PENERAPAN MODEL EXPONENTIAL GENERALIZED AUTOREGRESSIVE CONDITIONAL HETEROSCEDASTICITY (EGARCH) PADA ANALISIS RISIKO DENGAN VALUE AT RISK (VaR)

(Studi Kasus : Penutupan JII)

Skripsi

Untuk mememnuhi sebagian persyaratan

Mencapai derajat Sarjana S-1

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JURUSAN MATEMATIKA

FAKULTAS SAINS DAN TEKNOLOGI

UNIVERSITAS ISLAM NEGERI SUNAN KALI JAGA

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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 Program Studi Matematika.

Dengan ini kami mengharap agar skripsi/tugas akhir Saudara tersebut di atas dapat segera dimunaqsyahkan. Atas perhatiannya kami ucapkan terima kasih.

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Adalah hasil karya sendiri dan sepanjang sepengetahuan penulis tidak berisi materi yang dipublikasikan atau ditulis orang lain, kecuali bagian tertentu yang diambil sebagai bahan acuan yang secara tertulis dalam naskah dan disebutkan dalam daftar pustaka. Apabila terbukti pernyataan ini tidak benar sepenuhnya menjadi tanggung jawab penulis.

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"Hai orang-orang beriman apabila kamu dikatakan kepadamu : "Berlapang-lapanglah dalam majlis", Maka lapangkanlah niscaya Allah akan memberi kepalangan untukmu. Dan apabila dikatakan : "Berdirilah kamu", Maka berdirilah, niscaya Allah akan meninggikan orang-orang yang diberi ilmu pengetahuan beberapa derajat. Dan Allah Maha mengetahui apa yang kamu kerjakan."

(Q.S. Al-Mujadilah : 11)

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"kita hidup untuk saat ini, kita bermimpi untuk masa depan, dan kita belajar untuk kebenaran abadi"

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"Indahnya hidup bukan karena seberapa banyak orang yang mengenal kita, namun seberapa banyak orang yang berbahagia karena kita"

(Syaifullah)

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Yogyakarta, 2 Oktober 2014

Penulis

Nurhasanah
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DAFTAR ISI

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DAFTAR LAMPIRAN

DAFTAR SIMBOL

X = Variabel random

t_1^* = statistik uji akar unit *Augmented Dickey Fuller*

B = Operator backshift

X_t = Data *time series*

d = Orde pembeda

s = Simpangan baku

$T(X_t)$ = Fungsi transformasi

λ = Parameter transformasi

ϕ = Parameter model AR

ε = Nilai kesalahan (error)

p = Order AR

θ = Parameter model MA

q = Order MA

γ_k = Kovarians antara $X_t$dan X_{t-1}

s_{X_t} =Standar deviasi X_t

n = Jumlah data

$\overline{X}$ = Nilai rata-rata (*mean*)

μ = Nilai rata-rata (*mean*)

σ_t = Variansi dari residual pada waktu t

α_0 = Komponen konstanta

α_i = Parameter dari ARCH

α = Z-Score

α' = Z-Koreksi

β = Parameter dari GARCH

γ = Parameter pertama dari EGARCH

ε_{t-i}^2 = Kuadrat residual pada waktu t-i

σ_{t-j}^2 = Variansi dari residual pada saat t-j

$\hat{\sigma}_{\varepsilon}^2$ = Estimasi maksimum *likelihood* dari σ_{ε}^2,

M = Jumlah parameter pada model,

$\hat{\sigma}_{z}^2$ = Sampel variansi dari data *time series*.

p^* = Probabilitas terjadinya *failure* dibawah *null hypothesis*

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(Studi Kasus : Penutupan JII)

Oleh :
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ABSTRAK

Salah satu bentuk investasi di pasar modal adalah saham, pada investasi saham biasanya investor memperhatikan tingkat pengembalian (*return*). Banyak ditemukan fakta di lapangan volatilitas dalam *return* bersifat asimetris yang biasa disebut *leverage effect* dalam volatilitas. Sehingga untuk menghadapi kasus seperti ini model yang lebih tepat adalah model volatilitas *Exponential Generalized Autoregressive Conditional Heteroscedasticity* (EGARCH). Selain return, pengukuran risiko juga merupakan hal yang penting. Salah satu alat ukur yang digunakan untuk mengestimasi risiko adalah *Value at Risk* (VaR).

Padapenerapannya perhitungan analisis risiko VaR dengan pendekatan model EGARCH, memiliki langkah-langkah utama yaitu, menentukan nilai *return*, menguji kestasioneran data, menguji kenormalan data, menentukan model yang sesuai untuk persamaan *mean*, menguji ada tidaknya efek ARCH, menentukan model GARCH, pengujian efek asimetris, menentukan model EGARCH, menghitung nilai VaR dengan pendekatan model EGARCH, dan menguji validasi perhitungan VaR tersebut. Adapun data yang digunakan data indeks saham syariah harian *Jakarta Islamic Index* (JII) periode 1 Januari 2012 – 30 April 2014.

Hasil dari penelitian ini menunjukkan bahwa model EGARCH (1,1) adalah model terbaik yang memenuhi asumsi-asumsi pada pemeriksaan diagnosa. Sehingga model EGARCH (1,1) yang digunakan untuk menghitung nilai risiko dengan VaR, hasil kemungkinan kerugian yang didapat investor pada tingkat kepercayaan 95% dengan danayang diinvestasikan sebesar Rp.100.000.000padasaham *Jakarta Islamic Index* (JII) adalah dalam 1 hari ke depan sebesar Rp. 1.377.012,515 dalam 5 hari ke depan sebesar Rp. 3.079.093,598.

Kata Kunci : Volatilitas, *Return*, Heteroskedastisitas, Asimetris, EGARCH,*Value at Risk* (VaR)

BAB I

PENDAHULUAN

1.1 Latar Belakang Masalah

Investasi adalah bagian dari perencanaan keuangan, karena dengan berinvestasi maka harta kekayaan yang kita miliki dapat terkendali dengan baik. Pasar modal banyak sekali menawarkan berbagai investasi yang menjanjikan untuk diikuti. Saat ini di Negara-negara yang menganut sistem ekonomi pasar menjadikan pasar modal salah satu sumber kemajuan ekonomi

Pada pasar modal inilah para investor dapat memilih investasi berbagai investasi yang ada. Keputusan untuk melakukan investasi selalu beriringan dengan probabilitas untung dan rugi yang mana tak seorang pun mampu memprediksi apa yang akan terjadi. Oleh karena itu, setiap pelaku investasi perlu melakukan upaya pengendalian risiko yang disebut dengan manajemen risiko.

Manajemen Risiko adalah seperangkat kebijakan, prosedur yang lengkap yang dipunyai organisasi untuk mengelola, memonitor, dan mengendalikan ekposur organisasi terhadap risiko (Henry Faizal: 2004). Manajemen risiko dikenal sebagai pengambilan keputusan risiko yang cukup rasional dalam seluruh proses penanganan risiko. Manajemen risiko memiliki tujuan untuk mempermudah penilaian terhadap kemungkinan kerugian yang dihadapi oleh investor dengan cara mengenal dan

memahami seluruh risiko yang sudah ada sebelumnya, sehingga lebih mudah untuk diidentifikasi kemungkinan yang akan terjadi.

Risiko muncul karena ada kondisi ketidakpastian, maka untuk mengukur risiko, kita harus memahami konsep distribusi probabilitas. Distribusi probabilitas adalah himpunan hasil-hasil yang mungkin terjadi dengan probabilitas terjadinya. Risiko diukur dengan distribusi probabilitas, karena kurva normal menunjukan kemungkinan memperoleh keuntungan diatas sama dengan kemungkinan memperoleh keuntungan dibawah. Semakin tinggi risiko semakin tinggi keuntungan yang diharapkan Salah satu teknik yang saat ini sering digunakan untuk mengukur risiko investasi adalah *Value at Risk (VaR). Value at Risk* merupakan teknik pengukuran risiko yang dikembangkan dari kurva normal (Mahmud,2012 : 145-148).

Dalam hal manajemen dan administrasi, perencanaan merupakan kebutuhan yang besar, karena waktu tenggang untuk pengambilan keputusan dapat berkisar dari beberapa tahun sampai beberapa hari atau bahkan beberapa jam. Peramalan merupakan alat bantu yang penting dalam perencanaan yang efektif dan efisien. Peramalan memiliki tujuan untuk memperkecil risiko dan faktor-faktor ketidakpastian. Seperti halnya, dalam masalah saham apabila tidak diketahui prediksi berapa saham yang akan dibeli pada waktu yang akan datang, maka juga tidak akan diketahui pula berapa saham yang terjual untuk periode berikutnya, sehingga data yang ada sekarang sangatlah penting sebagai alat untuk mengukur prediksi

masa depan. Dalam hal ini, peneliti ingin menggunakan data indeks harga saham *Jakarta Islamic Index* (JII) yang diambil dari www.*finance.yahoo.com*. Saham yang masuk pada data indeks saham JII berjumlah 30 (tiga puluh) saham merupakan saham yang tidak bertentangan dengan syariah seperti tidak menerapkan sistem riba, tidak menjalankan usaha perjudian, dan tidak memproduksi minuman/makanan yang haram.

Model runtun waktu (*time series*) adalah pendugaan masa depan yang dilakukan berdasarkan nilai masa lalu dari suatu variabel atau kesalahan masa lalu (Makridakis, 1999: 9).Langkah penting dalam memilih suatu modelruntun waktu (*time series*) yang tepat adalah dengan mempertimbangkan jenis pola data, sehingga metode yang paling tepat dengan pola tersebut dapat diuji. Pola data dapat dibedakan menjadi empat jenis yaitu pola horizontal, pola musiman, pola siklis, dan pola trend. Nilai data berfluktasi di sekitar nilai rata-rata yang konstan disebut pola horizontal. Sebagai contoh penjualan tiap bulan suatu produk tidak meningkat atau menurun secara konsisten pada suatu waktu dapat dipertimbangkan untuk pola horizontal. Suatu deret dipengaruhi oleh faktor musiman disebut pola musiman yang ditandai dengan adanya pola perubahan yang berulang secara otomatis dari tahun ke tahun. Data dipengaruhi oleh fluktuasi ekonomi jangka panjang seperti yang berhubungan dengan siklus bisnis yang dinamakan pola siklis. Terdapat

kenaikan atau penurunan sekuler jangka panjang dalam data disebut pola trend (Makridakis,1999: 9-10).

Model umum runtun waktu yang umum digunakan untuk memodelkan data ekonomi dan keuangan dengan asumsi stasioneritas terhadap ragam (homoskedastisitas) adalah *Autoregressive* (AR), *Moving Average* (MA) dan *Autoregressive Moving Average* (ARMA). Namun ada salah satu metode yang dapat digunakan untuk mengatasi masalah heteroskedastisitas adalah metode *Autoregressive Conditional Heteroscedasticity* (*ARCH*) yang diperkenalkan Engle pada tahun 1982. Perubahan variansi pada model ARCH dipengaruhi oleh sejumlah T data acak sebelumnya. Model tersebut di kembangkan kembali oleh Tim Bollerslev (1986 dan 1994) yang dikenal dengan nama GARCH (*Generalized Autoregressive Conditional Heteroscedasticity* dengan maksud untuk mengatasi orde yang terlalu tinggi pada ARCH (Tsay,2010).

Model ARCH dan GARCH berguna hanya untuk data yang simetris. Pada dasarnya data return yang mendapatkan kondisi *bad news* dan *good news* akan memberikan pengaruh yang tidak simetris terhadap volatilitas data return tersebut. Model yang dapat digunakan untuk menghadapi data yang asimetris adalah model Exponential GARCH yang diperkenalkan oleh Nelson di tahun 1991. Model EGARCH tidak membatasi nilai parameter yang non-negatif untuk menghasilkan variansi bersyarat non-negatif. Variansi error masa sekarang tidak hanya

dipengaruhi oleh error masa lalu tetapi juga dipengaruhi oleh variansi error masa lalu. Model EGARCH dapat digunakan investor dalam memilih periode yang tepat saat ingin berinvestasi dan menjual saham. Adapun Karakteristik model EGARCH dapat dilihat dari nilai volatilitas (tingkat perubahan dalam harga saham) yang menghadapi data perubahan asimetris, jika diprediksi nilai volatilitas tinggi maka menunjukkan tingkat risiko yang tinggi sehingga investor akan meninggalkan pasar atau menjual aset guna meminimalkan risiko. Bagi orang awam nilai volatilitas berguna untuk mengetahui dan memahami gambaran umum tentang risiko dalam berinvestasi saham sehingga dapat menjadi pertimbangan dalam pengambilan keputusan dan kebijakan para pemegang saham(Tsay, 2005).

Naik turun harga saham memberikan sebuah dampak yang cukup berpengaruh bagi para investor. Perubahan harga saham yang lebih tinggi akan memberikan dampak positif ke berbagai pihak (investor) dan memberikan dampak negatif bila mengalami penurunan. Dalam pasar modal tersedia berbagai investasi yang menawarkan dengan tingkat keuntungan dan risiko yang berbeda. Oleh karena itu, diperlukan alat ukur untuk mengukur risiko pasar tersebut, agar dapat diketahui sejauh mana investor dapat dengan aman berinvestasi. Pengukuran risiko merupakan hal yang sangat penting dalam analisis keuangan mengingat hal ini masih berhubungan dengan investasi dana yang cukup besar.

Salah satu cara yang sangat dikenal dalam manganalisis risiko keuangan adalah perhitungan VaR (*Value at Risk*). Peneliti ingin mencoba

memberikan penerapan model EGARCH untuk memperoleh hasil yang lebih baik pada perhitungan VaR dengan data sampel yang lebih panjang terutama pada harga saham JII.

Dari latar belakang di atas maka peneliti mengambil judul tentang "**Penerapan model *Exponential Generalized Autoreggresive Conditional Heteroscedasticity* (EGARCH) pada analisis risiko dengan *Value at Risk* (VaR)** *".*

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. Data yang digunakan adalah data Indeks Harga Saham JII *(Jakarta Islamic Indeks)* periode 1 Januari 2012 sampai 30 April 2014
2. Menggunakan bantuan *software* E-Views 7.1, Microsoft Excel 2007 dan MATLAB 7.1.
3. Estimasi parameter menggunakan metode *Maximum Likelihood.*

1.3 Rumusan Masalah

Berdasarkan uraian di atas, maka masalah yang akan dikaji dalam penelitian ini adalah

1. Bagaimana prosedur penerapan model EGARCH pada analisis risiko investasi dengan VaR?

2. Bagaimana bentuk model EGARCH untuk mengukur besar risiko investasi dengan VaR pada indeks harga saham syariah JII?
3. Berapa besar risiko investasi dengan VaR pada indeks harga saham syariah JII menggunakan model EGARCH ?

1.4 Tujuan Penelitian

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

1. Mengetahui Prosedur penerapan model EGARCH pada analisis risiko investasi dengan VaR.
2. Mengetahui bentuk model EGARCH untuk mengukur besar risiko investasi dengan VaR pada indeks harga saham syariah JII.
3. Mengetahui besar risiko investasi dengan VaR pada indeks harga saham syariah JII menggunakan model EGARCH.

1.5 Manfaat Penelitian

1. Menambah referensi terapan dalan analisis risiko investasi dengan VaR menggunakan model EGARCH
2. Menganalisis risiko investasi dengan VaR pada data time series dengan model EGARCH
3. Mendapatkan informasi tentang hasil peramalan analisis risiko investasi dengan VaR pada periode selanjutnya.

1.6 Tinjauan Pustaka

Tinjauan pustaka yang digunakan oleh peneliti adalah beberapa penelitian yang relevan dengan tema yang diambil peneliti, antara lain:

1. Penelitian Dian Harry Hanggara (2013) yang berjudul Model Analisis Risiko Investasi dengan *Value at Risk* (VaR) – *Generalized Autoregressive Conditional Heteroscedasticity* (GARCH). Dari penelitian tersebut didapatkan model VaR-GARCH (1,1) hasil kemungkinan kerugian yang didapat investor pada tingkat kepercayaan 95% dengan dana yang diinvestasikan sebesar Rp.100.000.000,- pada saham *Jakarta Islamic Index* (JII) adalah dalam 1 hari ke depan sebesar Rp. 502.229,890, dalam 5 hari ke depan sebesar Rp. 1.123.020,175 dan dalam 20 hari ke depan sebesar Rp. 2.246.040,350.
2. Penelitian Dewi Umi Ningsih (2013) yang berjudul *Model Exponential Generalized Autoregressive Conditional Heteroscedasticity* (EGARCH) *dan penerapan pada data indeks harga saham*. Dalam penelitian ini Model EGARCH diterapkan pada data indeks harga saham PT. ANTAM (persero) tbk periode 20 Januari 2011 – 29Februari 2012. Diperoleh model terbaik adalah EGARCH (1,1) dengan persamaan *mean* MA(1) adalah $\Delta X_t^{"} = 0,990399\varepsilon_{t-1} + \varepsilon_t$ dan persamaan variansi EGARCH (1,1) adalah $\ln \hat{\sigma}_t^2 = -0.918204 + 0.324153 \frac{\varepsilon_{t-1}^2}{\sigma_{t-1}^2} - 0.112845 \frac{\varepsilon_{t-1}^2}{\sigma_{t-1}^2}$

$+0.90108 \ln \sigma_{t-1}^2$ Nilai peramalan data indeks harga saham PT.ANTAM,tbk untuk 5 periode ke depan memiliki pola yang tidak jauh berbeda dengan data aktualnya yaitu berkisar pada nilai 1,9.

3. Penelitian Julianto, Entit Puspita, dan Fitriani Agustina yang berjudul *Penerapan model EGARCH-M dalam peramalan nilai harga saham dan pengukuran Value at Risk (VaR).* Pada penelitian ini membahas mengenai model voaltilitas *Exponential Generalized Autoregressive Conditional Heteroscedasticity in mean* yang diterapkan pada data indeks harga saham harian PT.Gudang Garam Tbk. periode 29 Juli 2004 sampai 29 Juni 2012 yang secara keseluruhan berjumlah 2000 data. Dari penelitian ini di dapat hasil model terbaik yang digunakan adalah model ARMA(2,1)-EGARCH(1,1) karena dapat dilihat nilai harga saham pada model terbaik tidak jauh berbeda dengan nilai harga saham yang sebenarnya. Sehingga model tersebutlah yang diterapkan pada perhitungan analisis risiko menggunakan VaR.

Pada penelitian yang sekarang memiliki persamaan dan perbedaan baik itu dari model yang akan digunakan maupun objek yang diteliti. Penelitian dari Dian Harry Hanggara, objek yang diteliti sebelumnya sama menggunakan saham JII tetapi model yang digunakan berbeda pada penelitian sebelumnya dengan model GARCH, pada penelitian sekarang yaitu dengan model EGARCH. Sedangkan pada penelitian dari Julianto, Entit Puspita, dan Fitriani Agustina, dan Dewi Uminingsih objek yang diteliti berbeda dengan objek yang diteliti peneliti sebelumnya. Jika pada

penelitian sebelumnya objek yang diteliti adalah saham Gudang Garam tbk dan PT. ANTAM (persero) tbk, pada penelitian yang sekarang objek yang diteliti adalah saham *Jakarta Islamic Index* (JII) tetapi model yang digunakan sama yaitu EGARCH. Selain itu untuk penelitian Dewi Uminingsih tidak menerapkan model EGARCH tersebut pada perhitungan analisis risiko dengan VaR.

Tabel 1.1 Kajian pustaka

No.	Nama Peneliti	Judul	Metode	Objek
1	Dian Harry Hanggara (UIN)	Analisis Risiko Investasi dengan *Value at Risk* (VaR) –*Generalized Autoregressive Conditional Heteroscedasticity* (GARCH)	Var-Garch	JII
2	Dewi Uminingsih(UNY)	Model *Exponential Generalized Autoregressive Conditional Heteroscedasticity* (EGARCH)dan Penerapan Pada Data Indeks Harga Saham	EGARCH	PT. ANTAM, Tbk
3	Julianto, Entit Puspita, dan	Penerapan Model *EGARCH-M* dalam	EGARCH -M dan	PT.Gudang Garam,

	Fitriani Agustina (UNIBRAW)	Peramalan Nilai Harga Saham dan Pengukuran *Value at Risk* (VaR)	VaR	Tbk
4	Nurhasanah (UIN)	Penerapan Model *Exponential Generalized Autoregressive Conditional Heteroscedasticity* (EGARCH) Pada Analisis Risiko dengan *Value at Risk* (VaR)	VaR - EGARCH	JII

1.7 Sistematika Penulisan

Untuk memberikan gambaran menyeluruh dan memudahkan dalam penelitian mengenai Penerapan model EGARCH pada analisis risiko dengan VaR,secara garis besar sistematika penulisannya yaitu :

BAB I : PENDAHULUAN

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

BAB II : LANDASAN TEORI

Berisi tentang teori penunjang yang digunakan dalam pembahasan yaitu Penerapan model EGARCH pada analisis risiko dengan VaR

BAB III : METODE PENELITIAN

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

BAB IV : PENERAPAN MODEL EGARCH PADA ANALISIS RISIKODENGAN VAR

Berisi tentang pembahasan mengenai penerapan model EGARCH pada analisis risiko investasi dengan VaR.

BAB V : STUDI KASUS

Berisi tentang penerapan model EGARCH dan perhitungan analisis risiko dengan VaR 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 dan pemecahan masalah dan saran-saran yang berkaitan dengan penelitian sejenis untuk penelitian berikutnya.

BAB VI

PENUTUP

6.1 Kesimpulan

Berdasarkan uraian dan pembahasan pada penelitian ini, maka dapat disimpulkan sebagai berikut:

1. Ada beberapa langkah-langkah dalam menentukan Perhitungan nilai VaR dengan pendekatan model EGARCH yaitu Menentukan nilai *return*,menguji data hasil pengamatan apakah sudah stasioner atau belum, menguji kenormalan data, menentukan model yang sesuai untuk persamaan *mean*, menguji ada tidaknya efek ARCH menggunakan uji *Lagrange Multiplier*, menentukan model yang sesuai untuk persamaan variansi dengan melakukan estimasi parameter model GARCH menggunakan *Maximum Likelihood Estimation (MLE)*, menguji ada tidaknya efek asimetris dengan melihat korelasi kuadrat standar residual ε_t^2 dengan lag standar residual ε_{t-k} dari hasil estimasi parameter model GARCH, melakukan estimasi model EGARCH menggunakan *Maximum Likelihood Estimation (MLE),* pemeriksaan diagnostik, pemilihan model terbaik dengan memilih model yang memiliki nilai BIC terkecil, menghitung nilai VaR dengan pendekatan model EGARCH yang sudah didapat.

