUE	TRUE	TRUE
666.65	-0.004111	-41107.08134	FALSE	FALSE	TRUE	TRUE
665.27	-0.0009	-8999.438127	FALSE	TRUE	TRUE	TRUE
655.9	-0.00616	-61603.08518	FALSE	FALSE	FALSE	TRUE
661.51	0.0036988	36987.76193	TRUE	TRUE	TRUE	TRUE
658.05	-0.002278	-22775.33476	FALSE	FALSE	TRUE	TRUE
654.36	-0.002442	-24421.49763	FALSE	FALSE	TRUE	TRUE
652.97	-0.000924	-9235.285073	FALSE	TRUE	TRUE	TRUE
653.44	0.0003125	3125.074805	TRUE	TRUE	TRUE	TRUE
654.65	0.0008035	8034.694109	TRUE	TRUE	TRUE	TRUE
651.63	-0.002008	-20081.15164	FALSE	TRUE	TRUE	TRUE

<b>Close</b>	<b>Return</b>	<b>Return * 10.000.000</b>	<b>T-1</b>	<b>T-6</b>	<b>T-30</b>	<b>T-90</b>
656.69	0.0033593	33593.32633	TRUE	TRUE	TRUE	TRUE
651.89	-0.003186	-31860.7728	FALSE	FALSE	TRUE	TRUE
655	0.002067	20669.74321	TRUE	TRUE	TRUE	TRUE
656.35	0.0008942	8941.763537	TRUE	TRUE	TRUE	TRUE
663.86	0.004941	49410.18712	TRUE	TRUE	TRUE	TRUE
661.79	-0.001356	-13563.07731	FALSE	TRUE	TRUE	TRUE
663.63	0.0012058	12058.23147	TRUE	TRUE	TRUE	TRUE
679.41	0.0102059	102059.0516	TRUE	TRUE	TRUE	TRUE
683.29	0.0024731	24731.36491	TRUE	TRUE	TRUE	TRUE
692.85	0.0060342	60341.5664	TRUE	TRUE	TRUE	TRUE
679.85	-0.008226	-82261.19657	FALSE	FALSE	FALSE	TRUE
679.71	-8.94E-05	-894.169524	TRUE	TRUE	TRUE	TRUE
688.2	0.005391	53910.02439	TRUE	TRUE	TRUE	TRUE
694.49	0.0039513	39513.15839	TRUE	TRUE	TRUE	TRUE
685.93	-0.005386	-53861.99084	FALSE	FALSE	FALSE	TRUE
689.79	0.0024371	24370.90095	TRUE	TRUE	TRUE	TRUE
697.11	0.0045844	45844.25033	TRUE	TRUE	TRUE	TRUE
692.33	-0.002988	-29881.43093	FALSE	FALSE	TRUE	TRUE
692.14	-0.000119	-1192.08496	TRUE	TRUE	TRUE	TRUE
692.46	0.0002007	2007.490634	TRUE	TRUE	TRUE	TRUE
690.4	-0.001294	-12939.08666	FALSE	TRUE	TRUE	TRUE
701.23	0.0067597	67596.80117	TRUE	TRUE	TRUE	TRUE
697.15	-0.002534	-25342.31242	FALSE	FALSE	TRUE	TRUE
687.88	-0.005814	-58135.61572	FALSE	FALSE	FALSE	TRUE
690.39	0.0015818	15818.15885	TRUE	TRUE	TRUE	TRUE
686.73	-0.002308	-23084.91035	FALSE	FALSE	TRUE	TRUE
697.35	0.0066648	66647.85342	TRUE	TRUE	TRUE	TRUE
700.19	0.0017651	17651.11167	TRUE	TRUE	TRUE	TRUE
707.38	0.0044369	44368.72744	TRUE	TRUE	TRUE	TRUE
703.81	-0.002197	-21973.4353	FALSE	FALSE	TRUE	TRUE
701.44	-0.001465	-14649.05032	FALSE	TRUE	TRUE	TRUE
702.47	0.0006372	6372.351181	TRUE	TRUE	TRUE	TRUE
701.37	-0.000681	-6805.775718	TRUE	TRUE	TRUE	TRUE
706.22	0.0029928	29928.08401	TRUE	TRUE	TRUE	TRUE
707.44	0.0007496	7496.179273	TRUE	TRUE	TRUE	TRUE
704.21	-0.001987	-19874.11779	FALSE	TRUE	TRUE	TRUE
701.09	-0.001928	-19284.0905	FALSE	TRUE	TRUE	TRUE
696	-0.003165	-31645.51568	FALSE	FALSE	TRUE	TRUE
698.91	0.001812	18119.96149	TRUE	TRUE	TRUE	TRUE

