

**ANALISIS RISIKO SAHAM SYARIAH *AVERAGE VALUE AT RISK* -
GENERALIZED AUTOREGRESSIVE CONDITIONAL HETEROSCEDASTICITY
(AVaR - GARCH)**

**(Studi Kasus : Indeks Harga Saham Syariah Jakarta Islamic Index(JII) Periode 02
Januari 2015 – 30 Agustus 2019)**

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MOTTO

“Banyaknya kegagalan dalam hidup ini dikarenakan orang-orang tidak menyadari betapa dekatnya mereka dengan keberhasilan saat mereka menyerah”

(Thomas Alva Edison)

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“Jadikanlah sabar dan sholat sebagai penolongmu, Sesungguhnya Allah bersama orang-orang yang sabar”

(Q.S Al-Baqarah 153)

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KATA PENGANTAR

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Skripsi ini dimaksudkan untuk memperoleh gelar sarjana Sains (Matematika). Skripsi ini berjudul **“ANALISIS RISIKO SAHAM SYARIAH *AVERAGE VALUE AT RISK* - *GENERALIZED AUTOREGRESSIVE CONDITIONAL HETEROSCEDASTICITY* (AVaR) - (GARCH)”**.

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DAFTAR LAMBANG

R_t : *Return* data harga saham pada periode t

r_t : *simple net return* pada periode t

P_t : nilai *asset* pada periode t

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

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

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

r_k : koefisien autokorelasi sampai *lag* k

N : jumlah data

X_t : nilai X orde t

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

ϕ : koefisien parameter *Autoregressive*

σ_t^2 : varian dari residual pada waktu t

α_0 : konstanta model GARCH (p,q)

α : parameter model GARCH (p,q)

β : parameter model GARCH (p,q)

$\hat{\sigma}_t$: standar deviasi dari model GARCH

S : *Skewness*

L : Fungsi *likelihood*

n : Jumlah data

x : Total failures

$\mu = E(r_t) = E(E(r_t | \Omega_{t-1})) = E(\mu_t) = \mu$: *unconditional* mean dari *return* series

t : Anggota titik waktu

X : Data runtun waktu

Ω_{t-1} : himpunan informasi pada $t-1$

ABSTRAK

Risiko dan *return* merupakan dua hal yang perlu dipertimbangkan dalam berinvestasi. Untuk mengukur besarnya risiko diperlukan suatu alat atau metode agar dapat secara tepat mengukur risiko, salah satunya dengan menggunakan *Average Value at Risk* (AVaR) dengan pendekatan *Generalized Autoregressive Conditional Heteroscedasticity* (GARCH).

Data saham yang digunakan dalam penelitian ini adalah saham *Jakarta Islamic Index* (JII) periode 01 Januari 2015 sampai dengan 31 Agustus 2019. Langkah-langkah pada analisis risiko dengan model AVaR-GARCH ini adalah 1) Menentukan nilai *return*; 2) Menguji kestasioneran data; 3) Menguji Normalitas; 4) Identifikasi model ARIMA (p,d,q); 5) Mengestimasi model ARIMA (p,d,q); 6) Menguji diagnosa model ARIMA (p,d,q); 7) Menguji efek ARCH; 8) Identifikasi model GARCH (p,q); 9) Mengestimasi model GARCH (p,q); 10) Mendiagnosa model GARCH (p,q); 11) Menghitung AVaR-GARCH; 12) Menguji Validitas model AVaR-GARCH.

Adapun model terbaik untuk penelitian ini adalah model GARCH (1,1), sedangkan hasil perhitungan dengan AVaR-GARCH diperoleh risiko dengan tingkat kepercayaan 95% sebesar 6,9411% dengan *return* sebesar 0,0796%, sehingga jika dimisalkan seorang investor menginvestasikan dana sebesar Rp.100.000.000,- pada saham *Jakarta Islamic Index* (JII) maka kemungkinan kerugian maksimal pada satu hari kedepan yang dihadapi investor adalah sebesar Rp.6.491,100,- dengan keuntungan sebesar Rp. 79.600,-.

Kata kunci : *Average Value at Risk* (AVaR), GARCH, *Jakarta Islamic Index* (JII), *Return*, *Risk*, *Time Series*.

BAB 1

PENDAHULUAN

1.1. Latar Belakang

Investasi adalah penanaman modal untuk satu atau lebih aktiva yang dimiliki dan biasanya berjangka waktu lama dengan harapan mendapatkan keuntungan dimasa-masa yang akan datang. Keputusan penanaman modal tersebut dapat dilakukan oleh individu atau suatu entitas yang mempunyai kelebihan dana. Investasi dalam arti luas terdiri dari dua bagian utama, yaitu : investasi dalam bentuk aktiva riil (*real assets*) dan investasi dalam bentuk surat-surat berharga atau sekuritas (*marketable securities* atau *financial assets*). Aktiva riil adalah aktiva berwujud seperti emas, perak, intan, barang-barang seni dan real estate. Sedangkan aktiva finansial adalah surat-surat berharga yang pada dasarnya merupakan klaim atas aktiva riil yang dikuasai oleh suatu entitas (Sunariyah, 2003).