2. Berdasarkan pemeriksaan diagnosa yang memenuhi asumsi serta pemilihan model terbaik maka model yang terpilih adalah model EGARCH (1,1). Dari model tersebut akan dilakukan perhitungan VaR dengan pendekatan model EGARCH (1,1) sehingga dapat menunjukkan tingkat keakuratan risiko yang cukup baik. Jadi bentuk model untuk mengukur besar risiko investasi VaR pada indeks harga saham syariah JII yaitu model EGARCH (1,1), dengan persamaan sebagai berikut :

   Persamaan *mean* :

   $$\log X_t = 0.000310$$

   $$\widehat{X}_t = e^{0.000310}$$

   Persamaan variansi :

   $$\ln \widehat{\sigma}_t^2 = -0.492669 + 0.210626 \frac{\varepsilon_{t-1}^2}{\sigma_{t-1}^2} - 0.061296 \frac{\varepsilon_{t-1}^2}{\sigma_{t-1}^2} + 0.9622888 \ln \sigma_{t-1}^2$$

3. Untuk pengukuran besar risiko investasi VaR dengan menggunakan EGARCH (1,1), dimana nilai investasi awal diasumsikan sebesar Rp.100.000.000,- menghasilkan beberapa besaran nilai risiko untuk indeks harga saham JII dengan tingkat kepercayaan 95%, sebagai berikut :

   a. Dalam 1 hari ke depan sebesar Rp. 1.377.012,515

      Artinya dengan investasi awal sebesar Rp.100.000.000,- maka investor memiliki risiko kerugian sebesar Rp. 1.377.012,515

   b. Dalam 5 hari ke depan sebesar Rp. 3.079.093,598

Artinya dengan investasi awal sebesar Rp.100.000.000,- maka investor memiliki risiko kerugian sebesar Rp. 3.079.093,598

6.2 Saran

Berdasarkan pengalaman dan pertimbangan dalam studi literatur, saran-saran yang dapat disampaikan peneliti adalah:

1. Model yang didapat pada pembahasan penelitian ini, diharapkan dapat membantu dan menjadi bahan pertimbangan bagi para investor dalam memilih investasi.
2. Melanjutkan pengukuran VaR dengan model lain seperti GARCH-M, EGARCH-M, T-GARCH, I-GARCH, PARCH dll.
3. Disarankan bagi para analis dan investor di pasar saham Indonesia untuk dapat melakukan analisis risiko investasi menggunakan *Value at Risk*sehingga dapat mengantisipasi lebih awal kerugian yang mungkin akan terjadi.

Demikian saran dari peneliti semoga dapat menjadi masukan para peneliti pada bidang statistik khususnya penerapan model EGARCH pada analisis risiko dengan VaR untuk mengembangkan penelitian ini.

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Lampiran 1

Data Harian Penutupan Saham Syariah *Jakarta Islamic Indeks*

Periode 1 Januari 2012 – 30 April 2014

Date	close	return
2-Jan-12	533.451	0
3-Jan-12	542.176	0.016223452
4-Jan-12	553.077	0.01990656
5-Jan-12	555.232	0.003888812
6-Jan-12	547.611	-0.013820864
9-Jan-12	550.083	0.004503995
10-Jan-12	559.147	0.016343232
11-Jan-12	553.016	-0.011025474
12-Jan-12	552.395	-0.001123564
13-Jan-12	557.344	0.008919273
16-Jan-12	553.793	-0.006391673
17-Jan-12	560.986	0.012904979
18-Jan-12	565.712	0.008389165
19-Jan-12	568.704	0.005274973
20-Jan-12	568.282	-0.000742313
24-Jan-12	570.54	0.003965506
25-Jan-12	564.631	-0.01041086
26-Jan-12	567.45	0.004980219
27-Jan-12	570.754	0.005805654
30-Jan-12	557.351	-0.023763091
31-Jan-12	562.535	0.009258151
1-Feb-12	562.364	-0.000304027
2-Feb-12	571.086	0.015390484
3-Feb-12	571.418	0.00058118
6-Feb-12	565.338	-0.010697209
7-Feb-12	564.689	-0.001148645
8-Feb-12	570.415	0.010089029
9-Feb-12	568.872	-0.002708713
10-Feb-12	560.346	-0.015101003
13-Feb-12	568.495	0.014438068
14-Feb-12	570.738	0.003937742
15-Feb-12	570.467	-0.000474937
16-Feb-12	562.505	-0.014055301
17-Feb-12	572.046	0.016819385
20-Feb-12	573.689	0.00286803
21-Feb-12	573.639	-8.7159E-05
22-Feb-12	570.748	-0.005052497
23-Feb-12	562.08	-0.015303593

24-Feb-12	550.402	-0.020995268
27-Feb-12	545.996	-0.008037271
28-Feb-12	553.259	0.013214597
29-Feb-12	566.754	0.024099101
1-Mar-12	561.822	-0.008740273
2-Mar-12	570.052	0.014542511
5-Mar-12	565.599	-0.007842238
6-Mar-12	561.577	-0.007136449
7-Mar-12	559.098	-0.004424127
8-Mar-12	563.531	0.007897574
9-Mar-12	567.169	0.006434974
12-Mar-12	564.593	-0.004552202
13-Mar-12	568.199	0.006366592
14-Mar-12	575.711	0.013134089
15-Mar-12	571.966	-0.00652625
16-Mar-12	566.907	-0.00888428
19-Mar-12	566.905	-3.52792E-06
20-Mar-12	566.16	-0.001315017
21-Mar-12	570.903	0.008342594
22-Mar-12	570.791	-0.0001962
26-Mar-12	569.017	-0.003112807
27-Mar-12	576.621	0.013274894
28-Mar-12	577.592	0.001682532
29-Mar-12	579.334	0.003011431
30-Mar-12	584.06	0.008124549
2-Apr-12	588.1	0.006893284
3-Apr-12	593.074	0.008422179
4-Apr-12	576.96	-0.02754624
5-Apr-12	581.009	0.006993307
9-Apr-12	579.4	-0.002773162
10-Apr-12	577.941	-0.002521298
11-Apr-12	572.811	-0.008915968
12-Apr-12	572.685	-0.000219992
13-Apr-12	575.489	0.004884287
16-Apr-12	570.615	-0.008505388
17-Apr-12	571.614	0.001749212
18-Apr-12	574.26	0.004618317
19-Apr-12	571.724	-0.004425898
20-Apr-12	574.032	0.004028786
23-Apr-12	570.083	-0.00690318
24-Apr-12	571.792	0.002993325
25-Apr-12	569.491	-0.004032309
26-Apr-12	570.546	0.001850818
27-Apr-12	572.787	0.003920123
30-Apr-12	575.088	0.004009153

1-May-12	577.299	0.003837257
2-May-12	582.692	0.009298415
3-May-12	583.334	0.001101176
4-May-12	580.754	-0.004432662
7-May-12	572.372	-0.01453813
8-May-12	575.194	0.004918246
9-May-12	564.783	-0.018265789
10-May-12	567.406	0.00463351
11-May-12	562.133	-0.00933662
14-May-12	555.611	-0.011670068
15-May-12	554.611	-0.001801442
16-May-12	548.334	-0.011382377
21-May-12	540.184	-0.014974768
22-May-12	550.239	0.018442907
23-May-12	545.446	-0.008748921
24-May-12	544.454	-0.001820351
25-May-12	531.239	-0.024571443
28-May-12	533.03	0.003365694
29-May-12	534.052	0.001915505
30-May-12	536.681	0.004910665
31-May-12	525.052	-0.021906572
1-Jun-12	519.836	-0.009983928
4-Jun-12	498.03	-0.042853061
5-Jun-12	510.315	0.024367866
6-Jun-12	527.915	0.033907104
7-Jun-12	528.793	0.001661765
8-Jun-12	526.869	-0.00364511
11-Jun-12	530.559	0.006979227
12-Jun-12	530.869	0.000584119
13-Jun-12	532.742	0.003521968
14-Jun-12	521.985	-0.020398403
15-Jun-12	525.682	0.007057615
18-Jun-12	531.667	0.011320886
19-Jun-12	535.401	0.006998645
20-Jun-12	545.996	0.019595651
21-Jun-12	538.139	-0.014494759
22-Jun-12	536.224	-0.003564907
25-Jun-12	529.903	-0.011858013
26-Jun-12	536.11	0.011645393
27-Jun-12	541.618	0.010221592
28-Jun-12	533.777	-0.014582807
29-Jun-12	544.19	0.019320302
2-Jul-12	552.122	0.014470586
3-Jul-12	562.704	0.018984699
4-Jul-12	569.656	0.012278935

5-Jul-12	567.403	-0.00396286
6-Jul-12	563.918	-0.006160959
9-Jul-12	551.524	-0.022223495
10-Jul-12	557.358	0.010522407
11-Jul-12	560.168	0.005028976
12-Jul-12	551.736	-0.015167068
13-Jul-12	557.98	0.011253448
16-Jul-12	561.122	0.005615231
17-Jul-12	566.363	0.009296865
18-Jul-12	565.576	-0.001390535
19-Jul-12	566.322	0.00131814
20-Jul-12	561.332	-0.00885029
23-Jul-12	551.113	-0.018372661
24-Jul-12	547.297	-0.006948253
25-Jul-12	548.252	0.001743419
26-Jul-12	550.705	0.00446424
27-Jul-12	563.878	0.02363864
30-Jul-12	565.824	0.00344516
31-Jul-12	573.731	0.01387757
1-Aug-12	574.507	0.001351636
2-Aug-12	567.417	-0.012417799
3-Aug-12	569.883	0.004336593
6-Aug-12	572.202	0.004060999
7-Aug-12	568.351	-0.00675289
8-Aug-12	569.352	0.001759686
9-Aug-12	575.658	0.011014862
10-Aug-12	578.382	0.004720816
13-Aug-12	571.891	-0.011286136
14-Aug-12	576.209	0.007522028
15-Aug-12	582.471	0.010808957
16-Aug-12	585.225	0.00471699
23-Aug-12	583.529	-0.002902238
24-Aug-12	580.192	-0.005735067
27-Aug-12	579.491	-0.001208951
28-Aug-12	579.98	0.000843488
29-Aug-12	575.869	-0.007113416
30-Aug-12	566.449	-0.016493154
31-Aug-12	569.935	0.006135269
3-Sep-12	577.898	0.013875063
4-Sep-12	577.271	-0.001085556
5-Sep-12	569.997	-0.012680729
6-Sep-12	574.104	0.007179467
7-Sep-12	580.863	0.011704364
10-Sep-12	587.635	0.011591078
11-Sep-12	585.911	-0.002938106

12-Sep-12	590.608	0.007984614
13-Sep-12	590.091	-0.000875752
14-Sep-12	604.785	0.024596261
17-Sep-12	605.76	0.001610845
18-Sep-12	601.662	-0.006788042
19-Sep-12	605.385	0.006168793
20-Sep-12	598.158	-0.012009686
21-Sep-12	602.629	0.007446817
24-Sep-12	592.697	-0.016618443
25-Sep-12	596.991	0.007218731
26-Sep-12	585.855	-0.018829719
27-Sep-12	593.241	0.012528406
28-Sep-12	600.84	0.012727952
1-Oct-12	594.641	-0.010370814
2-Oct-12	599.459	0.00806972
3-Oct-12	599.187	-0.000453845
4-Oct-12	605.746	0.01088702
5-Oct-12	616.807	0.018095415
8-Oct-12	610.242	-0.010700571
9-Oct-12	610.053	-0.000309761
10-Oct-12	610.65	0.000978125
11-Oct-12	612.06	0.002306353
12-Oct-12	613.325	0.002064658
15-Oct-12	612.143	-0.00192906
16-Oct-12	616.872	0.007695632
17-Oct-12	617.794	0.001493522
18-Oct-12	621.647	0.006217339
19-Oct-12	616.778	-0.007863254
22-Oct-12	617.314	0.000868655
23-Oct-12	613.67	-0.005920484
24-Oct-12	616.32	0.004308985
25-Oct-12	615.449	-0.001414226
29-Oct-12	614.068	-0.002246412
30-Oct-12	618.899	0.007836422
31-Oct-12	619.27	0.000599272
1-Nov-12	616.945	-0.003761486
2-Nov-12	616.415	-0.000859441
5-Nov-12	610.622	-0.009442328
6-Nov-12	611.361	0.00120951
7-Nov-12	617.871	0.010592078
8-Nov-12	614.927	-0.004776136
9-Nov-12	612.369	-0.00416852
12-Nov-12	608.276	-0.006706316
13-Nov-12	608.939	0.001089372
14-Nov-12	611.056	0.00347051

19-Nov-12	605.513	-0.009112575
20-Nov-12	604.552	-0.001588345
21-Nov-12	604.313	-0.000395412
22-Nov-12	607.073	0.004556772
23-Nov-12	607.736	0.00109153
26-Nov-12	611.687	0.006480137
27-Nov-12	604.113	-0.012459447
28-Nov-12	595.57	-0.014242336
29-Nov-12	597.274	0.002857039
30-Nov-12	588.776	-0.014330164
3-Dec-12	588.448	-0.000557243
4-Dec-12	587.274	-0.001997071
5-Dec-12	588.994	0.002924506
6-Dec-12	589.861	0.001470919
7-Dec-12	590.644	0.001326551
10-Dec-12	591.79	0.001938375
11-Dec-12	595.461	0.006184053
12-Dec-12	597.488	0.003398304
13-Dec-12	593.832	-0.006137749
14-Dec-12	593.721	-0.000186939
17-Dec-12	594.437	0.001205227
18-Dec-12	593.16	-0.002150562
19-Dec-12	590.926	-0.003773379
20-Dec-12	584.286	-0.011300209
21-Dec-12	586.093	0.003087891
26-Dec-12	587.401	0.002229241
27-Dec-12	590.455	0.005185705
28-Dec-12	594.789	0.007313295
2-Jan-13	602.073	0.01217198
3-Jan-13	612.339	0.01690735
4-Jan-13	611.797	-0.000885523
7-Jan-13	607.12	-0.007674063
8-Jan-13	606.579	-0.00089149
9-Jan-13	600.603	-0.009900825
10-Jan-13	592.112	-0.014238344
11-Jan-13	590.345	-0.002988694
14-Jan-13	602.059	0.019648335
15-Jan-13	606.274	0.006976582
16-Jan-13	607.899	0.002676721
17-Jan-13	602.804	-0.008416647
18-Jan-13	615.444	0.020751856
21-Jan-13	610.287	-0.00841462
22-Jan-13	609.291	-0.001633352
23-Jan-13	608.162	-0.001854692
25-Jan-13	608.625	0.000761021

28-Jan-13	604.901	-0.006137506
29-Jan-13	608.602	0.006099715
30-Jan-13	608.935	0.000547006
31-Jan-13	604.61	-0.007127908
1-Feb-13	606.257	0.002720367
4-Feb-13	608.689	0.004003475
5-Feb-13	609.587	0.001474215
6-Feb-13	612.28	0.004408016
7-Feb-13	611.407	-0.001426836
8-Feb-13	611.504	0.000158638
11-Feb-13	612.914	0.002303136
12-Feb-13	621.24	0.013492848
13-Feb-13	624.342	0.004980814
14-Feb-13	624.019	-0.000517479
15-Feb-13	626.243	0.003557658
18-Feb-13	624.444	-0.002876821
19-Feb-13	620.352	-0.006574595
20-Feb-13	624.614	0.0068468
21-Feb-13	624.72	0.00016969
22-Feb-13	625.492	0.001234991
25-Feb-13	630.496	0.007968271
26-Feb-13	626.807	-0.005868133
27-Feb-13	635.858	0.01433659
28-Feb-13	645.219	0.014614526
1-Mar-13	652.114	0.010629599
4-Mar-13	646.859	-0.008091051
5-Mar-13	648.65	0.002764938
6-Mar-13	661.117	0.019037549
7-Mar-13	662.956	0.002777794
8-Mar-13	668.46	0.008267936
11-Mar-13	660.306	-0.012273195
13-Mar-13	656.211	-0.00622098
14-Mar-13	645.376	-0.016649291
15-Mar-13	648.639	0.005043229
18-Mar-13	650.993	0.003622568
19-Mar-13	650.019	-0.001497296
20-Mar-13	651.142	0.001726151
21-Mar-13	646.12	-0.007742499
22-Mar-13	630.614	-0.024291297
25-Mar-13	640.857	0.016112395
26-Mar-13	649.876	0.013975232
27-Mar-13	660.333	0.015962678
28-Mar-13	660.337	6.05753E-06
1-Apr-13	658.055	-0.003461796
2-Apr-13	662.145	0.006196051

3-Apr-13	669.778	0.011461749
4-Apr-13	659.339	-0.015708496
5-Apr-13	656.545	-0.004246581
8-Apr-13	655.311	-0.001881305
9-Apr-13	656.951	0.002499502
10-Apr-13	653.381	-0.005449014
11-Apr-13	660.087	0.010211224
12-Apr-13	660.704	0.000934289
15-Apr-13	655.728	-0.007559864
16-Apr-13	667.887	0.018372929
17-Apr-13	673.003	0.00763079
18-Apr-13	674.024	0.001515931
19-Apr-13	672.388	-0.002430164
22-Apr-13	674.375	0.002950781
23-Apr-13	673.488	-0.001316158
24-Apr-13	678.951	0.008078782
25-Apr-13	671.849	-0.010515347
26-Apr-13	664.636	-0.010794091
29-Apr-13	670.939	0.009438701
30-Apr-13	682.691	0.017364118
1-May-13	682.846	0.000227017
2-May-13	674.963	-0.011611484
3-May-13	665.406	-0.014260494
6-May-13	673.554	0.01217079
7-May-13	677.039	0.005160708
8-May-13	683.669	0.009745004
10-May-13	684.845	0.001718653
13-May-13	679.324	-0.008094349
14-May-13	682.213	0.00424374
15-May-13	681.707	-0.000741979
16-May-13	681.489	-0.000319837
17-May-13	696.581	0.021903972
20-May-13	709.461	0.018321445
21-May-13	703.323	-0.008689281
22-May-13	708.1	0.006769081
23-May-13	694.792	-0.018972806
24-May-13	701.254	0.009257641
27-May-13	685.35	-0.022940504
28-May-13	701.962	0.023949615
29-May-13	705.97	0.005693472
30-May-13	689.999	-0.022882595
31-May-13	676.583	-0.019635018
3-Jun-13	665.625	-0.016328682
4-Jun-13	677.35	0.017461677
5-Jun-13	674.404	-0.004358788

7-Jun-13	647.278	-0.04105346
10-Jun-13	634.293	-0.020264885
11-Jun-13	608.881	-0.040888146
12-Jun-13	635.103	0.042164344
13-Jun-13	618.565	-0.026384911
14-Jun-13	640.218	0.034406464
17-Jun-13	642.789	0.004007778
18-Jun-13	649.351	0.010156881
19-Jun-13	642.421	-0.010729551
20-Jun-13	618.389	-0.038126143
21-Jun-13	596.67	-0.035753513
24-Jun-13	585.773	-0.018431854
25-Jun-13	583.403	-0.004054143
26-Jun-13	616.886	0.055806042
27-Jun-13	634.272	0.027793643
28-Jun-13	660.165	0.040011919
1-Jul-13	648.254	-0.018207209
2-Jul-13	640.965	-0.011307742
3-Jul-13	618.621	-0.035482046
4-Jul-13	619.17	0.000887064
5-Jul-13	626.55	0.011848708
8-Jul-13	601.218	-0.041270982
9-Jul-13	597.702	-0.005865296
10-Jul-13	614.084	0.027039425
11-Jul-13	633.028	0.030382928
12-Jul-13	636.975	0.006215753
15-Jul-13	637.697	0.001132841
16-Jul-13	637.506	-0.00029956
17-Jul-13	641.934	0.006921806
18-Jul-13	645.732	0.005899062
19-Jul-13	646.651	0.001422179
22-Jul-13	637	-0.015037081
23-Jul-13	651.96	0.023213555
24-Jul-13	642.413	-0.014751811
25-Jul-13	635.176	-0.011329273
26-Jul-13	629.952	-0.0082585
29-Jul-13	618.582	-0.018213864
30-Jul-13	627.134	0.013730472
31-Jul-13	623.747	-0.005415396
1-Aug-13	630.933	0.011454839
2-Aug-13	630.161	-0.001224334
12-Aug-13	622.947	-0.011513899
13-Aug-13	633.382	0.016612273
14-Aug-13	639.989	0.010377273
15-Aug-13	634.574	-0.008497081

16-Aug-13	619.728	-0.023673236
19-Aug-13	580.134	-0.066021561
20-Aug-13	561.357	-0.032902045
21-Aug-13	572.634	0.019889702
22-Aug-13	571.883	-0.001312344
23-Aug-13	572.602	0.00125646
26-Aug-13	562.997	-0.016916586
27-Aug-13	541.027	-0.039805114
28-Aug-13	552.121	0.02029804
29-Aug-13	568.921	0.029974359
30-Aug-13	592.002	0.039768429
2-Sep-13	574.589	-0.029855011
3-Sep-13	585.03	0.018008125
4-Sep-13	568.373	-0.028885235
5-Sep-13	562.609	-0.010193
6-Sep-13	569.298	0.01181913
9-Sep-13	587.383	0.031273054
10-Sep-13	611.053	0.039506621
11-Sep-13	605.832	-0.008580979
12-Sep-13	600.717	-0.008478778
13-Sep-13	600.641	-0.000126523
16-Sep-13	627.06	0.043044812
17-Sep-13	625.98	-0.001723808
18-Sep-13	618.204	-0.012499922
19-Sep-13	649.916	0.050024624
20-Sep-13	635.907	-0.021790798
23-Sep-13	633.333	-0.004055976
24-Sep-13	613.543	-0.031745999
25-Sep-13	603.19	-0.017018113
26-Sep-13	602.195	-0.001650925
27-Sep-13	606.394	0.006948627
30-Sep-13	585.593	-0.034904931
1-Oct-13	593.077	0.01269923
2-Oct-13	600.628	0.012651536
3-Oct-13	605.541	0.008146499
4-Oct-13	600.502	-0.008356301
7-Oct-13	599.148	-0.002257326
8-Oct-13	606.514	0.012219165
9-Oct-13	613.563	0.011555137
10-Oct-13	618.039	0.007268614
11-Oct-13	627.98	0.015956757
16-Oct-13	622.046	-0.009494274
17-Oct-13	627.42	0.008602128
18-Oct-13	633.923	0.010311323
21-Oct-13	638.545	0.007264655