<b>Close</b>	<b>Return</b>	<b>Return * 10.000.000</b>	<b>T-1</b>	<b>T-6</b>	<b>T-30</b>	<b>T-90</b>
701.52	0.0016188	16188.33691	TRUE	TRUE	TRUE	TRUE
691.13	-0.00648	-64803.24576	FALSE	FALSE	FALSE	TRUE
699.5	0.005228	52279.73954	TRUE	TRUE	TRUE	TRUE
703.05	0.0021985	21984.87571	TRUE	TRUE	TRUE	TRUE
707.22	0.0025683	25683.09094	TRUE	TRUE	TRUE	TRUE
702.23	-0.003075	-30751.48821	FALSE	FALSE	TRUE	TRUE
702.85	0.0003833	3832.701397	TRUE	TRUE	TRUE	TRUE
707.98	0.0031583	31583.40231	TRUE	TRUE	TRUE	TRUE
698.21	-0.006035	-60348.99967	FALSE	FALSE	FALSE	TRUE
688.65	-0.005988	-59875.12641	FALSE	FALSE	FALSE	TRUE
683.32	-0.003374	-33744.25864	FALSE	FALSE	TRUE	TRUE
688.68	0.0033933	33933.25918	TRUE	TRUE	TRUE	TRUE
691.6	0.0018375	18375.07554	TRUE	TRUE	TRUE	TRUE
691	-0.000377	-3769.246686	TRUE	TRUE	TRUE	TRUE
699.09	0.0050551	50550.61153	TRUE	TRUE	TRUE	TRUE
702.72	0.0022492	22491.8703	TRUE	TRUE	TRUE	TRUE
704.71	0.0012282	12281.5105	TRUE	TRUE	TRUE	TRUE
702.42	-0.001414	-14135.90235	FALSE	TRUE	TRUE	TRUE
696.19	-0.003869	-38690.7554	FALSE	FALSE	TRUE	TRUE
692.53	-0.002289	-22891.70489	FALSE	FALSE	TRUE	TRUE
695	0.0015462	15461.94246	TRUE	TRUE	TRUE	TRUE
687.63	-0.00463	-46299.88713	FALSE	FALSE	TRUE	TRUE
689.48	0.0011668	11668.4448	TRUE	TRUE	TRUE	TRUE
687.62	-0.001173	-11731.60342	FALSE	TRUE	TRUE	TRUE
682.39	-0.003316	-33158.3976	FALSE	FALSE	TRUE	TRUE
661.7	-0.013372	-133715.1905	FALSE	FALSE	FALSE	FALSE
658.99	-0.001782	-17823.23458	FALSE	TRUE	TRUE	TRUE
665.12	0.0040212	40211.89413	TRUE	TRUE	TRUE	TRUE
671.01	0.003829	38289.91778	TRUE	TRUE	TRUE	TRUE
659.35	-0.007613	-76130.01589	FALSE	FALSE	FALSE	TRUE
662.82	0.0022796	22796.13594	TRUE	TRUE	TRUE	TRUE
655.99	-0.004498	-44983.98582	FALSE	FALSE	TRUE	TRUE
647.24	-0.005832	-58318.69858	FALSE	FALSE	FALSE	TRUE
650.34	0.0020751	20751.44201	TRUE	TRUE	TRUE	TRUE
652.77	0.0016197	16197.13502	TRUE	TRUE	TRUE	TRUE
651.98	-0.000526	-5259.399186	TRUE	TRUE	TRUE	TRUE
663.57	0.0076525	76524.89599	TRUE	TRUE	TRUE	TRUE
662.62	-0.000622	-6222.09741	TRUE	TRUE	TRUE	TRUE
661.88	-0.000485	-4852.819178	TRUE	TRUE	TRUE	TRUE

<b>Close</b>	<b>Return</b>	<b>Return * 10.000.000</b>	<b>T-1</b>	<b>T-6</b>	<b>T-30</b>	<b>T-90</b>
668.13	0.0040817	40817.14411	TRUE	TRUE	TRUE	TRUE
671.07	0.0019069	19068.58067	TRUE	TRUE	TRUE	TRUE
666.41	-0.003026	-30263.44883	FALSE	FALSE	TRUE	TRUE
658.7	-0.005054	-50538.15788	FALSE	FALSE	FALSE	TRUE
652.62	-0.004027	-40272.91118	FALSE	FALSE	TRUE	TRUE
667.8	0.009986	99860.29299	TRUE	TRUE	TRUE	TRUE
666.81	-0.000644	-6443.039933	TRUE	TRUE	TRUE	TRUE
670.44	0.0023578	23578.13186	TRUE	TRUE	TRUE	TRUE
670.19	-0.000162	-1619.740297	TRUE	TRUE	TRUE	TRUE
664.45	-0.003736	-37356.31083	FALSE	FALSE	TRUE	TRUE
665.43	0.0006401	6400.577246	TRUE	TRUE	TRUE	TRUE
662.14	-0.002153	-21525.38977	FALSE	TRUE	TRUE	TRUE
654.02	-0.005359	-53587.88464	FALSE	FALSE	FALSE	TRUE
649.65	-0.002912	-29115.86423	FALSE	FALSE	TRUE	TRUE
661.68	0.0079685	79685.45098	TRUE	TRUE	TRUE	TRUE
663.92	0.0014677	14677.37243	TRUE	TRUE	TRUE	TRUE
665.7	0.0011628	11628.24979	TRUE	TRUE	TRUE	TRUE
665.84	9.134E-05	913.3771686	TRUE	TRUE	TRUE	TRUE
668.51	0.001738	17380.13405	TRUE	TRUE	TRUE	TRUE
675.76	0.0046846	46845.73004	TRUE	TRUE	TRUE	TRUE
678.64	0.001847	18469.72792	TRUE	TRUE	TRUE	TRUE
672.59	-0.003889	-38890.35042	FALSE	FALSE	TRUE	TRUE
677.52	0.0031717	31717.07327	TRUE	TRUE	TRUE	TRUE
686.49	0.0057121	57120.76309	TRUE	TRUE	TRUE	TRUE
680.1	-0.004061	-40614.46913	FALSE	FALSE	TRUE	TRUE
681.6	0.0009568	9568.069406	TRUE	TRUE	TRUE	TRUE
684.71	0.0019771	19771.14335	TRUE	TRUE	TRUE	TRUE
683.02	-0.001073	-10732.49876	FALSE	TRUE	TRUE	TRUE
685.4	0.0015107	15106.79293	TRUE	TRUE	TRUE	TRUE
685.92	0.0003293	3293.407369	TRUE	TRUE	TRUE	TRUE
681.74	-0.002655	-26546.83596	FALSE	FALSE	TRUE	TRUE
686.69	0.003142	31419.53071	TRUE	TRUE	TRUE	TRUE
688.28	0.0010044	10044.45985	TRUE	TRUE	TRUE	TRUE
680.77	-0.004765	-47647.47085	FALSE	FALSE	TRUE	TRUE
678.71	-0.001316	-13161.61019	FALSE	TRUE	TRUE	TRUE
682.72	0.0025583	25583.45573	TRUE	TRUE	TRUE	TRUE
679.66	-0.001951	-19509.14441	FALSE	TRUE	TRUE	TRUE
680.39	0.0004662	4662.36357	TRUE	TRUE	TRUE	TRUE
674.28	-0.003918	-39176.30883	FALSE	FALSE	TRUE	TRUE