22-Oct-13	623.211	-0.024307005
23-Oct-13	627.056	0.006150706
24-Oct-13	632.287	0.008307554
25-Oct-13	627.443	-0.007690575
28-Oct-13	629.889	0.003890783
29-Oct-13	626.827	-0.004873028
30-Oct-13	628.412	0.002525417
31-Oct-13	615.706	-0.020426425
1-Nov-13	603.506	-0.020013594
4-Nov-13	603.922	0.000689068
6-Nov-13	609.593	0.009346471
7-Nov-13	616.109	0.010632375
8-Nov-13	615.628	-0.000781011
11-Nov-13	610.502	-0.008361315
12-Nov-13	604.546	-0.009803806
13-Nov-13	590.931	-0.022778504
14-Nov-13	599.396	0.014223222
15-Nov-13	590.731	-0.014561728
18-Nov-13	605.593	0.02484739
19-Nov-13	608.249	0.004376194
20-Nov-13	597.711	-0.017476978
21-Nov-13	595.125	-0.004335892
22-Nov-13	592.891	-0.003760897
25-Nov-13	592.721	-0.000286772
26-Nov-13	573.572	-0.032840326
27-Nov-13	580.202	0.011492845
28-Nov-13	578.906	-0.002236203
29-Nov-13	579.868	0.001660376
2-Dec-13	591.915	0.020562552
3-Dec-13	584.709	-0.012248756
4-Dec-13	577.393	-0.012591144
5-Dec-13	573.882	-0.006099344
6-Dec-13	569.002	-0.008539851
9-Dec-13	576.233	0.012628144
10-Dec-13	587.521	0.019399897
11-Dec-13	586.106	-0.002411329
12-Dec-13	575.658	-0.017986926
13-Dec-13	568.146	-0.013135306
16-Dec-13	560.749	-0.013105038
17-Dec-13	567.513	0.011990267
18-Dec-13	572.12	0.008085103
19-Dec-13	579.324	0.012513147
20-Dec-13	575.8	-0.006101528
23-Dec-13	572.586	-0.005597436
24-Dec-13	578.142	0.009656571

27-Dec-13	578.641	0.000862737
30-Dec-13	585.11	0.011117613
2-Jan-14	596.148	0.018689095
3-Jan-14	585.642	-0.017780277
6-Jan-14	579.928	-0.009804723
7-Jan-14	572.287	-0.013263344
8-Jan-14	576.407	0.007173395
9-Jan-14	574.279	-0.003698667
10-Jan-14	582.379	0.014006098
13-Jan-14	601.806	0.032813696
15-Jan-14	609.9	0.013359875
16-Jan-14	606.816	-0.005069394
17-Jan-14	603.061	-0.006207262
20-Jan-14	608.315	0.008674487
21-Jan-14	609.114	0.001312602
22-Jan-14	614.407	0.008652133
23-Jan-14	614.965	0.000907781
24-Jan-14	604.373	-0.017373799
27-Jan-14	583.88	-0.034496075
28-Jan-14	588.271	0.007492244
29-Jan-14	601.539	0.022303645
30-Jan-14	602.873	0.00221519
3-Feb-14	595.621	-0.012102002
4-Feb-14	587.491	-0.013743632
5-Feb-14	594.498	0.011856425
6-Feb-14	601.058	0.010974084
7-Feb-14	606.217	0.008546572
10-Feb-14	603.326	-0.004780327
11-Feb-14	604.703	0.002279748
12-Feb-14	609.077	0.007207268
13-Feb-14	607.222	-0.003050239
14-Feb-14	608.972	0.002877832
17-Feb-14	615.614	0.010847854
18-Feb-14	615.1	-0.000835288
19-Feb-14	621.734	0.010727492
20-Feb-14	622.158	0.000681731
21-Feb-14	626.968	0.007701423
24-Feb-14	621.944	-0.008045446
25-Feb-14	614.478	-0.01207693
26-Feb-14	606.032	-0.013840337
27-Feb-14	612.839	0.011169469
28-Feb-14	626.864	0.022627353
3-Mar-14	618.984	-0.012650187
4-Mar-14	620.047	0.001715857
5-Mar-14	628.002	0.01274807

6-Mar-14	631	0.004762511
7-Mar-14	631.743	0.001176803
10-Mar-14	632.91	0.001845566
11-Mar-14	635.354	0.003854092
12-Mar-14	633.168	-0.003446534
13-Mar-14	641.309	0.01277561
14-Mar-14	661.737	0.031356796
17-Mar-14	663.863	0.003207607
18-Mar-14	651.323	-0.019070124
19-Mar-14	655.45	0.006316344
20-Mar-14	634.165	-0.03301285
21-Mar-14	636.549	0.003752226
24-Mar-14	637.79	0.001947677
25-Mar-14	632.444	-0.008417396
26-Mar-14	636.476	0.006355032
27-Mar-14	635.018	-0.002293366
28-Mar-14	640.411	0.008456813
1-Apr-14	657.09	0.025710838
2-Apr-14	655.267	-0.002778209
3-Apr-14	658.533	0.004971848
4-Apr-14	653.274	-0.008017991
7-Apr-14	667.22	0.021123184
8-Apr-14	666.518	-0.001052681
10-Apr-14	643.145	-0.035696942
11-Apr-14	653.278	0.015632562
14-Apr-14	659.705	0.009789999
15-Apr-14	659.78	0.000113681
16-Apr-14	657.858	-0.002917344
17-Apr-14	663.592	0.0086784
21-Apr-14	663.521	-0.000106999
22-Apr-14	664.132	0.000920421
23-Apr-14	664.142	1.50571E-05
24-Apr-14	663.179	-0.001451043
25-Apr-14	663.206	4.07122E-05
28-Apr-14	650.317	-0.019625715
29-Apr-14	645.254	-0.007815899
30-Apr-14	647.674	0.003743446

Lampiran 2

Null Hypothesis: LOGRETURN has a unit root
Exogenous: Constant
Lag Length: 2 (Automatic - based on SIC, maxlag=18)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-17.58933	0.0000
Test critical values:	1% level	-3.440929	
	5% level	-2.866099	
	10% level	-2.569257	

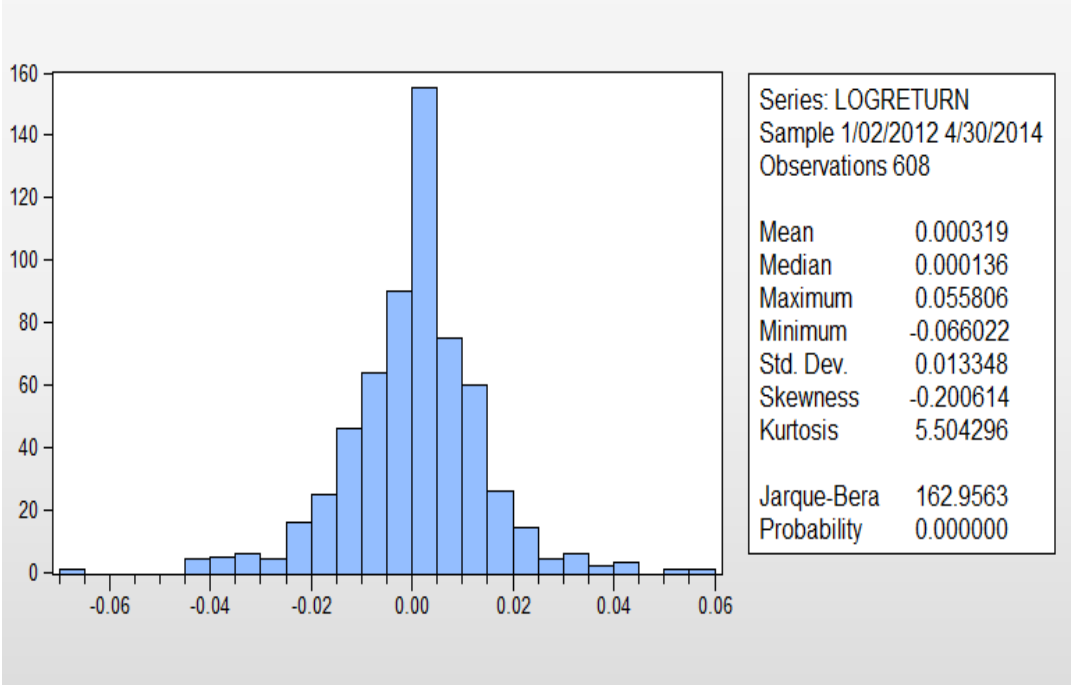
*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LOGRETURN)
Method: Least Squares
Date: 09/05/14 Time: 19:55
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGRETURN(-1)	-1.185926	0.067423	-17.58933	0.0000
D(LOGRETURN(-1))	0.224828	0.055042	4.084642	0.0001
D(LOGRETURN(-2))	0.208821	0.039862	5.238544	0.0000
C	0.000330	0.000532	0.621141	0.5347

R-squared	0.502447	Mean dependent var	-2.67E-05
Adjusted R-squared	0.499963	S.D. dependent var	0.018474
S.E. of regression	0.013063	Akaike info criterion	-5.831417
Sum squared resid	0.102562	Schwarz criterion	-5.802291
Log likelihood	1768.004	Hannan-Quinn criter.	-5.820083
F-statistic	202.3039	Durbin-Watson stat	2.031777
Prob(F-statistic)	0.000000		

Lampiran 3


160
140
120
100
80
60
40
20
0
-0.06
-0.04
-0.02
0.00
0.02
0.04
0.06
Series: LOGRETURN
Sample 1/02/2012 4/30/2014
Observations 608
Mean 0.000319
Median 0.000136
Maximum 0.055806
Minimum -0.066022
Std. Dev. 0.013348
Skewness -0.200614
Kurtosis 5.504296
Jarque-Bera 162.9563
Probability 0.000000

Lampiran 4

1. ARIMA (1,0,0)

a. Dengan konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/18/14 Time: 23:10
Sample (adjusted): 1/03/2012 4/30/2014
Included observations: 607 after adjustments
Convergence achieved after 3 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000320	0.000568	0.563183	0.5735
AR(1)	0.045703	0.040615	1.125257	0.2609

R-squared	0.002089	Mean dependent var	0.000320
Adjusted R-squared	0.000439	S.D. dependent var	0.013359
S.E. of regression	0.013356	Akaike info criterion	-5.790360
Sum squared resid	0.107927	Schwarz criterion	-5.775834
Log likelihood	1759.374	Hannan-Quinn criter.	-5.784708
F-statistic	1.266204	Durbin-Watson stat	1.995075
Prob(F-statistic)	0.260926		

Inverted AR Roots	.05

b. Tanpa konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 16:59
Sample (adjusted): 1/03/2012 4/30/2014
Included observations: 607 after adjustments
Convergence achieved after 2 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	0.046240	0.040581	1.139433	0.2550

R-squared	0.001566	Mean dependent var	0.000320
Adjusted R-squared	0.001566	S.D. dependent var	0.013359
S.E. of regression	0.013349	Akaike info criterion	-5.793131
Sum squared resid	0.107984	Schwarz criterion	-5.785868
Log likelihood	1759.215	Hannan-Quinn criter.	-5.790305
Durbin-Watson stat	1.995076		

Inverted AR Roots	.05

2. ARIMA (0,0,1)

a. Dengan kostanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 17:40
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 4 iterations
MA Backcast: 12/30/2011

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000319	0.000566	0.563758	0.5731
MA(1)	0.046671	0.040581	1.150062	0.2506

R-squared	0.002153	Mean dependent var	0.000319
Adjusted R-squared	0.000507	S.D. dependent var	0.013348
S.E. of regression	0.013345	Akaike info criterion	-5.792081
Sum squared resid	0.107920	Schwarz criterion	-5.777574
Log likelihood	1762.793	Hannan-Quinn criter.	-5.786437
F-statistic	1.307643	Durbin-Watson stat	2.000298
Prob(F-statistic)	0.253273		

Inverted MA Roots	-.05

b. Tanpa konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 17:44
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 4 iterations
MA Backcast: 12/30/2011

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MA(1)	0.047158	0.040547	1.163040	0.2453

R-squared	0.001630	Mean dependent var	0.000319
Adjusted R-squared	0.001630	S.D. dependent var	0.013348
S.E. of regression	0.013337	Akaike info criterion	-5.794846
Sum squared resid	0.107977	Schwarz criterion	-5.787593
Log likelihood	1762.633	Hannan-Quinn criter.	-5.792024
Durbin-Watson stat	2.000215		

Inverted MA Roots	-.05

3. ARIMA (1,0,1)

a. Dengan kostanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 17:48
Sample (adjusted): 1/03/2012 4/30/2014
Included observations: 607 after adjustments
Convergence achieved after 17 iterations
MA Backcast: 1/02/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000321	0.000567	0.566875	0.5710
AR(1)	-0.025051	0.865162	-0.028955	0.9769
MA(1)	0.071472	0.863225	0.082797	0.9340

R-squared	0.002177	Mean dependent var	0.000320
Adjusted R-squared	-0.001127	S.D. dependent var	0.013359
S.E. of regression	0.013367	Akaike info criterion	-5.787154
Sum squared resid	0.107918	Schwarz criterion	-5.765366
Log likelihood	1759.401	Hannan-Quinn criter.	-5.778677
F-statistic	0.658970	Durbin-Watson stat	1.997888
Prob(F-statistic)	0.517756		

Inverted AR Roots	-.03
Inverted MA Roots	-.07

b. Tanpa konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 21:46
Sample (adjusted): 1/03/2012 4/30/2014
Included observations: 607 after adjustments
Convergence achieved after 17 iterations
MA Backcast: 1/02/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	-0.021534	0.857926	-0.025100	0.9800
MA(1)	0.068482	0.856112	0.079991	0.9363

R-squared	0.001647	Mean dependent var	0.000320
Adjusted R-squared	-0.000003	S.D. dependent var	0.013359
S.E. of regression	0.013359	Akaike info criterion	-5.789918
Sum squared resid	0.107975	Schwarz criterion	-5.775392
Log likelihood	1759.240	Hannan-Quinn criter.	-5.784266
Durbin-Watson stat	1.997807		

Inverted AR Roots	-.02
Inverted MA Roots	-.07

4. ARIMA (2,0,0)

a. Dengan kostanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 21:41
Sample (adjusted): 1/04/2012 4/30/2014
Included observations: 606 after adjustments
Convergence achieved after 3 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000294	0.000530	0.554716	0.5793
AR(2)	-0.023565	0.040645	-0.579772	0.5623

R-squared	0.000556	Mean dependent var	0.000293
Adjusted R-squared	-0.001099	S.D. dependent var	0.013355
S.E. of regression	0.013362	Akaike info criterion	-5.789511
Sum squared resid	0.107840	Schwarz criterion	-5.774967
Log likelihood	1756.222	Hannan-Quinn criter.	-5.783852
F-statistic	0.336135	Durbin-Watson stat	1.918073
Prob(F-statistic)	0.562285		

b. Tanpa konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 21:39
Sample (adjusted): 1/04/2012 4/30/2014
Included observations: 606 after adjustments
Convergence achieved after 3 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(2)	-0.023013	0.040610	-0.566696	0.5711

R-squared	0.000047	Mean dependent var	0.000293
Adjusted R-squared	0.000047	S.D. dependent var	0.013355
S.E. of regression	0.013354	Akaike info criterion	-5.792303
Sum squared resid	0.107895	Schwarz criterion	-5.785031
Log likelihood	1756.068	Hannan-Quinn criter.	-5.789473
Durbin-Watson stat	1.916918		

5. ARIMA (0,0,2)

a. Dengan konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 21:52
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 6 iterations
MA Backcast: 12/29/2011 12/30/2011

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000319	0.000526	0.605531	0.5451
MA(2)	-0.028717	0.040619	-0.706989	0.4798

R-squared	0.000676	Mean dependent var	0.000319
Adjusted R-squared	-0.000973	S.D. dependent var	0.013348
S.E. of regression	0.013355	Akaike info criterion	-5.790602
Sum squared resid	0.108080	Schwarz criterion	-5.776095
Log likelihood	1762.343	Hannan-Quinn criter.	-5.784958
F-statistic	0.410149	Durbin-Watson stat	1.918162
Prob(F-statistic)	0.522136		

Inverted MA Roots	.17	-.17

b. Tanpa konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 21:53
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 6 iterations
MA Backcast: 12/29/2011 12/30/2011

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MA(2)	-0.028008	0.040585	-0.690105	0.4904

R-squared	0.000072	Mean dependent var	0.000319
Adjusted R-squared	0.000072	S.D. dependent var	0.013348
S.E. of regression	0.013348	Akaike info criterion	-5.793287
Sum squared resid	0.108145	Schwarz criterion	-5.786033
Log likelihood	1762.159	Hannan-Quinn criter.	-5.790465
Durbin-Watson stat	1.916757		

Inverted MA Roots	.17	-.17

6. ARIMA (2,0,2)

a. Dengan konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 21:55
Sample (adjusted): 1/04/2012 4/30/2014
Included observations: 606 after adjustments
Convergence achieved after 11 iterations
MA Backcast: 1/02/2012 1/03/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000245	0.000484	0.506705	0.6125
AR(2)	0.570874	0.342872	1.664977	0.0964
MA(2)	-0.620041	0.328133	-1.889601	0.0593

R-squared	0.004520	Mean dependent var	0.000293
Adjusted R-squared	0.001219	S.D. dependent var	0.013355
S.E. of regression	0.013347	Akaike info criterion	-5.790185
Sum squared resid	0.107412	Schwarz criterion	-5.768369
Log likelihood	1757.426	Hannan-Quinn criter.	-5.781696
F-statistic	1.369106	Durbin-Watson stat	1.942024
Prob(F-statistic)	0.255124		

Inverted AR Roots	.76	-.76
Inverted MA Roots	.79	-.79

b. Tanpa konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 21:56
Sample (adjusted): 1/04/2012 4/30/2014
Included observations: 606 after adjustments
Convergence achieved after 10 iterations
MA Backcast: 1/02/2012 1/03/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(2)	0.578137	0.333228	1.734959	0.0833
MA(2)	-0.626153	0.318964	-1.963085	0.0501

R-squared	0.004097	Mean dependent var	0.000293
Adjusted R-squared	0.002448	S.D. dependent var	0.013355
S.E. of regression	0.013338	Akaike info criterion	-5.793060
Sum squared resid	0.107458	Schwarz criterion	-5.778516
Log likelihood	1757.297	Hannan-Quinn criter.	-5.787401
Durbin-Watson stat	1.940651		

Inverted AR Roots	.76	-.76
Inverted MA Roots	.79	-.79

7. ARIMA (3,0,0)

a. Dengan konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 21:58
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments
Convergence achieved after 3 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000278	0.000438	0.634441	0.5260
AR(3)	-0.210431	0.039780	-5.289878	0.0000

R-squared	0.044348	Mean dependent var	0.000261
Adjusted R-squared	0.042763	S.D. dependent var	0.013342
S.E. of regression	0.013053	Akaike info criterion	-5.836231
Sum squared resid	0.102746	Schwarz criterion	-5.821669
Log likelihood	1767.460	Hannan-Quinn criter.	-5.830564
F-statistic	27.98281	Durbin-Watson stat	1.955503
Prob(F-statistic)	0.000000		

Inverted AR Roots	.30+.52i	.30-.52i	-.59

b. Tanpa konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 21:59
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments
Convergence achieved after 3 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(3)	-0.209751	0.039746	-5.277306	0.0000

R-squared	0.043710	Mean dependent var	0.000261
Adjusted R-squared	0.043710	S.D. dependent var	0.013342
S.E. of regression	0.013047	Akaike info criterion	-5.838870
Sum squared resid	0.102815	Schwarz criterion	-5.831589
Log likelihood	1767.258	Hannan-Quinn criter.	-5.836037
Durbin-Watson stat	1.954070		

Inverted AR Roots	.30+.51i	.30-.51i	-.59

8. ARIMA (0,0,3)

a. Dengan konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 21:59
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 5 iterations
MA Backcast: 12/28/2011 12/30/2011

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000314	0.000414	0.757865	0.4488
MA(3)	-0.218762	0.039717	-5.508019	0.0000

R-squared	0.046081	Mean dependent var	0.000319
Adjusted R-squared	0.044507	S.D. dependent var	0.013348
S.E. of regression	0.013048	Akaike info criterion	-5.837102
Sum squared resid	0.103169	Schwarz criterion	-5.822594
Log likelihood	1776.479	Hannan-Quinn criter.	-5.831458
F-statistic	29.27384	Durbin-Watson stat	1.948546
Prob(F-statistic)	0.000000		

Inverted MA Roots	.60	-.30+.52i	-.30-.52i

b. Tanpa konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 22:00
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 5 iterations
MA Backcast: 12/28/2011 12/30/2011

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MA(3)	-0.217729	0.039687	-5.486105	0.0000

R-squared	0.045178	Mean dependent var	0.000319
Adjusted R-squared	0.045178	S.D. dependent var	0.013348
S.E. of regression	0.013043	Akaike info criterion	-5.839445
Sum squared resid	0.103267	Schwarz criterion	-5.832191
Log likelihood	1776.191	Hannan-Quinn criter.	-5.836623
Durbin-Watson stat	1.946494		

Inverted MA Roots	.60	-.30+.52i	-.30-.52i

9. ARIMA (3,0,3)

a. Dengan konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 22:00
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments
Convergence achieved after 6 iterations
MA Backcast: 1/02/2012 1/04/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000273	0.000420	0.650918	0.5153
AR(3)	-0.050255	0.177320	-0.283411	0.7770
MA(3)	-0.169705	0.175441	-0.967301	0.3338

R-squared	0.045807	Mean dependent var	0.000261
Adjusted R-squared	0.042637	S.D. dependent var	0.013342
S.E. of regression	0.013054	Akaike info criterion	-5.834454
Sum squared resid	0.102590	Schwarz criterion	-5.812609
Log likelihood	1767.922	Hannan-Quinn criter.	-5.825953
F-statistic	14.44985	Durbin-Watson stat	1.956476
Prob(F-statistic)	0.000001		

Inverted AR Roots	.18+.32i	.18-.32i	-.37
Inverted MA Roots	.55	-.28-.48i	-.28+.48i

b. Tanpa konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 22:01
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments
Convergence achieved after 6 iterations
MA Backcast: 1/02/2012 1/04/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(3)	-0.051367	0.177339	-0.289654	0.7722
MA(3)	-0.167704	0.175550	-0.955308	0.3398