<b>Close</b>	<b>Return</b>	<b>Return * 10.000.000</b>	<b>T-1</b>	<b>T-6</b>	<b>T-30</b>	<b>T-90</b>
663.39	-0.007071	-70713.70279	FALSE	FALSE	FALSE	TRUE
661.6	-0.001173	-11734.4377	FALSE	TRUE	TRUE	TRUE
675.49	0.0090234	90234.34235	TRUE	TRUE	TRUE	TRUE
679.18	0.002366	23659.6459	TRUE	TRUE	TRUE	TRUE
685.84	0.0042379	42379.47475	TRUE	TRUE	TRUE	TRUE
691.04	0.0032803	32803.44419	TRUE	TRUE	TRUE	TRUE
691.04	0	0	TRUE	TRUE	TRUE	TRUE
694.47	0.0021503	21502.96753	TRUE	TRUE	TRUE	TRUE
689.09	-0.003378	-33775.04454	FALSE	FALSE	TRUE	TRUE
681.07	-0.005084	-50842.09301	FALSE	FALSE	FALSE	TRUE
687.51	0.0040873	40872.68652	TRUE	TRUE	TRUE	TRUE
688.14	0.0003978	3977.836495	TRUE	TRUE	TRUE	TRUE
688.95	0.0005109	5109.013439	TRUE	TRUE	TRUE	TRUE
683.78	-0.003271	-32712.97832	FALSE	FALSE	TRUE	TRUE
692.15	0.0052838	52838.22836	TRUE	TRUE	TRUE	TRUE
681.66	-0.006632	-66324.44671	FALSE	FALSE	FALSE	TRUE
687.57	0.0037491	37491.34531	TRUE	TRUE	TRUE	TRUE
681.69	-0.00373	-37300.02447	FALSE	FALSE	TRUE	TRUE
681.64	-3.18E-05	-318.4904755	TRUE	TRUE	TRUE	TRUE
688.62	0.0044246	44245.57877	TRUE	TRUE	TRUE	TRUE
702.1	0.0084193	84193.28639	TRUE	TRUE	TRUE	TRUE
708.84	0.0041493	41492.74623	TRUE	TRUE	TRUE	TRUE
716.73	0.0048073	48073.35608	TRUE	TRUE	TRUE	TRUE
705.43	-0.006902	-69016.51975	FALSE	FALSE	FALSE	TRUE
707.71	0.0014014	14014.25619	TRUE	TRUE	TRUE	TRUE
706.09	-0.000995	-9952.652437	FALSE	TRUE	TRUE	TRUE
703.1	-0.001843	-18429.93713	FALSE	TRUE	TRUE	TRUE
706.68	0.0022057	22057.0864	TRUE	TRUE	TRUE	TRUE
701.5	-0.003195	-31951.18857	FALSE	FALSE	TRUE	TRUE
704.64	0.0019396	19396.23755	TRUE	TRUE	TRUE	TRUE
708.72	0.0025074	25073.71174	TRUE	TRUE	TRUE	TRUE
700.4	-0.005129	-51285.2048	FALSE	FALSE	FALSE	TRUE
711.52	0.006841	68409.745	TRUE	TRUE	TRUE	TRUE
710.89	-0.000385	-3847.130977	TRUE	TRUE	TRUE	TRUE
707.01	-0.002377	-23768.48539	FALSE	FALSE	TRUE	TRUE
712.14	0.0031398	31398.23648	TRUE	TRUE	TRUE	TRUE
713.98	0.0011206	11206.48006	TRUE	TRUE	TRUE	TRUE
721.53	0.0045684	45683.76765	TRUE	TRUE	TRUE	TRUE
709.6	-0.007241	-72408.16511	FALSE	FALSE	FALSE	TRUE

<b>Close</b>	<b>Return</b>	<b>Return * 10.000.000</b>	<b>T-1</b>	<b>T-6</b>	<b>T-30</b>	<b>T-90</b>
714.34	0.0028914	28913.93104	TRUE	TRUE	TRUE	TRUE
718.68	0.0026306	26305.65402	TRUE	TRUE	TRUE	TRUE
718.68	0	0	TRUE	TRUE	TRUE	TRUE
715.36	-0.002011	-20109.06636	FALSE	TRUE	TRUE	TRUE
718.39	0.0018356	18356.37908	TRUE	TRUE	TRUE	TRUE
720.43	0.0012315	12314.98938	TRUE	TRUE	TRUE	TRUE
727.44	0.0042054	42053.94781	TRUE	TRUE	TRUE	TRUE
727.37	-4.18E-05	-417.9324277	TRUE	TRUE	TRUE	TRUE
722.1	-0.003158	-31580.5187	FALSE	FALSE	TRUE	TRUE

<b>Periode waktu (Hari)</b>	<b>VaR-GJR-TARCH (0,1) Dengan Threshold 1</b>	<b>n</b>	<b>x</b>	<b>Likelihood Ratio (LR)</b>
1	8.855	475	185	-137,907
6	21.691	475	146	-127,276
30	48.504	475	84	-96,248
90	84.011	475	34	54,956

## Lampiran 8. Program untuk menghitung VaR GJR-TARCH dengan Matlab

### 1. M-File

```

clc;
p0=input('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=0.112026;%nilai skewness
v=0.008515;%nilai volatilitas
z_koreksi=Z-(1/6*((Z^2)-1)*s);%data 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=p0*z_koreksi*v*a1;%VaR pada waktu t1
VaR_2=p0*z_koreksi*v*a2;%VaR pada waktu t2
VaR_3=p0*z_koreksi*v*a3;%VaR pada waktu t3
VaR_4=p0*z_koreksi*v*a4;%VaR pada waktu t4
clc;
fprintf('=====\\n')
fprintf('      ANALISIS RISIKO INVESTASI SAHAM SYARIAH\\n')
fprintf('          DENGAN           \\n')
fprintf('          MODEL VaR-GJR-TARCH       \\n')
fprintf('=====\\n')
fprintf('Value at Risk(t)=p0*z_koreksi*volatilitas*akar t \\n')
fprintf('          \\n')
fprintf('Nilai Awal Investasi :Rp.%8.0f     \\n',p0)
fprintf('Nilai z_koreksi :Rp.%8.4f  \\n',z_koreksi)
fprintf('Nilai Volatilitas :Rp.%8.6f  \\n',v)
fprintf('Periode Waktu :Rp.%8.0f hari   \\n',t1)
fprintf('Periode Waktu :Rp.%8.0f hari   \\n',t2)
fprintf('Periode Waktu :Rp.%8.0f hari   \\n',t3)
fprintf('Periode Waktu :Rp.%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 %2.0f Hari Kedepan:Rp.%8.0f \\n',t3,VaR_3)
fprintf('4.Besar Risiko Pada Waktu %2.0f Hari Kedepan:Rp.%8.0f \\n',t4,VaR_4)
fprintf('=====\\n')

```

## 2. Output

```
=====
ANALISIS RESIKO INVESTASI SAHAM SYARIAH
DENGAN
MODEL VaR-GJR-TARCH
=====
| Value at Risk(t)=p0*z_koreksi*volatilitas*akar t |
|
| Nilai Awal Investasi :Rp.10000000 |
| Nilai z_koreksi : 1.9069 |
| Nilai Volatilitas : 0.00851500 |
| 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. 162376 |
| 2. Besar Risiko Pada Waktu 6 Hari Kedepan :Rp. 397739 |
| 3. Besar Risiko Pada Waktu 30 Hari Kedepan :Rp. 889372 |
| 4. Besar Risiko Pada Waktu 90 Hari Kedepan :Rp. 1540437 |
=====
```

**Lampiran 9. Tabel Chi-Kuadrat**

<b>DB</b>	<b>0.25</b>	<b>0.2</b>	<b>0.15</b>	<b>0.1</b>	<b>0.05</b>	<b>0.025</b>	<b>0.02</b>	<b>0.01</b>
<b>1</b>	1.3233	1.6424	2.0723	2.7055	3.8415	5.0239	5.4119	6.6349
<b>2</b>	2.7726	3.2189	3.7942	4.6052	5.9915	7.3778	7.824	9.2103
<b>3</b>	4.1083	4.6416	5.317	6.2514	7.8147	9.3484	9.8374	11.345
<b>4</b>	5.3853	5.9886	6.7449	7.7794	9.4877	11.143	11.668	13.277
<b>5</b>	6.6257	7.2893	8.1152	9.2364	11.07	12.833	13.388	15.086
<b>6</b>	7.8408	8.5581	9.4461	10.645	12.592	14.449	15.033	16.812
<b>7</b>	9.0371	9.8032	10.748	12.017	14.067	16.013	16.622	18.475
<b>8</b>	10.219	11.03	12.027	13.362	15.507	17.535	18.168	20.09
<b>9</b>	11.389	12.242	13.288	14.684	16.919	19.023	19.679	21.666
<b>10</b>	12.549	13.442	14.534	15.987	18.307	20.483	21.161	23.209
<b>11</b>	13.701	14.631	15.767	17.275	19.675	21.92	22.618	24.725
<b>12</b>	14.845	15.812	16.989	18.549	21.026	23.337	24.054	26.217
<b>13</b>	15.984	16.985	18.202	19.812	22.362	24.736	25.472	27.688
<b>14</b>	17.117	18.151	19.406	21.064	23.685	26.119	26.873	29.141
<b>15</b>	18.245	19.311	20.603	22.307	24.996	27.488	28.259	30.578
<b>16</b>	19.369	20.465	21.793	23.542	26.296	28.845	29.633	32
<b>17</b>	20.489	21.615	22.977	24.769	27.587	30.191	30.995	33.409
<b>18</b>	21.605	22.76	24.155	25.989	28.869	31.526	32.346	34.805
<b>19</b>	22.718	23.9	25.329	27.204	30.144	32.852	33.687	36.191
<b>20</b>	23.828	25.038	26.498	28.412	31.41	34.17	35.02	37.566
<b>21</b>	24.935	26.171	27.662	29.615	32.671	35.479	36.343	38.932
<b>22</b>	26.039	27.301	28.822	30.813	33.924	36.781	37.659	40.289
<b>23</b>	27.141	28.429	29.979	32.007	35.172	38.076	38.968	41.638
<b>24</b>	28.241	29.553	31.132	33.196	36.415	39.364	40.27	42.98
<b>25</b>	29.339	30.675	32.282	34.382	37.652	40.646	41.566	44.314
<b>26</b>	30.435	31.795	33.429	35.563	38.885	41.923	42.856	45.642
<b>27</b>	31.528	32.912	34.574	36.741	40.113	43.195	44.14	46.963
<b>28</b>	32.62	34.027	35.715	37.916	41.337	44.461	45.419	48.278
<b>29</b>	33.711	35.139	36.854	39.087	42.557	45.722	46.693	49.588
<b>30</b>	34.8	36.25	37.99	40.256	43.773	46.979	47.962	50.892
<b>31</b>	35.887	37.359	39.124	41.422	44.985	48.232	49.226	52.191
<b>32</b>	36.973	38.466	40.256	42.585	46.194	49.48	50.487	53.486
<b>33</b>	38.058	39.572	41.386	43.745	47.4	50.725	51.743	54.776
<b>34</b>	39.141	40.676	42.514	44.903	48.602	51.966	52.995	56.061
<b>35</b>	40.223	41.778	43.64	46.059	49.802	53.203	54.244	57.342
<b>36</b>	41.304	42.879	44.764	47.212	50.998	54.437	55.489	58.619
<b>37</b>	42.383	43.978	45.886	48.363	52.192	55.668	56.73	59.893
<b>38</b>	43.462	45.076	47.007	49.513	53.384	56.896	57.969	61.162
<b>39</b>	44.539	46.173	48.126	50.66	54.572	58.12	59.204	62.428