R-squared	0.045136	Mean dependent var	0.000261
Adjusted R-squared	0.043553	S.D. dependent var	0.013342
S.E. of regression	0.013048	Akaike info criterion	-5.837057
Sum squared resid	0.102662	Schwarz criterion	-5.822494
Log likelihood	1767.710	Hannan-Quinn criter.	-5.831390
Durbin-Watson stat	1.954960		

Inverted AR Roots	.19+.32i	.19-.32i	-.37
Inverted MA Roots	.55	-.28-.48i	-.28+.48i

10. ARIMA (1,0,2)

a. Dengan konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 22:08
Sample (adjusted): 1/03/2012 4/30/2014
Included observations: 607 after adjustments
Convergence achieved after 8 iterations
MA Backcast: 12/30/2011 1/02/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000319	0.000555	0.574271	0.5660
AR(1)	0.042384	0.040685	1.041756	0.2979
MA(2)	-0.020005	0.040723	-0.491251	0.6234

R-squared	0.002410	Mean dependent var	0.000320
Adjusted R-squared	-0.000894	S.D. dependent var	0.013359
S.E. of regression	0.013365	Akaike info criterion	-5.787387
Sum squared resid	0.107892	Schwarz criterion	-5.765599
Log likelihood	1759.472	Hannan-Quinn criter.	-5.778910
F-statistic	0.729487	Durbin-Watson stat	1.996849
Prob(F-statistic)	0.482581		

Inverted AR Roots	.04	
Inverted MA Roots	.14	-.14

c. Tanpa konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 22:09
Sample (adjusted): 1/03/2012 4/30/2014
Included observations: 607 after adjustments
Convergence achieved after 8 iterations
MA Backcast: 12/30/2011 1/02/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	0.043061	0.040652	1.059260	0.2899
MA(2)	-0.019313	0.040691	-0.474628	0.6352

R-squared	0.001866	Mean dependent var	0.000320
Adjusted R-squared	0.000216	S.D. dependent var	0.013359
S.E. of regression	0.013358	Akaike info criterion	-5.790137
Sum squared resid	0.107951	Schwarz criterion	-5.775611
Log likelihood	1759.307	Hannan-Quinn criter.	-5.784485
Durbin-Watson stat	1.996812		

Inverted AR Roots	.04	
Inverted MA Roots	.14	-.14

11. ARIMA (1,0,3)

a. Dengan konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 22:10
Sample (adjusted): 1/03/2012 4/30/2014
Included observations: 607 after adjustments
Convergence achieved after 6 iterations
MA Backcast: 12/29/2011 1/02/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000312	0.000427	0.730336	0.4655
AR(1)	0.025795	0.040692	0.633910	0.5264
MA(3)	-0.216828	0.039811	-5.446448	0.0000

R-squared	0.046751	Mean dependent var	0.000320
Adjusted R-squared	0.043594	S.D. dependent var	0.013359
S.E. of regression	0.013065	Akaike info criterion	-5.832853
Sum squared resid	0.103097	Schwarz criterion	-5.811065
Log likelihood	1773.271	Hannan-Quinn criter.	-5.824376
F-statistic	14.81114	Durbin-Watson stat	1.996253
Prob(F-statistic)	0.000001		

Inverted AR Roots	.03		
Inverted MA Roots	.60	-.30+.52i	-.30-.52i

b. Tanpa konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 22:10
Sample (adjusted): 1/03/2012 4/30/2014
Included observations: 607 after adjustments
Convergence achieved after 6 iterations
MA Backcast: 12/29/2011 1/02/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	0.026784	0.040656	0.658806	0.5103
MA(3)	-0.215824	0.039780	-5.425469	0.0000

R-squared	0.045911	Mean dependent var	0.000320
Adjusted R-squared	0.044334	S.D. dependent var	0.013359
S.E. of regression	0.013060	Akaike info criterion	-5.835267
Sum squared resid	0.103188	Schwarz criterion	-5.820742
Log likelihood	1773.004	Hannan-Quinn criter.	-5.829616
Durbin-Watson stat	1.996212		

Inverted AR Roots	.03		
Inverted MA Roots	.60	-.30+.52i	-.30-.52i

12. ARIMA (2,0,1)

a. Dengan konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 22:37
Sample (adjusted): 1/04/2012 4/30/2014
Included observations: 606 after adjustments
Convergence achieved after 8 iterations
MA Backcast: 1/03/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000295	0.000556	0.531019	0.5956
AR(2)	-0.015476	0.040711	-0.380134	0.7040
MA(1)	0.040610	0.040716	0.997412	0.3190

R-squared	0.002146	Mean dependent var	0.000293
Adjusted R-squared	-0.001164	S.D. dependent var	0.013355
S.E. of regression	0.013362	Akaike info criterion	-5.787803
Sum squared resid	0.107668	Schwarz criterion	-5.765987
Log likelihood	1756.704	Hannan-Quinn criter.	-5.779314
F-statistic	0.648437	Durbin-Watson stat	1.996373
Prob(F-statistic)	0.523227		

Inverted MA Roots	-.04

b. Tanpa konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 22:37
Sample (adjusted): 1/04/2012 4/30/2014
Included observations: 606 after adjustments
Convergence achieved after 8 iterations
MA Backcast: 1/03/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(2)	-0.014844	0.040677	-0.364926	0.7153
MA(1)	0.041141	0.040682	1.011274	0.3123

R-squared	0.001680	Mean dependent var	0.000293
Adjusted R-squared	0.000027	S.D. dependent var	0.013355
S.E. of regression	0.013354	Akaike info criterion	-5.790636
Sum squared resid	0.107718	Schwarz criterion	-5.776092
Log likelihood	1756.563	Hannan-Quinn criter.	-5.784977
Durbin-Watson stat	1.996259		

Inverted MA Roots	-.04

13. ARIMA (2,0,3)

a. Dengan konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 22:11
Sample (adjusted): 1/04/2012 4/30/2014
Included observations: 606 after adjustments
Convergence achieved after 5 iterations
MA Backcast: 12/30/2011 1/03/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000298	0.000407	0.732491	0.4642
AR(2)	-0.021947	0.040700	-0.539233	0.5899
MA(3)	-0.217597	0.039816	-5.465117	0.0000

R-squared	0.045790	Mean dependent var	0.000293
Adjusted R-squared	0.042625	S.D. dependent var	0.013355
S.E. of regression	0.013067	Akaike info criterion	-5.832526
Sum squared resid	0.102959	Schwarz criterion	-5.810709
Log likelihood	1770.255	Hannan-Quinn criter.	-5.824037
F-statistic	14.46804	Durbin-Watson stat	1.950091
Prob(F-statistic)	0.000001		

Inverted MA Roots	.60	-.30+.52i	-.30-.52i

b. Tanpa konstantab

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 22:12
Sample (adjusted): 1/04/2012 4/30/2014
Included observations: 606 after adjustments
Convergence achieved after 5 iterations
MA Backcast: 12/30/2011 1/03/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(2)	-0.021003	0.040664	-0.516496	0.6057
MA(3)	-0.216497	0.039788	-5.441298	0.0000

R-squared	0.044943	Mean dependent var	0.000293
Adjusted R-squared	0.043361	S.D. dependent var	0.013355
S.E. of regression	0.013062	Akaike info criterion	-5.834939
Sum squared resid	0.103050	Schwarz criterion	-5.820395
Log likelihood	1769.986	Hannan-Quinn criter.	-5.829279
Durbin-Watson stat	1.948286		

Inverted MA Roots	.60	-.30-.52i	-.30+.52i

14. ARIMA (3,0,1)

a. Dengan konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 22:18
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments
Convergence achieved after 6 iterations
MA Backcast: 1/04/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000278	0.000450	0.618898	0.5362
AR(3)	-0.208308	0.039838	-5.228927	0.0000
MA(1)	0.023091	0.040753	0.566601	0.5712

R-squared	0.044836	Mean dependent var	0.000261
Adjusted R-squared	0.041663	S.D. dependent var	0.013342
S.E. of regression	0.013061	Akaike info criterion	-5.833437
Sum squared resid	0.102694	Schwarz criterion	-5.811593
Log likelihood	1767.615	Hannan-Quinn criter.	-5.824936
F-statistic	14.12925	Durbin-Watson stat	2.000496
Prob(F-statistic)	0.000001		

Inverted AR Roots	.30+.51i	.30-.51i	-.59
Inverted MA Roots	-.02		

b. Tanpa konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 22:19
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments
Convergence achieved after 6 iterations
MA Backcast: 1/04/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(3)	-0.207596	0.039804	-5.215509	0.0000
MA(1)	0.023775	0.040719	0.583893	0.5595

R-squared	0.044229	Mean dependent var	0.000261
Adjusted R-squared	0.042644	S.D. dependent var	0.013342
S.E. of regression	0.013054	Akaike info criterion	-5.836107
Sum squared resid	0.102759	Schwarz criterion	-5.821545
Log likelihood	1767.422	Hannan-Quinn criter.	-5.830440
Durbin-Watson stat	2.000439		

Inverted AR Roots	.30-.51i	.30+.51i	-.59
Inverted MA Roots	-.02		

15. ARIMA (3,02)

a. Dengan konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 22:20
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments
Convergence achieved after 5 iterations
MA Backcast: 1/03/2012 1/04/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000278	0.000430	0.646896	0.5179
AR(3)	-0.209940	0.039848	-5.268484	0.0000
MA(2)	-0.019351	0.040795	-0.474354	0.6354

R-squared	0.044646	Mean dependent var	0.000261
Adjusted R-squared	0.041472	S.D. dependent var	0.013342
S.E. of regression	0.013062	Akaike info criterion	-5.833238
Sum squared resid	0.102714	Schwarz criterion	-5.811394
Log likelihood	1767.554	Hannan-Quinn criter.	-5.824737
F-statistic	14.06652	Durbin-Watson stat	1.954904
Prob(F-statistic)	0.000001		

Inverted AR Roots	.30+.51i	.30-.51i	-.59
Inverted MA Roots	.14	-.14	

b. Tanpa konstanta

Dependent Variable: LOGRETURN
Method: Least Squares
Date: 06/19/14 Time: 22:21
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments
Convergence achieved after 5 iterations
MA Backcast: 1/03/2012 1/04/2012

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(3)	-0.209257	0.039815	-5.255760	0.0000
MA(2)	-0.018479	0.040762	-0.453344	0.6505

R-squared	0.043983	Mean dependent var	0.000261
Adjusted R-squared	0.042398	S.D. dependent var	0.013342
S.E. of regression	0.013056	Akaike info criterion	-5.835850
Sum squared resid	0.102786	Schwarz criterion	-5.821287
Log likelihood	1767.345	Hannan-Quinn criter.	-5.830183
Durbin-Watson stat	1.953466		

Inverted AR Roots	.30+.51i	.30-.51i	-.59
Inverted MA Roots	.14	-.14	

Lampiran 5

Uji efek ARCH untuk model ARIMA dengan lag =3

ARIMA (3,0,0**)**

Heteroskedasticity Test: ARCH

F-statistic	16.35036	Prob. F(3,598)	0.0000
Obs*R-squared	45.63588	Prob. Chi-Square(3)	0.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 07/02/14 Time: 21:04
Sample (adjusted): 1/10/2012 4/30/2014
Included observations: 602 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000102	1.73E-05	5.869235	0.0000
RESID^2(-1)	0.155593	0.040391	3.852163	0.0001
RESID^2(-2)	0.090624	0.040722	2.225443	0.0264
RESID^2(-3)	0.157219	0.040402	3.891360	0.0001

R-squared	0.075807	Mean dependent var	0.000170
Adjusted R-squared	0.071171	S.D. dependent var	0.000362
S.E. of regression	0.000349	Akaike info criterion	-13.07923
Sum squared resid	7.26E-05	Schwarz criterion	-13.04999
Log likelihood	3940.848	Hannan-Quinn criter.	-13.06785
F-statistic	16.35036	Durbin-Watson stat	2.022094
Prob(F-statistic)	0.000000		

ARIMA (0,0,3)

Heteroskedasticity Test: ARCH

F-statistic	16.49911	Prob. F(3,601)	0.0000
Obs*R-squared	46.03538	Prob. Chi-Square(3)	0.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 08/26/14 Time: 10:37
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000101	1.73E-05	5.849158	0.0000
RESID^2(-1)	0.158970	0.040287	3.945969	0.0001
RESID^2(-2)	0.088098	0.040649	2.167289	0.0306
RESID^2(-3)	0.156262	0.040294	3.878024	0.0001

R-squared	0.076092	Mean dependent var	0.000170
Adjusted R-squared	0.071480	S.D. dependent var	0.000362
S.E. of regression	0.000348	Akaike info criterion	-13.07943
Sum squared resid	7.30E-05	Schwarz criterion	-13.05031
Log likelihood	3960.528	Hannan-Quinn criter.	-13.06810
F-statistic	16.49911	Durbin-Watson stat	2.020519
Prob(F-statistic)	0.000000		

Lampiran 6

Estimasi Parameter Model GARCH

1. GARCH (0,1)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 06/29/14 Time: 04:23
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 17 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000355	0.000585	0.608049	0.5432
Variance Equation				
C	-2.28E-07	5.22E-07	-0.437096	0.6620
GARCH(-1)	1.002302	0.003162	316.9380	0.0000

R-squared	-0.000007	Mean dependent var	0.000319
Adjusted R-squared	-0.000007	S.D. dependent var	0.013348
S.E. of regression	0.013348	Akaike info criterion	-5.821922
Sum squared resid	0.108154	Schwarz criterion	-5.800162
Log likelihood	1772.864	Hannan-Quinn criter.	-5.813456
Durbin-Watson stat	1.908481		

2. GARCH (0,2)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 07/05/14 Time: 10:32
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 12 iterations
WARNING: Singular covariance - coefficients are not unique
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*GARCH(-1) + C(4)*GARCH(-2)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000345	NA	NA	NA
Variance Equation				
C	-2.87E-07	NA	NA	NA
GARCH(-1)	0.902697	NA	NA	NA
GARCH(-2)	0.100046	NA	NA	NA

R-squared	-0.000004	Mean dependent var	0.000319
Adjusted R-squared	-0.000004	S.D. dependent var	0.013348
S.E. of regression	0.013348	Akaike info criterion	-5.818584
Sum squared resid	0.108154	Schwarz criterion	-5.789570
Log likelihood	1772.850	Hannan-Quinn criter.	-5.807296
Durbin-Watson stat	1.908488		

3. GARCH (0,3)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 07/05/14 Time: 10:35
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 10 iterations
WARNING: Singular covariance - coefficients are not unique
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*GARCH(-1) + C(4)*GARCH(-2) + C(5)*GARCH(-3)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000450	NA	NA	NA
Variance Equation				
C	-3.80E-07	NA	NA	NA
GARCH(-1)	0.796536	NA	NA	NA
GARCH(-2)	0.202063	NA	NA	NA
GARCH(-3)	0.004849	NA	NA	NA

R-squared	-0.000097	Mean dependent var	0.000319
Adjusted R-squared	-0.000097	S.D. dependent var	0.013348
S.E. of regression	0.013349	Akaike info criterion	-5.815926
Sum squared resid	0.108164	Schwarz criterion	-5.779658
Log likelihood	1773.041	Hannan-Quinn criter.	-5.801816
Durbin-Watson stat	1.908310		

4. GARCH (1,0)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 07/05/14 Time: 10:37
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 7 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000430	0.000464	0.927410	0.3537
Variance Equation				
C	0.000121	6.22E-06	19.48101	0.0000
RESID(-1)^2	0.345816	0.057700	5.993403	0.0000

R-squared	-0.000069	Mean dependent var	0.000319
Adjusted R-squared	-0.000069	S.D. dependent var	0.013348
S.E. of regression	0.013349	Akaike info criterion	-5.875564
Sum squared resid	0.108161	Schwarz criterion	-5.853803
Log likelihood	1789.171	Hannan-Quinn criter.	-5.867098
Durbin-Watson stat	1.908363		

5. GARCH (1,1)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 06/30/14 Time: 04:26
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 11 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000379	0.000431	0.879141	0.3793
Variance Equation				
C	6.49E-06	2.48E-06	2.617355	0.0089
RESID(-1)^2	0.157803	0.025461	6.197736	0.0000
GARCH(-1)	0.811137	0.032007	25.34224	0.0000

R-squared	-0.000020	Mean dependent var	0.000319
Adjusted R-squared	-0.000020	S.D. dependent var	0.013348
S.E. of regression	0.013348	Akaike info criterion	-6.017898
Sum squared resid	0.108155	Schwarz criterion	-5.988883
Log likelihood	1833.441	Hannan-Quinn criter.	-6.006610
Durbin-Watson stat	1.908457		

6. GARCH (1,2)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 06/30/14 Time: 04:28
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 10 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1) + C(5)*GARCH(-2)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000341	0.000426	0.800365	0.4235
Variance Equation				
C	8.06E-06	3.20E-06	2.517411	0.0118
RESID(-1)^2	0.209057	0.037343	5.598335	0.0000
GARCH(-1)	0.446876	0.206308	2.166064	0.0303
GARCH(-2)	0.307206	0.184160	1.668150	0.0953

R-squared	-0.000003	Mean dependent var	0.000319
Adjusted R-squared	-0.000003	S.D. dependent var	0.013348
S.E. of regression	0.013348	Akaike info criterion	-6.017773
Sum squared resid	0.108154	Schwarz criterion	-5.981505
Log likelihood	1834.403	Hannan-Quinn criter.	-6.003663
Durbin-Watson stat	1.908490		

7. GARCH (1,3)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 07/05/14 Time: 12:18
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 21 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*GARCH(-1) + C(5)*GARCH(-2) + C(6)*GARCH(-3)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000275	0.000422	0.651961	0.5144
Variance Equation				
C	1.06E-05	4.31E-06	2.469386	0.0135
RESID(-1)^2	0.289810	0.049034	5.910398	0.0000
GARCH(-1)	0.134525	0.115942	1.160275	0.2459
GARCH(-2)	0.219035	0.137485	1.593157	0.1111
GARCH(-3)	0.311833	0.123657	2.521751	0.0117

R-squared	-0.000011	Mean dependent var	0.000319
Adjusted R-squared	-0.000011	S.D. dependent var	0.013348
S.E. of regression	0.013348	Akaike info criterion	-6.017540
Sum squared resid	0.108154	Schwarz criterion	-5.974018
Log likelihood	1835.332	Hannan-Quinn criter.	-6.000608
Durbin-Watson stat	1.908474		

8. GARCH (2,0)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 06/30/14 Time: 04:33
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 9 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000663	0.000462	1.434321	0.1515
Variance Equation				
C	0.000106	6.96E-06	15.17833	0.0000
RESID(-1)^2	0.292637	0.050642	5.778569	0.0000
RESID(-2)^2	0.139821	0.041971	3.331330	0.0009

R-squared	-0.000664	Mean dependent var	0.000319
Adjusted R-squared	-0.000664	S.D. dependent var	0.013348
S.E. of regression	0.013353	Akaike info criterion	-5.891096
Sum squared resid	0.108225	Schwarz criterion	-5.862082
Log likelihood	1794.893	Hannan-Quinn criter.	-5.879808
Durbin-Watson stat	1.907228		

9. GARCH (2,1)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 06/30/14 Time: 04:37
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 8 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000354	0.000428	0.828605	0.4073
Variance Equation				
C	4.77E-06	2.27E-06	2.102374	0.0355
RESID(-1)^2	0.221763	0.041265	5.374157	0.0000
RESID(-2)^2	-0.089083	0.044646	-1.995306	0.0460
GARCH(-1)	0.845903	0.038644	21.88942	0.0000

R-squared	-0.000007	Mean dependent var	0.000319
Adjusted R-squared	-0.000007	S.D. dependent var	0.013348
S.E. of regression	0.013348	Akaike info criterion	-6.017860
Sum squared resid	0.108154	Schwarz criterion	-5.981592
Log likelihood	1834.429	Hannan-Quinn criter.	-6.003750
Durbin-Watson stat	1.908481		

10. GARCH (2,2)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 07/05/14 Time: 12:43
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 15 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)*GARCH(-1)
+ C(6)*GARCH(-2)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000334	0.000426	0.784617	0.4327
Variance Equation				
C	6.45E-06	5.12E-06	1.261068	0.2073
RESID(-1)^2	0.229150	0.042044	5.450233	0.0000
RESID(-2)^2	-0.055085	0.110443	-0.498762	0.6179
GARCH(-1)	0.611020	0.549453	1.112051	0.2661
GARCH(-2)	0.186015	0.428457	0.434152	0.6642

R-squared	-0.000001	Mean dependent var	0.000319
Adjusted R-squared	-0.000001	S.D. dependent var	0.013348
S.E. of regression	0.013348	Akaike info criterion	-6.015049
Sum squared resid	0.108153	Schwarz criterion	-5.971528
Log likelihood	1834.575	Hannan-Quinn criter.	-5.998117
Durbin-Watson stat	1.908492		

11. GARCH (2,3)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 07/05/14 Time: 12:51
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 20 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)*GARCH(-1) + C(6)*GARCH(-2) + C(7)*GARCH(-3)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000242	0.000419	0.577476	0.5636
Variance Equation				
C	1.42E-05	5.51E-06	2.571621	0.0101
RESID(-1)^2	0.269987	0.047581	5.674279	0.0000
RESID(-2)^2	0.153810	0.052040	2.955615	0.0031
GARCH(-1)	-0.330774	0.110899	-2.982666	0.0029
GARCH(-2)	0.255154	0.065765	3.879789	0.0001
GARCH(-3)	0.597072	0.077400	7.714096	0.0000

R-squared	-0.000033	Mean dependent var	0.000319
Adjusted R-squared	-0.000033	S.D. dependent var	0.013348
S.E. of regression	0.013349	Akaike info criterion	-6.023499
Sum squared resid	0.108157	Schwarz criterion	-5.972724
Log likelihood	1838.144	Hannan-Quinn criter.	-6.003745
Durbin-Watson stat	1.908431		

12. GARCH (3,0)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 07/05/14 Time: 12:58
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 10 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)*RESID(-3)^2

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000516	0.000430	1.198225	0.2308
Variance Equation				
C	7.94E-05	7.06E-06	11.24555	0.0000
RESID(-1)^2	0.266289	0.045499	5.852601	0.0000
RESID(-2)^2	0.090918	0.039457	2.304217	0.0212
RESID(-3)^2	0.227043	0.047784	4.751410	0.0000

R-squared	-0.000217	Mean dependent var	0.000319
Adjusted R-squared	-0.000217	S.D. dependent var	0.013348
S.E. of regression	0.013350	Akaike info criterion	-5.947417
Sum squared resid	0.108177	Schwarz criterion	-5.911149
Log likelihood	1813.015	Hannan-Quinn criter.	-5.933307
Durbin-Watson stat	1.908080		

13. GARCH (3,1)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 06/30/14 Time: 04:39
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 8 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)*RESID(-3)^2 + C(6)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000312	0.000423	0.737096	0.4611
Variance Equation				
C	6.30E-06	3.22E-06	1.956001	0.0505
RESID(-1)^2	0.228802	0.041236	5.548613	0.0000
RESID(-2)^2	-0.113952	0.056022	-2.034061	0.0419
RESID(-3)^2	0.046330	0.050905	0.910139	0.3627
GARCH(-1)	0.810310	0.056543	14.33075	0.0000

R-squared	-0.000000	Mean dependent var	0.000319
Adjusted R-squared	-0.000000	S.D. dependent var	0.013348
S.E. of regression	0.013348	Akaike info criterion	-6.015455
Sum squared resid	0.108153	Schwarz criterion	-5.971933
Log likelihood	1834.698	Hannan-Quinn criter.	-5.998523

14. GARCH (3,2)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 07/05/14 Time: 12:21
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 9 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)*RESID(-3)^2 + C(6)*GARCH(-1) + C(7)*GARCH(-2)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000313	0.000426	0.734274	0.4628
Variance Equation				
C	6.50E-06	6.62E-06	0.982538	0.3258
RESID(-1)^2	0.228933	0.041272	5.546936	0.0000
RESID(-2)^2	-0.106140	0.253343	-0.418957	0.6752
RESID(-3)^2	0.043637	0.106676	0.409067	0.6825
GARCH(-1)	0.774296	1.051132	0.736631	0.4613
GARCH(-2)	0.029884	0.871300	0.034298	0.9726

R-squared	-0.000000	Mean dependent var	0.000319
Adjusted R-squared	-0.000000	S.D. dependent var	0.013348
S.E. of regression	0.013348	Akaike info criterion	-6.012173
Sum squared resid	0.108153	Schwarz criterion	-5.961398
Log likelihood	1834.701	Hannan-Quinn criter.	-5.992419
Durbin-Watson stat	1.908494		

15. GARCH (3,3)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 07/05/14 Time: 12:23
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 42 iterations
Presample variance: backcast (parameter = 0.7)
GARCH = C(2) + C(3)*RESID(-1)^2 + C(4)*RESID(-2)^2 + C(5)*RESID(-3)^2 + C(6)*GARCH(-1) + C(7)*GARCH(-2) + C(8)*GARCH(-3)

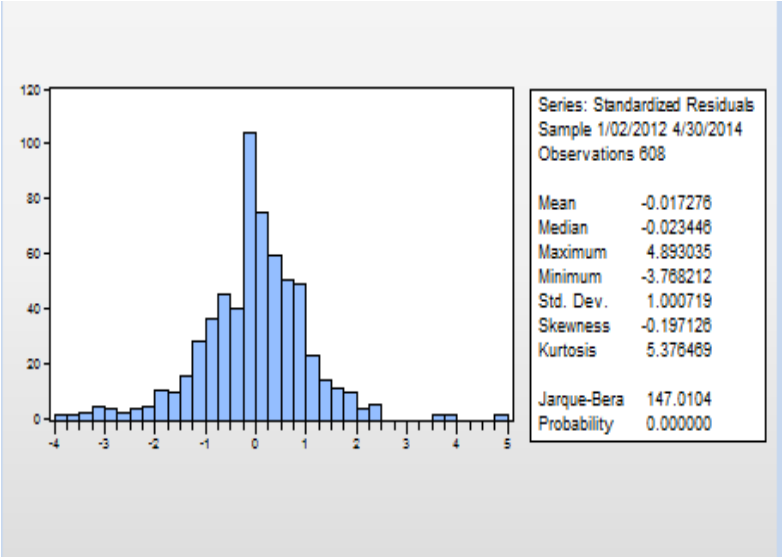
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000216	0.000410	0.526730	0.5984
Variance Equation				
C	1.66E-05	6.83E-06	2.427937	0.0152
RESID(-1)^2	0.256594	0.035407	7.246967	0.0000
RESID(-2)^2	0.207567	0.044799	4.633324	0.0000
RESID(-3)^2	0.084206	0.045063	1.868615	0.0617
GARCH(-1)	-0.455516	0.038694	-11.77232	0.0000
GARCH(-2)	0.162927	0.052318	3.114141	0.0018
GARCH(-3)	0.691086	0.033981	20.33737	0.0000

R-squared	-0.000060	Mean dependent var	0.000319
Adjusted R-squared	-0.000060	S.D. dependent var	0.013348
S.E. of regression	0.013349	Akaike info criterion	-6.028893
Sum squared resid	0.108160	Schwarz criterion	-5.970864
Log likelihood	1840.783	Hannan-Quinn criter.	-6.006317
Durbin-Watson stat	1.908380		

Lampiran 7

Pemeriksaan diagnosa untuk model GARCH

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



   b. Uji Arch Lm

Heteroskedasticity Test: ARCH

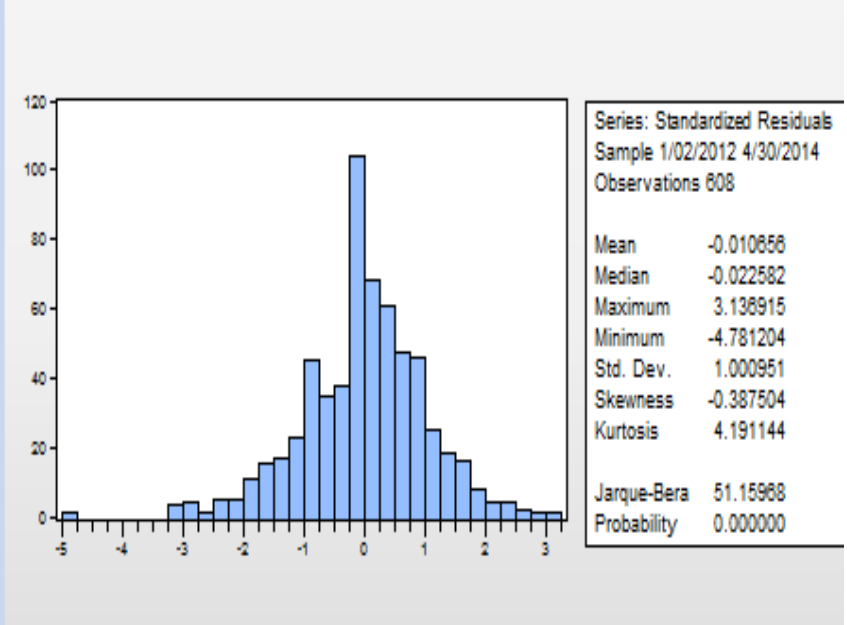
F-statistic	6.793686	Prob. F(3,601)	0.0002
Obs*R-squared	19.84377	Prob. Chi-Square(3)	0.0002

Test Equation:
Dependent Variable: WGT_RESID^2
Method: Least Squares
Date: 07/06/14 Time: 10:18
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.796631	0.109081	7.303147	0.0000
WGT_RESID^2(-1)	-0.039933	0.040248	-0.992172	0.3215
WGT_RESID^2(-2)	0.078655	0.040146	1.959206	0.0506
WGT_RESID^2(-3)	0.163138	0.040277	4.050443	0.0001

R-squared	0.032800	Mean dependent var	0.998622
Adjusted R-squared	0.027972	S.D. dependent var	2.100923
S.E. of regression	2.071331	Akaike info criterion	4.300850
Sum squared resid	2578.538	Schwarz criterion	4.329975
Log likelihood	-1297.007	Hannan-Quinn criter.	4.312183
F-statistic	6.793686	Durbin-Watson stat	2.044628
Prob(F-statistic)	0.000165		

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



   b. Uji Arch Lm

Heteroskedasticity Test: ARCH

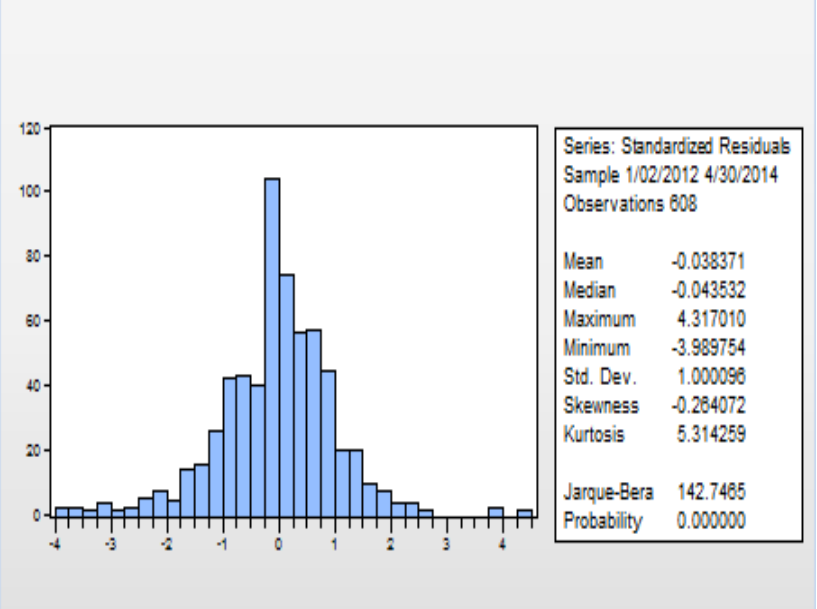
F-statistic	0.340798	Prob. F(3,601)	0.7958
Obs*R-squared	1.027451	Prob. Chi-Square(3)	0.7946

Test Equation:
Dependent Variable: WGT_RESID^2
Method: Least Squares
Date: 07/06/14 Time: 10:27
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.013963	0.101223	10.01711	0.0000
WGT_RESID^2(-1)	0.026805	0.040765	0.657549	0.5111
WGT_RESID^2(-2)	-0.025969	0.040760	-0.637116	0.5243
WGT_RESID^2(-3)	-0.017221	0.040952	-0.420523	0.6743

R-squared	0.001698	Mean dependent var	0.997594
Adjusted R-squared	-0.003285	S.D. dependent var	1.795310
S.E. of regression	1.798256	Akaike info criterion	4.018102
Sum squared resid	1943.469	Schwarz criterion	4.047227
Log likelihood	-1211.476	Hannan-Quinn criter.	4.029435
F-statistic	0.340798	Durbin-Watson stat	1.996913
Prob(F-statistic)	0.795838		

3. Uji asumsi GARCH (2,0)
   a. Uji Normalitas



   b. Uji Arch Lm

Heteroskedasticity Test: ARCH

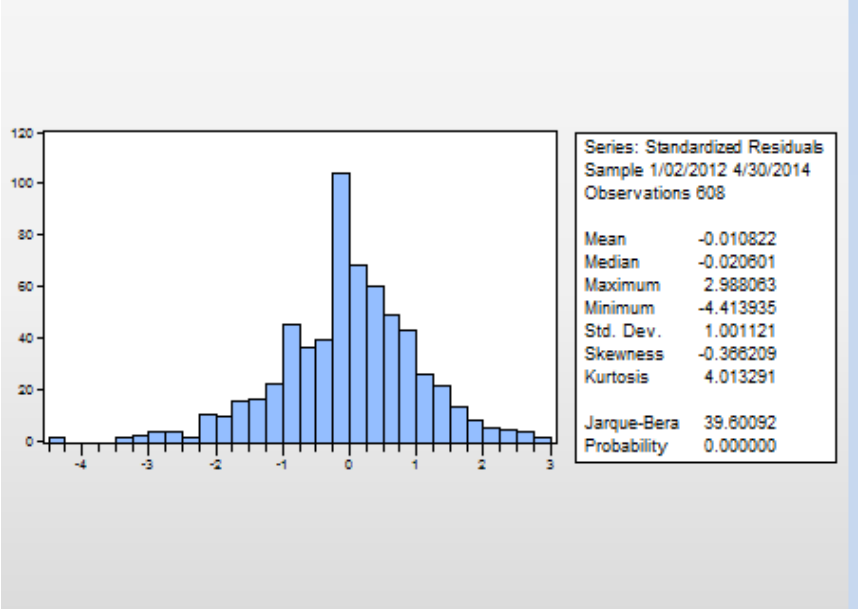
F-statistic	4.933936	Prob. F(3,601)	0.0022
Obs*R-squared	14.54217	Prob. Chi-Square(3)	0.0023

Test Equation:
Dependent Variable: WGT_RESID^2
Method: Least Squares
Date: 07/06/14 Time: 10:31
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.892476	0.110623	8.067701	0.0000
WGT_RESID^2(-1)	-0.023384	0.040322	-0.579929	0.5622
WGT_RESID^2(-2)	-0.021289	0.040320	-0.528005	0.5977
WGT_RESID^2(-3)	0.150941	0.040373	3.738619	0.0002

R-squared	0.024037	Mean dependent var	0.998305
Adjusted R-squared	0.019165	S.D. dependent var	2.090874
S.E. of regression	2.070741	Akaike info criterion	4.300280
Sum squared resid	2577.069	Schwarz criterion	4.329405
Log likelihood	-1296.835	Hannan-Quinn criter.	4.311614
F-statistic	4.933936	Durbin-Watson stat	2.036064
Prob(F-statistic)	0.002157		

4. Uji asumsi GARCH (2,1)
   a. Uji Normalitas



   b. Uji Arch Lm

Heteroskedasticity Test: ARCH

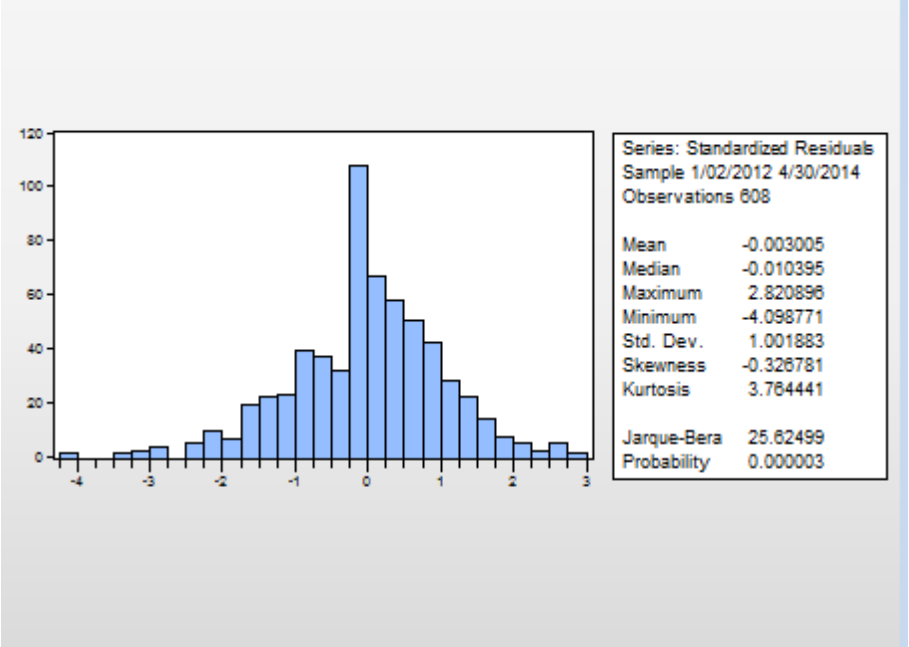
F-statistic	0.066054	Prob. F(3,601)	0.9779
Obs*R-squared	0.199416	Prob. Chi-Square(3)	0.9777

Test Equation:
Dependent Variable: WGT_RESID^2
Method: Least Squares
Date: 07/06/14 Time: 10:40
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.028448	0.100673	10.21576	0.0000
WGT_RESID^2(-1)	-0.006211	0.040773	-0.152324	0.8790
WGT_RESID^2(-2)	-0.011421	0.040758	-0.280215	0.7794
WGT_RESID^2(-3)	-0.012858	0.040929	-0.314142	0.7535

R-squared	0.000330	Mean dependent var	0.997937
Adjusted R-squared	-0.004660	S.D. dependent var	1.745181
S.E. of regression	1.749243	Akaike info criterion	3.962833
Sum squared resid	1838.971	Schwarz criterion	3.991959
Log likelihood	-1194.757	Hannan-Quinn criter.	3.974167
F-statistic	0.066054	Durbin-Watson stat	1.997023
Prob(F-statistic)	0.977864		

5. Uji asumsi GARCH (2,3)
   a. Uji Normalitas



   b. Uji Arch Lm

Heteroskedasticity Test: ARCH

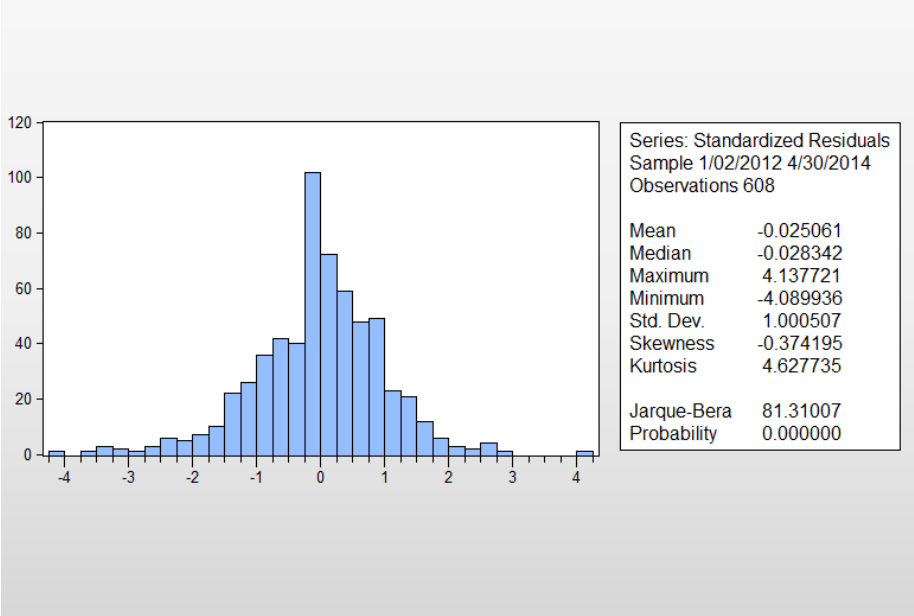
F-statistic	0.150655	Prob. F(3,601)	0.9293
Obs*R-squared	0.454631	Prob. Chi-Square(3)	0.9287

Test Equation:
Dependent Variable: WGT_RESID^2
Method: Least Squares
Date: 07/06/14 Time: 10:36
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.000654	0.098862	10.12170	0.0000
WGT_RESID^2(-1)	-0.022542	0.040777	-0.552813	0.5806
WGT_RESID^2(-2)	0.007672	0.040767	0.188203	0.8508
WGT_RESID^2(-3)	0.013675	0.040847	0.334771	0.7379

R-squared	0.000751	Mean dependent var	0.999436
Adjusted R-squared	-0.004236	S.D. dependent var	1.670675
S.E. of regression	1.674210	Akaike info criterion	3.875149
Sum squared resid	1684.590	Schwarz criterion	3.904275
Log likelihood	-1168.233	Hannan-Quinn criter.	3.886483
F-statistic	0.150655	Durbin-Watson stat	1.997065
Prob(F-statistic)	0.929266		

6. Uji asumsi (3,0)
   a. Uji Normalitas



   b. Uji Arch Lm

Heteroskedasticity Test: ARCH

F-statistic	0.288863	Prob. F(3,601)	0.8335
Obs*R-squared	0.871100	Prob. Chi-Square(3)	0.8324

Test Equation:
Dependent Variable: WGT_RESID^2
Method: Least Squares
Date: 07/06/14 Time: 10:43
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.053295	0.106224	9.915822	0.0000
WGT_RESID^2(-1)	-0.026526	0.040772	-0.650605	0.5156
WGT_RESID^2(-2)	-0.001473	0.040780	-0.036130	0.9712
WGT_RESID^2(-3)	-0.027226	0.040910	-0.665523	0.5060

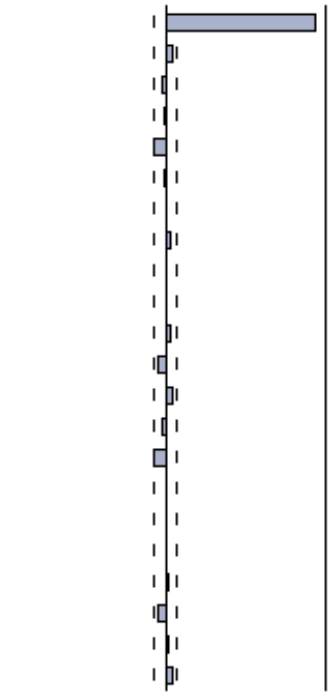
R-squared	0.001440	Mean dependent var	0.998136
Adjusted R-squared	-0.003545	S.D. dependent var	1.918853
S.E. of regression	1.922251	Akaike info criterion	4.151461
Sum squared resid	2220.725	Schwarz criterion	4.180586
Log likelihood	-1251.817	Hannan-Quinn criter.	4.162794
F-statistic	0.288863	Durbin-Watson stat	1.992243
Prob(F-statistic)	0.833459		

Lampiran 8

Korelogram pengujian efek asimetris

- Lag dan lead resid 1
- Lag dan Lead resid 2

Date: 08/12/14 Time: 09:37
Sample: 1/02/2012 4/30/2014
Included observations: 608
Correlations are asymptotically consistent approximations



RESID01,RESID02(-i)	RESID01,RESID02(+i)	i	lag	lead
		0	0.9772	0.9772
		1	0.0411	0.0297
		2	-0.0179	-0.0261
		3	-0.0027	-0.2130
		4	-0.0806	-0.0778
		5	-0.0116	-0.0095
		6	0.0039	0.0070
		7	0.0318	0.0532
		8	0.0022	-0.0081
		9	0.0021	0.0107
		10	0.0319	0.0185
		11	-0.0470	-0.0589
		12	0.0420	0.0437
		13	-0.0219	-0.0279
		14	-0.0660	-0.0522
		15	0.0114	0.0095
		16	0.0120	0.0064
		17	0.0042	0.0200
		18	0.0223	0.0271
		19	-0.0424	-0.0513
		20	0.0224	0.0075
		21	0.0473	0.0363