<b>DB</b>	<b>0.25</b>	<b>0.2</b>	<b>0.15</b>	<b>0.1</b>	<b>0.05</b>	<b>0.025</b>	<b>0.02</b>	<b>0.01</b>
<b>40</b>	45.616	47.269	49.244	51.805	55.758	59.342	60.436	63.691
<b>41</b>	46.692	48.363	50.36	52.949	56.942	60.561	61.665	64.95
<b>42</b>	47.766	49.456	51.475	54.09	58.124	61.777	62.892	66.206
<b>43</b>	48.84	50.548	52.588	55.23	59.304	62.99	64.116	67.459
<b>44</b>	49.913	51.639	53.7	56.369	60.481	64.201	65.337	68.71
<b>45</b>	50.985	52.729	54.81	57.505	61.656	65.41	66.555	69.957
<b>46</b>	52.056	53.818	55.92	58.641	62.83	66.617	67.771	71.201
<b>47</b>	53.127	54.906	57.028	59.774	64.001	67.821	68.985	72.443
<b>48</b>	54.196	55.993	58.135	60.907	65.171	69.023	70.197	73.683
<b>49</b>	55.265	57.079	59.241	62.038	66.339	70.222	71.406	74.919
<b>50</b>	56.334	58.164	60.346	63.167	67.505	71.42	72.613	76.154
<b>51</b>	57.401	59.248	61.45	64.295	68.669	72.616	73.818	77.386
<b>52</b>	58.468	60.332	62.553	65.422	69.832	73.81	75.021	78.616
<b>53</b>	59.534	61.414	63.654	66.548	70.993	75.002	76.223	79.843
<b>54</b>	60.6	62.496	64.755	67.673	72.153	76.192	77.422	81.069
<b>55</b>	61.665	63.577	65.855	68.796	73.311	77.38	78.619	82.292
<b>56</b>	62.729	64.658	66.954	69.919	74.468	78.567	79.815	83.513
<b>57</b>	63.793	65.737	68.052	71.04	75.624	79.752	81.009	84.733
<b>58</b>	64.857	66.816	69.149	72.16	76.778	80.936	82.201	85.95
<b>59</b>	65.919	67.894	70.246	73.279	77.931	82.117	83.391	87.166
<b>60</b>	66.981	68.972	71.341	74.397	79.082	83.298	84.58	88.379