Lampiran 9

Estimasi Parameter Model EGARCH

EGARCH (1,1)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 07/06/14 Time: 10:46
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 15 iterations
Presample variance: backcast (parameter = 0.7)
LOG(GARCH) = C(2) + C(3)*ABS(RESID(-1)/@SQRT(GARCH(-1))) + C(4)
*RESID(-1)/@SQRT(GARCH(-1)) + C(5)*LOG(GARCH(-1))

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000310	0.000434	0.713775	0.4754
Variance Equation				
C(2)	-0.492669	0.140791	-3.499288	0.0005
C(3)	0.210626	0.046583	4.521488	0.0000
C(4)	-0.061296	0.024193	-2.533657	0.0113
C(5)	0.962288	0.013682	70.33078	0.0000

R-squared	-0.000001	Mean dependent var	0.000319
Adjusted R-squared	-0.000001	S.D. dependent var	0.013348
S.E. of regression	0.013348	Akaike info criterion	-6.014612
Sum squared resid	0.108153	Schwarz criterion	-5.978344
Log likelihood	1833.442	Hannan-Quinn criter.	-6.000502
Durbin-Watson stat	1.908494		

Korrelogram EGARCH (1,1)

Date: 08/13/14 Time: 08:32
Sample: 1/02/2012 4/30/2014
Included observations: 608

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.040	0.040	0.9869	0.320
		2	-0.006	-0.007	1.0059	0.605
		3	-0.001	-0.000	1.0065	0.800
		4	0.026	0.027	1.4360	0.838
		5	-0.049	-0.051	2.9041	0.715
		6	0.016	0.020	3.0594	0.801
		7	-0.005	-0.007	3.0745	0.878
		8	-0.017	-0.017	3.2484	0.918
		9	0.013	0.017	3.3513	0.949
		10	0.041	0.036	4.3826	0.928
		11	-0.025	-0.026	4.7803	0.941
		12	0.018	0.021	4.9889	0.958
		13	-0.050	-0.054	6.5248	0.925
		14	-0.017	-0.012	6.6984	0.946
		15	0.058	0.064	8.8125	0.887
		16	0.026	0.015	9.2298	0.904
		17	0.019	0.025	9.4679	0.924
		18	-0.023	-0.029	9.7911	0.939
		19	0.048	0.046	11.234	0.916
		20	-0.003	-0.002	11.238	0.940

EGARCH (1,2)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 08/23/14 Time: 20:42
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 15 iterations
Presample variance: backcast (parameter = 0.7)
LOG(GARCH) = C(2) + C(3)*ABS(RESID(-1)/@SQRT(GARCH(-1))) + C(4)
*RESID(-1)/@SQRT(GARCH(-1)) + C(5)*LOG(GARCH(-1)) + C(6)
*LOG(GARCH(-2))

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000285	0.000431	0.660439	0.5090
Variance Equation				
C(2)	-0.670535	0.193873	-3.458631	0.0005
C(3)	0.295719	0.064429	4.589876	0.0000
C(4)	-0.073002	0.031617	-2.308966	0.0209
C(5)	0.615714	0.205724	2.992914	0.0028
C(6)	0.333733	0.200390	1.665416	0.0958

R-squared	-0.000007	Mean dependent var	0.000319
Adjusted R-squared	-0.000007	S.D. dependent var	0.013348
S.E. of regression	0.013348	Akaike info criterion	-6.014616
Sum squared resid	0.108154	Schwarz criterion	-5.971094
Log likelihood	1834.443	Hannan-Quinn criter.	-5.997684
Durbin-Watson stat	1.908482		

Kolerrogram EGARCH (1,2)

Date: 08/23/14 Time: 20:43
Sample: 1/02/2012 4/30/2014
Included observations: 608

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.012	0.012	0.0897	0.765
		2	0.007	0.007	0.1213	0.941
		3	-0.003	-0.003	0.1261	0.989
		4	0.032	0.032	0.7561	0.944
		5	-0.052	-0.053	2.4084	0.790
		6	0.017	0.018	2.5916	0.858
		7	-0.004	-0.004	2.6018	0.919
		8	-0.013	-0.015	2.7068	0.951
		9	0.016	0.020	2.8606	0.970
		10	0.040	0.036	3.8437	0.954
		11	-0.025	-0.025	4.2443	0.962
		12	0.026	0.026	4.6517	0.969
		13	-0.046	-0.049	5.9463	0.948
		14	-0.017	-0.016	6.1221	0.963
		15	0.064	0.071	8.6721	0.894
		16	0.017	0.009	8.8581	0.919
		17	0.020	0.026	9.1026	0.937
		18	-0.020	-0.025	9.3574	0.951
		19	0.049	0.043	10.885	0.928
		20	-0.007	-0.001	10.912	0.948

EGARCH (1,3)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 08/23/14 Time: 20:44
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 28 iterations
Presample variance: backcast (parameter = 0.7)
LOG(GARCH) = C(2) + C(3)*ABS(RESID(-1)/@SQRT(GARCH(-1))) + C(4)
*RESID(-1)/@SQRT(GARCH(-1)) + C(5)*LOG(GARCH(-1)) + C(6)
*LOG(GARCH(-2)) + C(7)*LOG(GARCH(-3))

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000279	0.000430	0.648384	0.5167
Variance Equation				
C(2)	-0.716501	0.215053	-3.331747	0.0009
C(3)	0.324930	0.072394	4.488375	0.0000
C(4)	-0.084637	0.035640	-2.374782	0.0176
C(5)	0.563356	0.218057	2.583527	0.0098
C(6)	0.209369	0.318808	0.656723	0.5114
C(7)	0.174033	0.211428	0.823134	0.4104

R-squared	-0.000009	Mean dependent var	0.000319
Adjusted R-squared	-0.000009	S.D. dependent var	0.013348
S.E. of regression	0.013348	Akaike info criterion	-6.012613
Sum squared resid	0.108154	Schwarz criterion	-5.961838
Log likelihood	1834.834	Hannan-Quinn criter.	-5.992859
Durbin-Watson stat	1.908477		

Korrelogram EGARCH (1,3)

Date: 08/23/14 Time: 20:48
Sample: 1/02/2012 4/30/2014
Included observations: 608

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.002	-0.002	0.0017	0.967
		2	0.010	0.010	0.0622	0.969
		3	0.008	0.009	0.1064	0.991
		4	0.030	0.030	0.6517	0.957
		5	-0.050	-0.051	2.2172	0.818
		6	0.021	0.021	2.4967	0.869
		7	-0.001	-0.000	2.4971	0.927
		8	-0.008	-0.009	2.5379	0.960
		9	0.020	0.022	2.7771	0.972
		10	0.041	0.037	3.7951	0.956
		11	-0.024	-0.022	4.1468	0.965
		12	0.029	0.028	4.6646	0.968
		13	-0.044	-0.046	5.8484	0.951
		14	-0.016	-0.016	6.0132	0.966
		15	0.067	0.072	8.8083	0.887
		16	0.011	0.006	8.8774	0.918
		17	0.018	0.024	9.0894	0.937
		18	-0.020	-0.026	9.3377	0.951
		19	0.050	0.044	10.922	0.926
		20	-0.012	-0.005	11.016	0.946

EGARCH (2,1)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 08/23/14 Time: 06:10
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 13 iterations
Presample variance: backcast (parameter = 0.7)
LOG(GARCH) = C(2) + C(3)*ABS(RESID(-1)/@SQRT(GARCH(-1))) + C(4)
*ABS(RESID(-2)/@SQRT(GARCH(-2))) + C(5)*RESID(-1)
/@SQRT(GARCH(-1)) + C(6)*LOG(GARCH(-1))

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000278	0.000430	0.646000	0.5183
Variance Equation				
C(2)	-0.425955	0.130679	-3.259561	0.0011
C(3)	0.333159	0.071984	4.628250	0.0000
C(4)	-0.137901	0.060699	-2.271863	0.0231
C(5)	-0.057652	0.023822	-2.420145	0.0155
C(6)	0.968525	0.012477	77.62172	0.0000

R-squared	-0.000010	Mean dependent var	0.000319
Adjusted R-squared	-0.000010	S.D. dependent var	0.013348
S.E. of regression	0.013348	Akaike info criterion	-6.015355
Sum squared resid	0.108154	Schwarz criterion	-5.971834
Log likelihood	1834.668	Hannan-Quinn criter.	-5.998423
Durbin-Watson stat	1.908477		

Korrelogram EGARCH (2,1)

Date: 08/13/14 Time: 08:27
Sample: 1/02/2012 4/30/2014
Included observations: 608

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.001	-0.001	0.0002	0.989
		2	0.004	0.004	0.0081	0.996
		3	0.012	0.012	0.0993	0.992
		4	0.034	0.034	0.8254	0.935
		5	-0.048	-0.048	2.2256	0.817
		6	0.025	0.024	2.5966	0.858
		7	0.005	0.004	2.6116	0.918
		8	-0.009	-0.009	2.6601	0.954
		9	0.020	0.022	2.9000	0.968
		10	0.040	0.036	3.8844	0.952
		11	-0.021	-0.020	4.1699	0.965
		12	0.029	0.029	4.6865	0.968
		13	-0.046	-0.050	6.0071	0.946
		14	-0.018	-0.018	6.2030	0.961
		15	0.070	0.074	9.2354	0.865
		16	0.008	0.003	9.2798	0.901
		17	0.023	0.030	9.6066	0.919
		18	-0.027	-0.034	10.079	0.929
		19	0.049	0.042	11.584	0.903
		20	-0.010	-0.003	11.643	0.928

EGARCH (2,2)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 08/23/14 Time: 20:50
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 18 iterations
Presample variance: backcast (parameter = 0.7)
LOG(GARCH) = C(2) + C(3)*ABS(RESID(-1)/@SQRT(GARCH(-1))) + C(4)
*ABS(RESID(-2)/@SQRT(GARCH(-2))) + C(5)*RESID(-1)
/@SQRT(GARCH(-1)) + C(6)*LOG(GARCH(-1)) + C(7)*LOG(GARCH(
-2))

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000246	0.000434	0.568276	0.5698
Variance Equation				
C(2)	-0.527873	0.304735	-1.732236	0.0832
C(3)	0.338558	0.072888	4.644900	0.0000
C(4)	-0.100624	0.126867	-0.793143	0.4277
C(5)	-0.068186	0.038948	-1.750697	0.0800
C(6)	0.787222	0.434398	1.812215	0.0700
C(7)	0.173415	0.413587	0.419295	0.6750

R-squared	-0.000030	Mean dependent var	0.000319
Adjusted R-squared	-0.000030	S.D. dependent var	0.013348
S.E. of regression	0.013348	Akaike info criterion	-6.012645
Sum squared resid	0.108156	Schwarz criterion	-5.961870
Log likelihood	1834.844	Hannan-Quinn criter.	-5.992891
Durbin-Watson stat	1.908438		

Korrelogram EGARCH (2,2)

Date: 08/23/14 Time: 20:52
Sample: 1/02/2012 4/30/2014
Included observations: 608

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	-0.003	-0.003	0.0070	0.933
		2	0.014	0.014	0.1353	0.935
		3	0.005	0.005	0.1488	0.985
		4	0.034	0.034	0.8456	0.932
		5	-0.049	-0.049	2.3420	0.800
		6	0.022	0.021	2.6344	0.853
		7	-0.001	0.000	2.6349	0.917
		8	-0.009	-0.010	2.6822	0.953
		9	0.018	0.022	2.8908	0.968
		10	0.038	0.034	3.7766	0.957
		11	-0.023	-0.022	4.1117	0.967
		12	0.029	0.028	4.6291	0.969
		13	-0.043	-0.046	5.7961	0.953
		14	-0.017	-0.018	5.9811	0.967
		15	0.070	0.076	9.0483	0.875
		16	0.011	0.006	9.1206	0.908
		17	0.021	0.027	9.4090	0.927
		18	-0.023	-0.028	9.7307	0.940
		19	0.048	0.041	11.200	0.917
		20	-0.010	-0.002	11.259	0.939

EGARCH (2,3)

Dependent Variable: LOGRETURN
Method: ML - ARCH (Marquardt) - Normal distribution
Date: 08/13/14 Time: 08:35
Sample: 1/02/2012 4/30/2014
Included observations: 608
Convergence achieved after 69 iterations
Presample variance: backcast (parameter = 0.7)
LOG(GARCH) = C(2) + C(3)*ABS(RESID(-1)/@SQRT(GARCH(-1))) + C(4)
*ABS(RESID(-2)/@SQRT(GARCH(-2))) + C(5)*RESID(-1)
/@SQRT(GARCH(-1)) + C(6)*LOG(GARCH(-1)) + C(7)*LOG(GARCH(
-2)) + C(8)*LOG(GARCH(-3))

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	0.000449	0.000195	2.299688	0.0215
Variance Equation				
C(2)	-1.127243	0.299331	-3.765872	0.0002
C(3)	0.292702	0.033751	8.672395	0.0000
C(4)	0.219387	0.036935	5.939802	0.0000
C(5)	0.010955	0.005600	1.956217	0.0504
C(6)	-0.816565	0.009665	-84.48401	0.0000
C(7)	0.797089	0.015435	51.64084	0.0000
C(8)	0.937949	0.012311	76.18926	0.0000

R-squared	-0.000095	Mean dependent var	0.000319
Adjusted R-squared	-0.000095	S.D. dependent var	0.013348
S.E. of regression	0.013349	Akaike info criterion	-6.042054
Sum squared resid	0.108163	Schwarz criterion	-5.984025
Log likelihood	1844.784	Hannan-Quinn criter.	-6.019478
Durbin-Watson stat	1.908314		

Korrelogram EGARCH (2,3)

Date: 08/13/14 Time: 08:36
Sample: 1/02/2012 4/30/2014
Included observations: 608

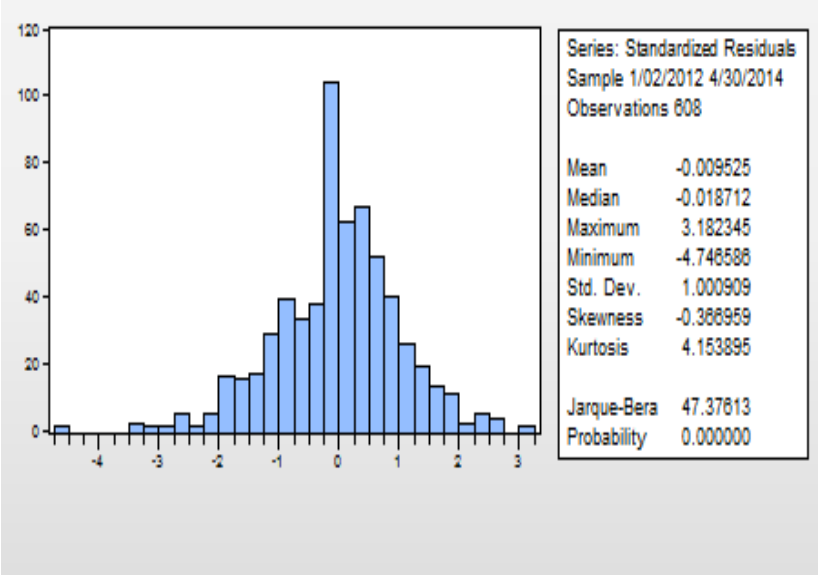
Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.087	0.087	4.6452	0.031
		2	0.085	0.078	9.1167	0.010
		3	-0.020	-0.035	9.3720	0.025
		4	0.076	0.075	12.902	0.012
		5	0.003	-0.005	12.908	0.024
		6	0.077	0.066	16.556	0.011
		7	-0.000	-0.008	16.556	0.020
		8	0.051	0.036	18.141	0.020
		9	0.070	0.069	21.138	0.012
		10	0.062	0.035	23.519	0.009
		11	0.042	0.029	24.622	0.010
		12	0.015	-0.004	24.755	0.016
		13	-0.033	-0.045	25.445	0.020
		14	0.029	0.027	25.964	0.026
		15	0.077	0.068	29.708	0.013
		16	0.020	-0.005	29.961	0.018
		17	0.012	-0.001	30.055	0.026
		18	0.010	0.001	30.115	0.036
		19	-0.002	-0.016	30.117	0.050
		20	-0.031	-0.042	30.724	0.059

Lampiran 10

Pemeriksaan diagnosa untuk model EGARCH

EGARCH (1,1)

a. Uji Normalitas



b. Efek Arch

Heteroskedasticity Test: ARCH

F-statistic	0.324986	Prob. F(3,601)	0.8073
Obs*R-squared	0.979856	Prob. Chi-Square(3)	0.8061

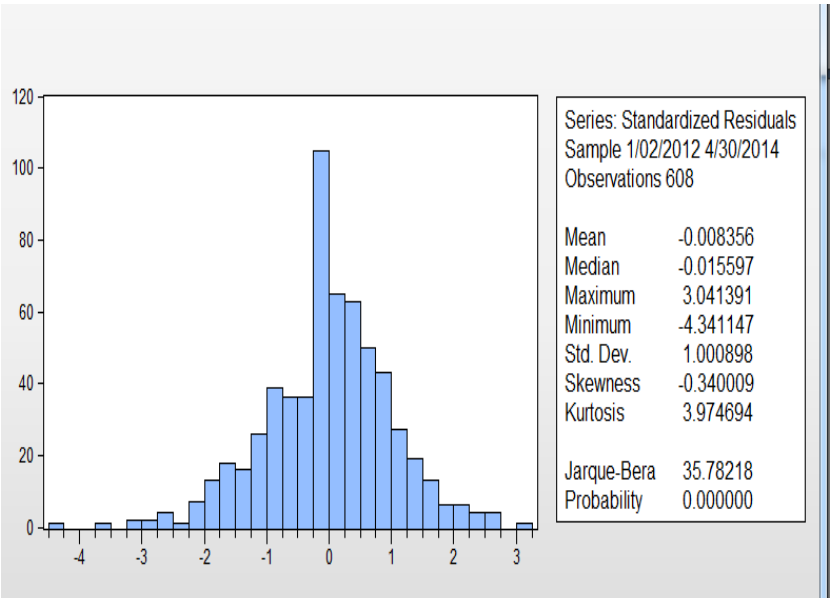
Test Equation:
Dependent Variable: WGT_RESID^2
Method: Least Squares
Date: 08/31/14 Time: 14:17
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.963705	0.100111	9.626359	0.0000
WGT_RESID^2(-1)	0.039979	0.040761	0.980827	0.3271
WGT_RESID^2(-2)	-0.006152	0.040785	-0.150830	0.8802
WGT_RESID^2(-3)	-0.000634	0.040979	-0.015466	0.9877

R-squared	0.001620	Mean dependent var	0.996942
Adjusted R-squared	-0.003364	S.D. dependent var	1.783400
S.E. of regression	1.786397	Akaike info criterion	4.004868
Sum squared resid	1917.920	Schwarz criterion	4.033994
Log likelihood	-1207.473	Hannan-Quinn criter.	4.016202
F-statistic	0.324986	Durbin-Watson stat	1.997145
Prob(F-statistic)	0.807307		

EGARCH (2,1)

a. Uji Normalitas



b. Efek Arch

Heteroskedasticity Test: ARCH

F-statistic	0.025080	Prob. F(3,601)	0.9946
Obs*R-squared	0.075732	Prob. Chi-Square(3)	0.9946

Test Equation:
Dependent Variable: WGT_RESID^2
Method: Least Squares
Date: 09/25/14 Time: 07:07
Sample (adjusted): 1/05/2012 4/30/2014
Included observations: 605 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.983302	0.099798	9.852943	0.0000
WGT_RESID^2(-1)	-0.001816	0.040769	-0.044552	0.9645
WGT_RESID^2(-2)	0.007049	0.040753	0.172977	0.8627
WGT_RESID^2(-3)	0.008551	0.041009	0.208524	0.8349

R-squared	0.000125	Mean dependent var	0.997068
Adjusted R-squared	-0.004866	S.D. dependent var	1.731547
S.E. of regression	1.735755	Akaike info criterion	3.947351
Sum squared resid	1810.719	Schwarz criterion	3.976477
Log likelihood	-1190.074	Hannan-Quinn criter.	3.958685
F-statistic	0.025080	Durbin-Watson stat	1.997972
Prob(F-statistic)	0.994627		

Lampiran 11

Program Mencari Nilai VaR dengan Pendekatan EGARCH

Menggunakan Software MATLAB 7.1

```
clc;
Po=input('Nilai investasi awal=')
t1=input('periode waktu=')
t2=input('periode waktu=')
t3=input('periode waktu=')
Z=input('nilai Z alpha=')
s=-0.200614%nilai skewness
Zkoreksi=Z-(1/6*(Z^2)*s)+(1/6*s)%karena data tdk berdistribusi normal
dilakukan pendekatan Cornish Fisher Expansion
v=input('nilai EGARCH (1,1)=');
vol=sqrt(v);%nilai volatilitas atau standar deviasi
clc;
fprintf('#############################################################\
n')
fprintf('##              Penerapan Model EGARCH              ##\n')
fprintf('##          Pada Analisis Resiko dengan VaR         ##\n')
fprintf('#############################################################\
n')
fprintf('Value at Risk(t)=Po*Zkoreksi*vol*c\n')
fprintf('Investasi awal:%8.0f\n',Po)
fprintf('nilai Z koreksi:%8.3f\n',Zkoreksi)
fprintf('periode waktu=%8.0f\n',t1)
fprintf('periode waktu=%8.0f\n',t2)
fprintf('periode waktu=%8.0f\n',t3)
fprintf('#############################################################\
n')
c1=sqrt(t1);
```

```
c2=sqrt(t2);
c3=sqrt(t3);
VaR1=Po*Zkoreksi*vol*c1;%Perhitungan VaR dengan Pendekatan
EGARCH(1,1) selama 1 hari
VaR5=Po*Zkoreksi*vol*c2;%Perhitungan VaR dengan Pendekatan
EGARCH(1,1) selama 5 hari
VaR30=Po*Zkoreksi*vol*c3;%Perhitungan VaR dengan Pendekatan
EGARCH(1,1) selama 30 hari
VaR=[VaR1 VaR5 VaR30]
fprintf('##############################################################\
n')
x=mean(VaR1);
y=mean(VaR5);
z=mean(VaR30);
fprintf('Dengan nilai rata-rata VaR1 adalah %8.3f\n',x)
fprintf('Dengan nilai rata-rata VaR6 adalah %8.3f\n',y)
fprintf('Dengan nilai rata-rata VaR30 adalah %8.3f\n',z)
fprintf('##############################################################\
n')
```

Lampiran 12

Output Perhitungan VaR dengan pendekatan EGARCH(1,1) Menggunakan Software MATLAB 7.1 dari 1 Januari 2012 sampai 30 April 2013

```
############################################################
##              Penerapan Model EGARCH                    ##
##          Pada Analisis Resiko dengan VaR               ##
############################################################
Value at Risk(t)=Po*Zkoreksi*vol*c
Investasi awal:100000000
nilai Z koreksi:   1.708
periode waktu=       1
periode waktu=       5
periode waktu=      30
############################################################

VaR =

  1.0e+006 *

    1.3770    3.0791    7.5422

############################################################
Dengan nilai rata-rata VaR1 adalah 1377012.515
Dengan nilai rata-rata VaR6 adalah 3079093.589
Dengan nilai rata-rata VaR30 adalah 7542208.163
############################################################
```

Lampiran 13

Perhitungan *Likelihood Ratio Test*

Date	close	return	return*100 juta	t1	t5
2-Jan-12	533.451	0	0	0	0
3-Jan-12	542.176	0.01622345	1622345.175	1	0
4-Jan-12	553.077	0.01990656	1990656.036	1	0
5-Jan-12	555.232	0.00388881	388881.2084	0	0
6-Jan-12	547.611	-0.01382086	-1382086.36	0	0
9-Jan-12	550.083	0.004504	450399.5064	0	0
10-Jan-12	559.147	0.01634323	1634323.224	1	0
11-Jan-12	553.016	-0.01102547	-1102547.4	0	0
12-Jan-12	552.395	-0.00112356	-112356.411	0	0
13-Jan-12	557.344	0.00891927	891927.3467	0	0
16-Jan-12	553.793	-0.00639167	-639167.283	0	0
17-Jan-12	560.986	0.01290498	1290497.906	0	0
18-Jan-12	565.712	0.00838917	838916.5006	0	0
19-Jan-12	568.704	0.00527497	527497.3092	0	0
20-Jan-12	568.282	-0.00074231	-74231.3484	0	0
24-Jan-12	570.54	0.00396551	396550.639	0	0
25-Jan-12	564.631	-0.01041086	-1041086.03	0	0
26-Jan-12	567.45	0.00498022	498021.9307	0	0
27-Jan-12	570.754	0.00580565	580565.3961	0	0
30-Jan-12	557.351	-0.02376309	-2376309.07	0	0
31-Jan-12	562.535	0.00925815	925815.1326	0	0
1-Feb-12	562.364	-0.00030403	-30402.7297	0	0
2-Feb-12	571.086	0.01539048	1539048.421	1	0
3-Feb-12	571.418	0.00058118	58117.96009	0	0
6-Feb-12	565.338	-0.01069721	-1069720.85	0	0
7-Feb-12	564.689	-0.00114865	-114864.525	0	0
8-Feb-12	570.415	0.01008903	1008902.897	0	0
9-Feb-12	568.872	-0.00270871	-270871.333	0	0
10-Feb-12	560.346	-0.015101	-1510100.27	0	0
13-Feb-12	568.495	0.01443807	1443806.8	1	0
14-Feb-12	570.738	0.00393774	393774.2145	0	0
15-Feb-12	570.467	-0.00047494	-47493.6589	0	0

16-Feb-12	562.505	-0.0140553	-1405530.07	0	0
17-Feb-12	572.046	0.01681938	1681938.48	1	0
20-Feb-12	573.689	0.00286803	286802.9913	0	0
21-Feb-12	573.639	-8.7159E-05	-8715.90339	0	0
22-Feb-12	570.748	-0.0050525	-505249.736	0	0
23-Feb-12	562.08	-0.01530359	-1530359.27	0	0
24-Feb-12	550.402	-0.02099527	-2099526.82	0	0
27-Feb-12	545.996	-0.00803727	-803727.062	0	0
28-Feb-12	553.259	0.0132146	1321459.66	0	0
29-Feb-12	566.754	0.0240991	2409910.084	1	0
1-Mar-12	561.822	-0.00874027	-874027.34	0	0
2-Mar-12	570.052	0.01454251	1454251.099	1	0
5-Mar-12	565.599	-0.00784224	-784223.819	0	0
6-Mar-12	561.577	-0.00713645	-713644.909	0	0
7-Mar-12	559.098	-0.00442413	-442412.661	0	0
8-Mar-12	563.531	0.00789757	789757.4428	0	0
9-Mar-12	567.169	0.00643497	643497.4005	0	0
12-Mar-12	564.593	-0.0045522	-455220.17	0	0
13-Mar-12	568.199	0.00636659	636659.189	0	0
14-Mar-12	575.711	0.01313409	1313408.92	0	0
15-Mar-12	571.966	-0.00652625	-652624.962	0	0
16-Mar-12	566.907	-0.00888428	-888427.994	0	0
19-Mar-12	566.905	-3.5279E-06	-352.792174	0	0
20-Mar-12	566.16	-0.00131502	-131501.742	0	0
21-Mar-12	570.903	0.00834259	834259.405	0	0
22-Mar-12	570.791	-0.0001962	-19619.9683	0	0
26-Mar-12	569.017	-0.00311281	-311280.748	0	0
27-Mar-12	576.621	0.01327489	1327489.428	0	0
28-Mar-12	577.592	0.00168253	168253.2131	0	0
29-Mar-12	579.334	0.00301143	301143.0837	0	0
30-Mar-12	584.06	0.00812455	812454.9372	0	0
2-Apr-12	588.1	0.00689328	689328.4189	0	0
3-Apr-12	593.074	0.00842218	842217.8954	0	0
4-Apr-12	576.96	-0.02754624	-2754624.04	0	0
5-Apr-12	581.009	0.00699331	699330.7251	0	0
9-Apr-12	579.4	-0.00277316	-277316.193	0	0
10-Apr-12	577.941	-0.0025213	-252129.8	0	0

11-Apr-12	572.811	-0.00891597	-891596.797	0	0
12-Apr-12	572.685	-0.00021999	-21999.2039	0	0
13-Apr-12	575.489	0.00488429	488428.6832	0	0
16-Apr-12	570.615	-0.00850539	-850538.761	0	0
17-Apr-12	571.614	0.00174921	174921.1856	0	0
18-Apr-12	574.26	0.00461832	461831.7028	0	0
19-Apr-12	571.724	-0.0044259	-442589.799	0	0
20-Apr-12	574.032	0.00402879	402878.6446	0	0
23-Apr-12	570.083	-0.00690318	-690317.963	0	0
24-Apr-12	571.792	0.00299332	299332.4621	0	0
25-Apr-12	569.491	-0.00403231	-403230.946	0	0
26-Apr-12	570.546	0.00185082	185081.7651	0	0
27-Apr-12	572.787	0.00392012	392012.2781	0	0
30-Apr-12	575.088	0.00400915	400915.2707	0	0
1-May-12	577.299	0.00383726	383725.7298	0	0
2-May-12	582.692	0.00929841	929841.4999	0	0
3-May-12	583.334	0.00110118	110117.6243	0	0
4-May-12	580.754	-0.00443266	-443266.183	0	0
7-May-12	572.372	-0.01453813	-1453812.96	0	0
8-May-12	575.194	0.00491825	491824.5554	0	0
9-May-12	564.783	-0.01826579	-1826578.86	0	0
10-May-12	567.406	0.00463351	463351.0294	0	0
11-May-12	562.133	-0.00933662	-933662.017	0	0
14-May-12	555.611	-0.01167007	-1167006.76	0	0
15-May-12	554.611	-0.00180144	-180144.2	0	0
16-May-12	548.334	-0.01138238	-1138237.68	0	0
21-May-12	540.184	-0.01497477	-1497476.81	0	0
22-May-12	550.239	0.01844291	1844290.703	1	0
23-May-12	545.446	-0.00874892	-874892.067	0	0
24-May-12	544.454	-0.00182035	-182035.099	0	0
25-May-12	531.239	-0.02457144	-2457144.35	0	0
28-May-12	533.03	0.00336569	336569.3618	0	0
29-May-12	534.052	0.0019155	191550.4736	0	0
30-May-12	536.681	0.00491066	491066.4532	0	0
31-May-12	525.052	-0.02190657	-2190657.17	0	0
1-Jun-12	519.836	-0.00998393	-998392.809	0	0
4-Jun-12	498.03	-0.04285306	-4285306.1	0	0

5-Jun-12	510.315	0.02436787	2436786.594	1	0
6-Jun-12	527.915	0.0339071	3390710.379	1	1
7-Jun-12	528.793	0.00166177	166176.5033	0	0
8-Jun-12	526.869	-0.00364511	-364511.014	0	0
11-Jun-12	530.559	0.00697923	697922.6913	0	0
12-Jun-12	530.869	0.00058412	58411.87698	0	0
13-Jun-12	532.742	0.00352197	352196.7968	0	0
14-Jun-12	521.985	-0.0203984	-2039840.26	0	0
15-Jun-12	525.682	0.00705762	705761.5341	0	0
18-Jun-12	531.667	0.01132089	1132088.633	0	0
19-Jun-12	535.401	0.00699865	699864.5337	0	0
20-Jun-12	545.996	0.01959565	1959565.086	1	0
21-Jun-12	538.139	-0.01449476	-1449475.86	0	0
22-Jun-12	536.224	-0.00356491	-356490.689	0	0
25-Jun-12	529.903	-0.01185801	-1185801.33	0	0
26-Jun-12	536.11	0.01164539	1164539.297	0	0
27-Jun-12	541.618	0.01022159	1022159.201	0	0
28-Jun-12	533.777	-0.01458281	-1458280.72	0	0
29-Jun-12	544.19	0.0193203	1932030.184	1	0
2-Jul-12	552.122	0.01447059	1447058.577	1	0
3-Jul-12	562.704	0.0189847	1898469.865	1	0
4-Jul-12	569.656	0.01227893	1227893.487	0	0
5-Jul-12	567.403	-0.00396286	-396286.024	0	0
6-Jul-12	563.918	-0.00616096	-616095.878	0	0
9-Jul-12	551.524	-0.0222235	-2222349.54	0	0
10-Jul-12	557.358	0.01052241	1052240.694	0	0
11-Jul-12	560.168	0.00502898	502897.6368	0	0
12-Jul-12	551.736	-0.01516707	-1516706.77	0	0
13-Jul-12	557.98	0.01125345	1125344.844	0	0
16-Jul-12	561.122	0.00561523	561523.124	0	0
17-Jul-12	566.363	0.00929686	929686.4702	0	0
18-Jul-12	565.576	-0.00139053	-139053.452	0	0
19-Jul-12	566.322	0.00131814	131814.0165	0	0
20-Jul-12	561.332	-0.00885029	-885029.02	0	0
23-Jul-12	551.113	-0.01837266	-1837266.1	0	0
24-Jul-12	547.297	-0.00694825	-694825.312	0	0
25-Jul-12	548.252	0.00174342	174341.8582	0	0

26-Jul-12	550.705	0.00446424	446424.0319	0	0
27-Jul-12	563.878	0.02363864	2363864.046	1	0
30-Jul-12	565.824	0.00344516	344515.9741	0	0
31-Jul-12	573.731	0.01387757	1387756.957	1	0
1-Aug-12	574.507	0.00135164	135163.6365	0	0
2-Aug-12	567.417	-0.0124178	-1241779.86	0	0
3-Aug-12	569.883	0.00433659	433659.3449	0	0
6-Aug-12	572.202	0.004061	406099.929	0	0
7-Aug-12	568.351	-0.00675289	-675289.028	0	0
8-Aug-12	569.352	0.00175969	175968.6418	0	0
9-Aug-12	575.658	0.01101486	1101486.233	0	0
10-Aug-12	578.382	0.00472082	472081.5672	0	0
13-Aug-12	571.891	-0.01128614	-1128613.62	0	0
14-Aug-12	576.209	0.00752203	752202.8324	0	0
15-Aug-12	582.471	0.01080896	1080895.669	0	0
16-Aug-12	585.225	0.00471699	471698.9878	0	0
23-Aug-12	583.529	-0.00290224	-290223.809	0	0
24-Aug-12	580.192	-0.00573507	-573506.733	0	0
27-Aug-12	579.491	-0.00120895	-120895.121	0	0
28-Aug-12	579.98	0.00084349	84348.81579	0	0
29-Aug-12	575.869	-0.00711342	-711341.591	0	0
30-Aug-12	566.449	-0.01649315	-1649315.43	0	0
31-Aug-12	569.935	0.00613527	613526.9301	0	0
3-Sep-12	577.898	0.01387506	1387506.327	1	0
4-Sep-12	577.271	-0.00108556	-108555.555	0	0
5-Sep-12	569.997	-0.01268073	-1268072.93	0	0
6-Sep-12	574.104	0.00717947	717946.692	0	0
7-Sep-12	580.863	0.01170436	1170436.413	0	0
10-Sep-12	587.635	0.01159108	1159107.815	0	0
11-Sep-12	585.911	-0.00293811	-293810.595	0	0
12-Sep-12	590.608	0.00798461	798461.3856	0	0
13-Sep-12	590.091	-0.00087575	-87575.247	0	0
14-Sep-12	604.785	0.02459626	2459626.068	1	0
17-Sep-12	605.76	0.00161085	161084.5051	0	0
18-Sep-12	601.662	-0.00678804	-678804.218	0	0
19-Sep-12	605.385	0.00616879	616879.3438	0	0
20-Sep-12	598.158	-0.01200969	-1200968.62	0	0

21-Sep-12	602.629	0.00744682	744681.7232	0	0
24-Sep-12	592.697	-0.01661844	-1661844.31	0	0
25-Sep-12	596.991	0.00721873	721873.0704	0	0
26-Sep-12	585.855	-0.01882972	-1882971.92	0	0
27-Sep-12	593.241	0.01252841	1252840.585	0	0
28-Sep-12	600.84	0.01272795	1272795.16	0	0
1-Oct-12	594.641	-0.01037081	-1037081.4	0	0
2-Oct-12	599.459	0.00806972	806971.9698	0	0
3-Oct-12	599.187	-0.00045385	-45384.543	0	0
4-Oct-12	605.746	0.01088702	1088701.992	0	0
5-Oct-12	616.807	0.01809541	1809541.479	1	0
8-Oct-12	610.242	-0.01070057	-1070057.13	0	0
9-Oct-12	610.053	-0.00030976	-30976.1167	0	0
10-Oct-12	610.65	0.00097812	97812.49781	0	0
11-Oct-12	612.06	0.00230635	230635.3305	0	0
12-Oct-12	613.325	0.00206466	206465.7964	0	0
15-Oct-12	612.143	-0.00192906	-192905.954	0	0
16-Oct-12	616.872	0.00769563	769563.1605	0	0
17-Oct-12	617.794	0.00149352	149352.1602	0	0
18-Oct-12	621.647	0.00621734	621733.8964	0	0
19-Oct-12	616.778	-0.00786325	-786325.387	0	0
22-Oct-12	617.314	0.00086865	86865.49037	0	0
23-Oct-12	613.67	-0.00592048	-592048.417	0	0
24-Oct-12	616.32	0.00430898	430898.4789	0	0
25-Oct-12	615.449	-0.00141423	-141422.644	0	0
29-Oct-12	614.068	-0.00224641	-224641.153	0	0
30-Oct-12	618.899	0.00783642	783642.1774	0	0
31-Oct-12	619.27	0.00059927	59927.20075	0	0
1-Nov-12	616.945	-0.00376149	-376148.605	0	0
2-Nov-12	616.415	-0.00085944	-85944.093	0	0
5-Nov-12	610.622	-0.00944233	-944232.821	0	0
6-Nov-12	611.361	0.00120951	120950.9609	0	0
7-Nov-12	617.871	0.01059208	1059207.841	0	0
8-Nov-12	614.927	-0.00477614	-477613.623	0	0
9-Nov-12	612.369	-0.00416852	-416851.958	0	0
12-Nov-12	608.276	-0.00670632	-670631.566	0	0
13-Nov-12	608.939	0.00108937	108937.2158	0	0

14-Nov-12	611.056	0.00347051	347050.951	0	0
19-Nov-12	605.513	-0.00911258	-911257.538	0	0
20-Nov-12	604.552	-0.00158834	-158834.476	0	0
21-Nov-12	604.313	-0.00039541	-39541.2231	0	0
22-Nov-12	607.073	0.00455677	455677.179	0	0
23-Nov-12	607.736	0.00109153	109152.9723	0	0
26-Nov-12	611.687	0.00648014	648013.6632	0	0
27-Nov-12	604.113	-0.01245945	-1245944.72	0	0
28-Nov-12	595.57	-0.01424234	-1424233.64	0	0
29-Nov-12	597.274	0.00285704	285703.941	0	0
30-Nov-12	588.776	-0.01433016	-1433016.39	0	0
3-Dec-12	588.448	-0.00055724	-55724.3156	0	0
4-Dec-12	587.274	-0.00199707	-199707.14	0	0
5-Dec-12	588.994	0.00292451	292450.5684	0	0
6-Dec-12	589.861	0.00147092	147091.908	0	0
7-Dec-12	590.644	0.00132655	132655.112	0	0
10-Dec-12	591.79	0.00193838	193837.518	0	0
11-Dec-12	595.461	0.00618405	618405.3244	0	0
12-Dec-12	597.488	0.0033983	339830.4455	0	0
13-Dec-12	593.832	-0.00613775	-613774.885	0	0
14-Dec-12	593.721	-0.00018694	-18693.9026	0	0
17-Dec-12	594.437	0.00120523	120522.706	0	0
18-Dec-12	593.16	-0.00215056	-215056.2	0	0
19-Dec-12	590.926	-0.00377338	-377337.905	0	0
20-Dec-12	584.286	-0.01130021	-1130020.91	0	0
21-Dec-12	586.093	0.00308789	308789.1078	0	0
26-Dec-12	587.401	0.00222924	222924.1124	0	0
27-Dec-12	590.455	0.0051857	518570.4948	0	0
28-Dec-12	594.789	0.00731329	731329.4675	0	0
2-Jan-13	602.073	0.01217198	1217197.961	0	0
3-Jan-13	612.339	0.01690735	1690735.031	1	0
4-Jan-13	611.797	-0.00088552	-88552.2582	0	0
7-Jan-13	607.12	-0.00767406	-767406.305	0	0
8-Jan-13	606.579	-0.00089149	-89148.9629	0	0
9-Jan-13	600.603	-0.00990082	-990082.492	0	0
10-Jan-13	592.112	-0.01423834	-1423834.44	0	0
11-Jan-13	590.345	-0.00298869	-298869.441	0	0

14-Jan-13	602.059	0.01964834	1964833.539	1	0
15-Jan-13	606.274	0.00697658	697658.1946	0	0
16-Jan-13	607.899	0.00267672	267672.0649	0	0
17-Jan-13	602.804	-0.00841665	-841664.732	0	0
18-Jan-13	615.444	0.02075186	2075185.611	1	0
21-Jan-13	610.287	-0.00841462	-841462.022	0	0
22-Jan-13	609.291	-0.00163335	-163335.223	0	0
23-Jan-13	608.162	-0.00185469	-185469.225	0	0
25-Jan-13	608.625	0.00076102	76102.06591	0	0
28-Jan-13	604.901	-0.00613751	-613750.623	0	0
29-Jan-13	608.602	0.00609972	609971.5411	0	0
30-Jan-13	608.935	0.00054701	54700.59773	0	0
31-Jan-13	604.61	-0.00712791	-712790.76	0	0
1-Feb-13	606.257	0.00272037	272036.6507	0	0
4-Feb-13	608.689	0.00400348	400347.546	0	0
5-Feb-13	609.587	0.00147421	147421.4649	0	0
6-Feb-13	612.28	0.00440802	440801.5538	0	0
7-Feb-13	611.407	-0.00142684	-142683.57	0	0
8-Feb-13	611.504	0.00015864	15863.78734	0	0
11-Feb-13	612.914	0.00230314	230313.6059	0	0
12-Feb-13	621.24	0.01349285	1349284.825	0	0
13-Feb-13	624.342	0.00498081	498081.4451	0	0
14-Feb-13	624.019	-0.00051748	-51747.8529	0	0
15-Feb-13	626.243	0.00355766	355765.8068	0	0
18-Feb-13	624.444	-0.00287682	-287682.088	0	0
19-Feb-13	620.352	-0.00657459	-657459.494	0	0
20-Feb-13	624.614	0.0068468	684680.0073	0	0
21-Feb-13	624.72	0.00016969	16969.04115	0	0
22-Feb-13	625.492	0.00123499	123499.0703	0	0
25-Feb-13	630.496	0.00796827	796827.1157	0	0
26-Feb-13	626.807	-0.00586813	-586813.296	0	0
27-Feb-13	635.858	0.01433659	1433658.972	1	0
28-Feb-13	645.219	0.01461453	1461452.608	1	0
1-Mar-13	652.114	0.0106296	1062959.922	0	0
4-Mar-13	646.859	-0.00809105	-809105.142	0	0
5-Mar-13	648.65	0.00276494	276493.8169	0	0
6-Mar-13	661.117	0.01903755	1903754.871	1	0

7-Mar-13	662.956	0.00277779	277779.4249	0	0
8-Mar-13	668.46	0.00826794	826793.6323	0	0
11-Mar-13	660.306	-0.0122732	-1227319.54	0	0
13-Mar-13	656.211	-0.00622098	-622098.037	0	0
14-Mar-13	645.376	-0.01664929	-1664929.09	0	0
15-Mar-13	648.639	0.00504323	504322.889	0	0
18-Mar-13	650.993	0.00362257	362256.7887	0	0
19-Mar-13	650.019	-0.0014973	-149729.623	0	0
20-Mar-13	651.142	0.00172615	172615.1151	0	0
21-Mar-13	646.12	-0.0077425	-774249.934	0	0
22-Mar-13	630.614	-0.0242913	-2429129.71	0	0
25-Mar-13	640.857	0.0161124	1611239.517	1	0
26-Mar-13	649.876	0.01397523	1397523.235	1	0
27-Mar-13	660.333	0.01596268	1596267.777	1	0
28-Mar-13	660.337	6.0575E-06	605.7531404	0	0
1-Apr-13	658.055	-0.0034618	-346179.631	0	0
2-Apr-13	662.145	0.00619605	619605.0727	0	0
3-Apr-13	669.778	0.01146175	1146174.901	0	0
4-Apr-13	659.339	-0.0157085	-1570849.62	0	0
5-Apr-13	656.545	-0.00424658	-424658.131	0	0
8-Apr-13	655.311	-0.0018813	-188130.46	0	0
9-Apr-13	656.951	0.0024995	249950.2163	0	0
10-Apr-13	653.381	-0.00544901	-544901.419	0	0
11-Apr-13	660.087	0.01021122	1021122.444	0	0
12-Apr-13	660.704	0.00093429	93428.86874	0	0
15-Apr-13	655.728	-0.00755986	-755986.439	0	0
16-Apr-13	667.887	0.01837293	1837292.874	1	0
17-Apr-13	673.003	0.00763079	763078.9737	0	0
18-Apr-13	674.024	0.00151593	151593.13	0	0
19-Apr-13	672.388	-0.00243016	-243016.373	0	0
22-Apr-13	674.375	0.00295078	295078.1157	0	0
23-Apr-13	673.488	-0.00131616	-131615.769	0	0
24-Apr-13	678.951	0.00807878	807878.1686	0	0
25-Apr-13	671.849	-0.01051535	-1051534.71	0	0
26-Apr-13	664.636	-0.01079409	-1079409.05	0	0
29-Apr-13	670.939	0.0094387	943870.1374	0	0
30-Apr-13	682.691	0.01736412	1736411.764	1	0

1-May-13	682.846	0.00022702	22701.69181	0	0
2-May-13	674.963	-0.01161148	-1161148.38	0	0
3-May-13	665.406	-0.01426049	-1426049.39	0	0
6-May-13	673.554	0.01217079	1217079.013	0	0
7-May-13	677.039	0.00516071	516070.7533	0	0
8-May-13	683.669	0.009745	974500.4025	0	0
10-May-13	684.845	0.00171865	171865.2918	0	0
13-May-13	679.324	-0.00809435	-809434.922	0	0
14-May-13	682.213	0.00424374	424373.9738	0	0
15-May-13	681.707	-0.00074198	-74197.9036	0	0
16-May-13	681.489	-0.00031984	-31983.6622	0	0
17-May-13	696.581	0.02190397	2190397.208	1	0
20-May-13	709.461	0.01832144	1832144.458	1	0
21-May-13	703.323	-0.00868928	-868928.105	0	0
22-May-13	708.1	0.00676908	676908.0907	0	0
23-May-13	694.792	-0.01897281	-1897280.65	0	0
24-May-13	701.254	0.00925764	925764.0725	0	0
27-May-13	685.35	-0.0229405	-2294050.42	0	0
28-May-13	701.962	0.02394961	2394961.483	1	0
29-May-13	705.97	0.00569347	569347.2166	0	0
30-May-13	689.999	-0.0228826	-2288259.54	0	0
31-May-13	676.583	-0.01963502	-1963501.79	0	0
3-Jun-13	665.625	-0.01632868	-1632868.15	0	0
4-Jun-13	677.35	0.01746168	1746167.713	1	0
5-Jun-13	674.404	-0.00435879	-435878.816	0	0
7-Jun-13	647.278	-0.04105346	-4105346.02	0	0
10-Jun-13	634.293	-0.02026488	-2026488.49	0	0
11-Jun-13	608.881	-0.04088815	-4088814.65	0	0
12-Jun-13	635.103	0.04216434	4216434.415	1	1
13-Jun-13	618.565	-0.02638491	-2638491.12	0	0
14-Jun-13	640.218	0.03440646	3440646.408	1	1
17-Jun-13	642.789	0.00400778	400777.7731	0	0
18-Jun-13	649.351	0.01015688	1015688.147	0	0
19-Jun-13	642.421	-0.01072955	-1072955.05	0	0
20-Jun-13	618.389	-0.03812614	-3812614.27	0	0
21-Jun-13	596.67	-0.03575351	-3575351.25	0	0
24-Jun-13	585.773	-0.01843185	-1843185.42	0	0

25-Jun-13	583.403	-0.00405414	-405414.283	0	0
26-Jun-13	616.886	0.05580604	5580604.215	1	1
27-Jun-13	634.272	0.02779364	2779364.267	1	0
28-Jun-13	660.165	0.04001192	4001191.926	1	1
1-Jul-13	648.254	-0.01820721	-1820720.89	0	0
2-Jul-13	640.965	-0.01130774	-1130774.16	0	0
3-Jul-13	618.621	-0.03548205	-3548204.59	0	0
4-Jul-13	619.17	0.00088706	88706.4191	0	0
5-Jul-13	626.55	0.01184871	1184870.812	0	0
8-Jul-13	601.218	-0.04127098	-4127098.21	0	0
9-Jul-13	597.702	-0.0058653	-586529.557	0	0
10-Jul-13	614.084	0.02703942	2703942.462	1	0
11-Jul-13	633.028	0.03038293	3038292.837	1	0
12-Jul-13	636.975	0.00621575	621575.3361	0	0
15-Jul-13	637.697	0.00113284	113284.057	0	0
16-Jul-13	637.506	-0.00029956	-29956.0151	0	0
17-Jul-13	641.934	0.00692181	692180.5914	0	0
18-Jul-13	645.732	0.00589906	589906.2356	0	0
19-Jul-13	646.651	0.00142218	142217.9269	0	0
22-Jul-13	637	-0.01503708	-1503708.07	0	0
23-Jul-13	651.96	0.02321355	2321355.478	1	0
24-Jul-13	642.413	-0.01475181	-1475181.13	0	0
25-Jul-13	635.176	-0.01132927	-1132927.32	0	0
26-Jul-13	629.952	-0.0082585	-825849.984	0	0
29-Jul-13	618.582	-0.01821386	-1821386.41	0	0
30-Jul-13	627.134	0.01373047	1373047.204	0	0
31-Jul-13	623.747	-0.0054154	-541539.647	0	0
1-Aug-13	630.933	0.01145484	1145483.88	0	0
2-Aug-13	630.161	-0.00122433	-122433.395	0	0
12-Aug-13	622.947	-0.0115139	-1151389.94	0	0
13-Aug-13	633.382	0.01661227	1661227.27	1	0
14-Aug-13	639.989	0.01037727	1037727.307	0	0
15-Aug-13	634.574	-0.00849708	-849708.109	0	0
16-Aug-13	619.728	-0.02367324	-2367323.55	0	0
19-Aug-13	580.134	-0.06602156	-6602156.08	0	0
20-Aug-13	561.357	-0.03290204	-3290204.46	0	0
21-Aug-13	572.634	0.0198897	1988970.241	1	0

22-Aug-13	571.883	-0.00131234	-131234.417	0	0
23-Aug-13	572.602	0.00125646	125646.0495	0	0
26-Aug-13	562.997	-0.01691659	-1691658.6	0	0
27-Aug-13	541.027	-0.03980511	-3980511.43	0	0
28-Aug-13	552.121	0.02029804	2029803.997	1	0
29-Aug-13	568.921	0.02997436	2997435.926	1	0
30-Aug-13	592.002	0.03976843	3976842.884	1	1
2-Sep-13	574.589	-0.02985501	-2985501.06	0	0
3-Sep-13	585.03	0.01800813	1800812.536	1	0
4-Sep-13	568.373	-0.02888523	-2888523.46	0	0
5-Sep-13	562.609	-0.010193	-1019300.03	0	0
6-Sep-13	569.298	0.01181913	1181912.978	0	0
9-Sep-13	587.383	0.03127305	3127305.438	1	1
10-Sep-13	611.053	0.03950662	3950662.12	1	1
11-Sep-13	605.832	-0.00858098	-858097.854	0	0
12-Sep-13	600.717	-0.00847878	-847877.814	0	0
13-Sep-13	600.641	-0.00012652	-12652.3484	0	0
16-Sep-13	627.06	0.04304481	4304481.155	1	1
17-Sep-13	625.98	-0.00172381	-172380.813	0	0
18-Sep-13	618.204	-0.01249992	-1249992.16	0	0
19-Sep-13	649.916	0.05002462	5002462.369	1	1
20-Sep-13	635.907	-0.0217908	-2179079.75	0	0
23-Sep-13	633.333	-0.00405598	-405597.606	0	0
24-Sep-13	613.543	-0.031746	-3174599.88	0	0
25-Sep-13	603.19	-0.01701811	-1701811.3	0	0
26-Sep-13	602.195	-0.00165093	-165092.518	0	0
27-Sep-13	606.394	0.00694863	694862.6696	0	0
30-Sep-13	585.593	-0.03490493	-3490493.08	0	0
1-Oct-13	593.077	0.01269923	1269922.977	0	0
2-Oct-13	600.628	0.01265154	1265153.571	0	0
3-Oct-13	605.541	0.0081465	814649.8826	0	0
4-Oct-13	600.502	-0.0083563	-835630.126	0	0
7-Oct-13	599.148	-0.00225733	-225732.601	0	0
8-Oct-13	606.514	0.01221917	1221916.532	0	0
9-Oct-13	613.563	0.01155514	1155513.698	0	0
10-Oct-13	618.039	0.00726861	726861.3897	0	0
11-Oct-13	627.98	0.01595676	1595675.656	1	0

16-Oct-13	622.046	-0.00949427	-949427.384	0	0
17-Oct-13	627.42	0.00860213	860212.785	0	0
18-Oct-13	633.923	0.01031132	1031132.312	0	0
21-Oct-13	638.545	0.00726465	726465.4714	0	0
22-Oct-13	623.211	-0.02430701	-2430700.54	0	0
23-Oct-13	627.056	0.00615071	615070.5604	0	0
24-Oct-13	632.287	0.00830755	830755.4153	0	0
25-Oct-13	627.443	-0.00769057	-769057.477	0	0
28-Oct-13	629.889	0.00389078	389078.3159	0	0
29-Oct-13	626.827	-0.00487303	-487302.789	0	0
30-Oct-13	628.412	0.00252542	252541.6821	0	0
31-Oct-13	615.706	-0.02042643	-2042642.54	0	0
1-Nov-13	603.506	-0.02001359	-2001359.44	0	0
4-Nov-13	603.922	0.00068907	68906.80297	0	0
6-Nov-13	609.593	0.00934647	934647.0844	0	0
7-Nov-13	616.109	0.01063237	1063237.457	0	0
8-Nov-13	615.628	-0.00078101	-78101.0921	0	0
11-Nov-13	610.502	-0.00836132	-836131.546	0	0
12-Nov-13	604.546	-0.00980381	-980380.644	0	0
13-Nov-13	590.931	-0.0227785	-2277850.38	0	0
14-Nov-13	599.396	0.01422322	1422322.22	1	0
15-Nov-13	590.731	-0.01456173	-1456172.85	0	0
18-Nov-13	605.593	0.02484739	2484739.023	1	0
19-Nov-13	608.249	0.00437619	437619.433	0	0
20-Nov-13	597.711	-0.01747698	-1747697.81	0	0
21-Nov-13	595.125	-0.00433589	-433589.203	0	0
22-Nov-13	592.891	-0.0037609	-376089.654	0	0
25-Nov-13	592.721	-0.00028677	-28677.1728	0	0
26-Nov-13	573.572	-0.03284033	-3284032.57	0	0
27-Nov-13	580.202	0.01149285	1149284.518	0	0
28-Nov-13	578.906	-0.0022362	-223620.325	0	0
29-Nov-13	579.868	0.00166038	166037.5916	0	0
2-Dec-13	591.915	0.02056255	2056255.206	1	0
3-Dec-13	584.709	-0.01224876	-1224875.59	0	0
4-Dec-13	577.393	-0.01259114	-1259114.37	0	0
5-Dec-13	573.882	-0.00609934	-609934.357	0	0
6-Dec-13	569.002	-0.00853985	-853985.121	0	0

9-Dec-13	576.233	0.01262814	1262814.373	0	0
10-Dec-13	587.521	0.0193999	1939989.727	1	0
11-Dec-13	586.106	-0.00241133	-241132.947	0	0
12-Dec-13	575.658	-0.01798693	-1798692.62	0	0
13-Dec-13	568.146	-0.01313531	-1313530.64	0	0
16-Dec-13	560.749	-0.01310504	-1310503.79	0	0
17-Dec-13	567.513	0.01199027	1199026.651	0	0
18-Dec-13	572.12	0.0080851	808510.3005	0	0
19-Dec-13	579.324	0.01251315	1251314.697	0	0
20-Dec-13	575.8	-0.00610153	-610152.838	0	0
23-Dec-13	572.586	-0.00559744	-559743.569	0	0
24-Dec-13	578.142	0.00965657	965657.0752	0	0
27-Dec-13	578.641	0.00086274	86273.749	0	0
30-Dec-13	585.11	0.01111761	1111761.301	0	0
2-Jan-14	596.148	0.01868909	1868909.464	1	0
3-Jan-14	585.642	-0.01778028	-1778027.7	0	0
6-Jan-14	579.928	-0.00980472	-980472.348	0	0
7-Jan-14	572.287	-0.01326334	-1326334.41	0	0
8-Jan-14	576.407	0.00717339	717339.4598	0	0
9-Jan-14	574.279	-0.00369867	-369866.745	0	0
10-Jan-14	582.379	0.0140061	1400609.759	1	0
13-Jan-14	601.806	0.0328137	3281369.57	1	1
15-Jan-14	609.9	0.01335988	1335987.507	0	0
16-Jan-14	606.816	-0.00506939	-506939.434	0	0
17-Jan-14	603.061	-0.00620726	-620726.248	0	0
20-Jan-14	608.315	0.00867449	867448.7435	0	0
21-Jan-14	609.114	0.0013126	131260.2402	0	0
22-Jan-14	614.407	0.00865213	865213.2688	0	0
23-Jan-14	614.965	0.00090778	90778.06202	0	0
24-Jan-14	604.373	-0.0173738	-1737379.86	0	0
27-Jan-14	583.88	-0.03449607	-3449607.47	0	0
28-Jan-14	588.271	0.00749224	749224.3815	0	0
29-Jan-14	601.539	0.02230365	2230364.514	1	0
30-Jan-14	602.873	0.00221519	221518.9728	0	0
3-Feb-14	595.621	-0.012102	-1210200.22	0	0
4-Feb-14	587.491	-0.01374363	-1374363.2	0	0
5-Feb-14	594.498	0.01185643	1185642.52	0	0

6-Feb-14	601.058	0.01097408	1097408.375	0	0
7-Feb-14	606.217	0.00854657	854657.2078	0	0
10-Feb-14	603.326	-0.00478033	-478032.696	0	0
11-Feb-14	604.703	0.00227975	227974.7583	0	0
12-Feb-14	609.077	0.00720727	720726.8094	0	0
13-Feb-14	607.222	-0.00305024	-305023.919	0	0
14-Feb-14	608.972	0.00287783	287783.2332	0	0
17-Feb-14	615.614	0.01084785	1084785.41	0	0
18-Feb-14	615.1	-0.00083529	-83528.7532	0	0
19-Feb-14	621.734	0.01072749	1072749.232	0	0
20-Feb-14	622.158	0.00068173	68173.12378	0	0
21-Feb-14	626.968	0.00770142	770142.2874	0	0
24-Feb-14	621.944	-0.00804545	-804544.612	0	0
25-Feb-14	614.478	-0.01207693	-1207692.96	0	0
26-Feb-14	606.032	-0.01384034	-1384033.69	0	0
27-Feb-14	612.839	0.01116947	1116946.874	0	0
28-Feb-14	626.864	0.02262735	2262735.251	1	0
3-Mar-14	618.984	-0.01265019	-1265018.7	0	0
4-Mar-14	620.047	0.00171586	171585.7409	0	0
5-Mar-14	628.002	0.01274807	1274806.956	0	0
6-Mar-14	631	0.00476251	476251.1365	0	0
7-Mar-14	631.743	0.0011768	117680.3333	0	0
10-Mar-14	632.91	0.00184557	184556.6066	0	0
11-Mar-14	635.354	0.00385409	385409.1932	0	0
12-Mar-14	633.168	-0.00344653	-344653.41	0	0
13-Mar-14	641.309	0.01277561	1277561.028	0	0
14-Mar-14	661.737	0.0313568	3135679.598	1	1
17-Mar-14	663.863	0.00320761	320760.6854	0	0
18-Mar-14	651.323	-0.01907012	-1907012.4	0	0
19-Mar-14	655.45	0.00631634	631634.3728	0	0
20-Mar-14	634.165	-0.03301285	-3301284.97	0	0
21-Mar-14	636.549	0.00375223	375222.5595	0	0
24-Mar-14	637.79	0.00194768	194767.7019	0	0
25-Mar-14	632.444	-0.0084174	-841739.642	0	0
26-Mar-14	636.476	0.00635503	635503.1948	0	0
27-Mar-14	635.018	-0.00229337	-229336.613	0	0
28-Mar-14	640.411	0.00845681	845681.2792	0	0

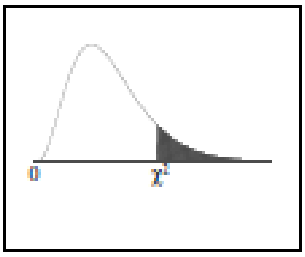
1-Apr-14	657.09	0.02571084	2571083.766	1	0
2-Apr-14	655.267	-0.00277821	-277820.924	0	0
3-Apr-14	658.533	0.00497185	497184.766	0	0
4-Apr-14	653.274	-0.00801799	-801799.072	0	0
7-Apr-14	667.22	0.02112318	2112318.351	1	0
8-Apr-14	666.518	-0.00105268	-105268.061	0	0
10-Apr-14	643.145	-0.03569694	-3569694.17	0	0
11-Apr-14	653.278	0.01563256	1563256.183	1	0
14-Apr-14	659.705	0.00979	978999.9311	0	0
15-Apr-14	659.78	0.00011368	11368.07165	0	0
16-Apr-14	657.858	-0.00291734	-291734.355	0	0
17-Apr-14	663.592	0.0086784	867840.0224	0	0
21-Apr-14	663.521	-0.000107	-10699.9178	0	0
22-Apr-14	664.132	0.00092042	92042.12895	0	0
23-Apr-14	664.142	1.5057E-05	1505.71343	0	0
24-Apr-14	663.179	-0.00145104	-145104.337	0	0
25-Apr-14	663.206	4.0712E-05	4071.216126	0	0
28-Apr-14	650.317	-0.01962571	-1962571.45	0	0
29-Apr-14	645.254	-0.0078159	-781589.859	0	0
30-Apr-14	647.674	0.00374345	374344.5615	0	0

Hasil Uji Validasi menggunakan *Likelihood Ratio*
dengan *software* Excel 2007

Selang Periode (hari)	VaR dengan pendekatan EGARCH (1,1)	*N*	*x*	*Likelihood Ratio* (LR)
1	1.079.679,564	570	67	107.135113
5	2.414.436,900	570	12	30.80856662
7	7.542.208,163	570	0	Tidak terdefinisi

Lampiran 14

Chi-Square Distribution Table



The shaded area is equal to α for $\chi^2 = \chi^2_\alpha$.

df	$\chi^2_{.995}$	$\chi^2_{.990}$	$\chi^2_{.975}$	$\chi^2_{.950}$	$\chi^2_{.900}$	$\chi^2_{.100}$	$\chi^2_{.050}$	$\chi^2_{.025}$	$\chi^2_{.010}$	$\chi^2_{.005}$
1	0.000	0.000	0.001	0.004	0.016	2.706	3.841	5.024	6.635	7.879
2	0.010	0.020	0.051	0.103	0.211	4.605	5.991	7.378	9.210	10.597
3	0.072	0.115	0.216	0.352	0.584	6.251	7.815	9.348	11.345	12.838
4	0.207	0.297	0.484	0.711	1.064	7.779	9.488	11.143	13.277	14.860
5	0.412	0.554	0.831	1.145	1.610	9.236	11.070	12.833	15.086	16.750
6	0.676	0.872	1.237	1.635	2.204	10.645	12.592	14.449	16.812	18.548
7	0.989	1.239	1.690	2.167	2.833	12.017	14.067	16.013	18.475	20.278
8	1.344	1.646	2.180	2.733	3.490	13.362	15.507	17.535	20.090	21.955
9	1.735	2.088	2.700	3.325	4.168	14.684	16.919	19.023	21.666	23.589
10	2.156	2.558	3.247	3.940	4.865	15.987	18.307	20.483	23.209	25.188
11	2.603	3.053	3.816	4.575	5.578	17.275	19.675	21.920	24.725	26.757
12	3.074	3.571	4.404	5.226	6.304	18.549	21.026	23.337	26.217	28.300
13	3.565	4.107	5.009	5.892	7.042	19.812	22.362	24.736	27.688	29.819
14	4.075	4.660	5.629	6.571	7.790	21.064	23.685	26.119	29.141	31.319
15	4.601	5.229	6.262	7.261	8.547	22.307	24.996	27.488	30.578	32.801
16	5.142	5.812	6.908	7.962	9.312	23.542	26.296	28.845	32.000	34.267
17	5.697	6.408	7.564	8.672	10.085	24.769	27.587	30.191	33.409	35.718
18	6.265	7.015	8.231	9.390	10.865	25.989	28.869	31.526	34.805	37.156
19	6.844	7.633	8.907	10.117	11.651	27.204	30.144	32.852	36.191	38.582
20	7.434	8.260	9.591	10.851	12.443	28.412	31.410	34.170	37.566	39.997
21	8.034	8.897	10.283	11.591	13.240	29.615	32.671	35.479	38.932	41.401
22	8.643	9.542	10.982	12.338	14.041	30.813	33.924	36.781	40.289	42.796
23	9.260	10.196	11.689	13.091	14.848	32.007	35.172	38.076	41.638	44.181
24	9.886	10.856	12.401	13.848	15.659	33.196	36.415	39.364	42.980	45.559
25	10.520	11.524	13.120	14.611	16.473	34.382	37.652	40.646	44.314	46.928
26	11.160	12.198	13.844	15.379	17.292	35.563	38.885	41.923	45.642	48.290
27	11.808	12.879	14.573	16.151	18.114	36.741	40.113	43.195	46.963	49.645
28	12.461	13.565	15.308	16.928	18.939	37.916	41.337	44.461	48.278	50.993
29	13.121	14.256	16.047	17.708	19.768	39.087	42.557	45.722	49.588	52.336
30	13.787	14.953	16.791	18.493	20.599	40.256	43.773	46.979	50.892	53.672
40	20.707	22.164	24.433	26.509	29.051	51.805	55.758	59.342	63.691	66.766
50	27.991	29.707	32.357	34.764	37.689	63.167	67.505	71.420	76.154	79.490
60	35.534	37.485	40.482	43.188	46.459	74.397	79.082	83.298	88.379	91.952
70	43.275	45.442	48.758	51.739	55.329	85.527	90.531	96.023	100.425	104.215
80	51.172	53.540	57.153	60.391	64.278	96.578	101.879	106.629	112.329	116.321
90	59.196	61.754	65.647	69.126	73.291	107.565	113.145	118.136	124.116	128.299
100	67.328	70.065	74.222	77.929	82.358	118.498	124.342	129.561	135.807	140.169