Pasar modal merupakan tempat pertemuan antara penawaran dengan permintaan surat berharga. Ditempat inilah para pelaku pasar yaitu individu-individu atau badan usaha yang mempunyai kelebihan dana (*surplus funds*) melakukan investasi dalam surat berharga yang ditawarkan oleh emiten. Ditempat itu pula perusahaan (*entites*) yang membutuhkan dana menawarkan surat berharga dengan cara *listing* terlebih dahulu pada badan otoritas di pasar modal sebagai emiten (Sunariyah 2003).

Pada era globalisasi saat ini pengukuran dan pengelolaan risiko data finansial telah mengalami kemajuan yang sangat pesat dan lumrah dilakukan dalam manajemen risiko. Seorang investor akan membentuk portofolio saham untuk mengelola suatu risiko. Hal

yang harus dipertimbangkan dalam mengolah dan mengukur suatu risiko pada portofolio tersebut (Natalia, et al., 2014).

Pengukuran dan pengelolaan risiko memerlukan alat ukur. Salah satu alat ukur risiko yang dipopulerkan oleh J.P. Morgan dan dianggap sebagai metode standar dalam mengukur risiko pasar adalah *Value at Risk* (VaR). VaR telah menjadi ukuran risiko yang umum digunakan untuk manajemen risiko finansial dikarenakan konsepnya sederhana, mudah dalam perhitungannya, serta dapat diterapkan secara langsung (Yamai & Yosiba, 2005).

VaR merupakan salah satu bentuk pengukuran risiko yang telah menjadi acuan standar dalam pengelolaan risiko pada beberapa instansi keuangan. Namun, VaR memiliki sejumlah kekurangan yang diakui oleh para ahli di bidang finansial. Salah satu kelemahan yang dimiliki oleh VaR adalah VaR hanya mengukur persentil dari distribusi keuntungan atau kerugian tanpa memperhatikan setiap kerugian yang melebihi tingkat VaR, dan VaR tidak koheren karena tidak memiliki sifat *sub-additive* (Artzner, et al., 1999). Sehingga VaR tidak dapat digunakan sebagai alat ukur risiko yang akurat. Sebagai alternatif untuk mengatasi kelemahan pada VaR maka diperlukan *Average Value at Risk* (AVaR).

AVaR merupakan alat ukur risiko yang memiliki beberapa keunggulan dibandingkan dengan VaR. salah satu keunggulan dari AVaR yang tidak dimiliki oleh VaR adalah AVaR memenuhi semua aksioma mengenai sifat risiko yang koheren dan konsisten dalam kaitannya dengan investor yang bersifat *risk-averse*. Selain itu AVaR memiliki interpretasi intuitif, yaitu dalam hal komputasi dan portofolio optimal, suatu hal yang sangat disukai oleh praktisi keuangan yang memiliki latar belakang matematika yang kuat (Dharmawan, 2015). Karena keunggulan yang dimiliki, maka AVaR digunakan sebagai alat ukur risiko yang mampu menanggulangi kelemahan pada 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, Batasan masalah dalam penelitian ini adalah :

1. Masalah yang dibahas pada tugas akhir ini dibatasi hanya pada AVaR dengan model GARCH.
2. Menghitung Estimasi parameter dengan menggunakan metode *Maximum Likelihood*.
3. Studi kasus menggunakan data saham *Jakarta Islamic Index (JII)* pada periode 1 Januari 2015 sampai dengan 31 Agustus 2019.
4. Alat bantu yang digunakan dalam penelitian ini adalah Ms. Excel dan Eviews.

1.3. Rumusan Masalah

Berdasarkan latar belakang dan batasan masalah, maka dapat dirumuskan permasalahan sebagai berikut :

1. Bagaimana langkah-langkah analisis risiko investasi dengan menggunakan AVaR dengan model GARCH ?
2. Bagaimana bentuk model AVaR dengan GARCH untuk mengukur besar risiko investasi pada indeks harga saham syariah JII periode 1 Januari 2015 sampai 31 Agustus 2019 ?
3. Berapa besar risiko investasi pada indeks harga saham syariah JII menggunakan AVaR dengan model GARCH ?

1.4. Tujuan Penelitian

Berdasarkan rumusan masalah diatas, maka tujuan penelitian ini adalah sebagai berikut :

1. Mengetahui langkah-langkah analisis risiko investasi menggunakan AVaR dengan GARCH.
2. Mengetahui bentuk model AVaR dengan GARCH untuk mengukur pada indeks harga saham syariah JII periode 1 Januari 2015 sampai 31 Agustus 2019.
3. Mengetahui besar risiko investasi pada indeks harga saham syariah JII menggunakan model AVaR dengan GARCH.

1.5. Manfaat Penelitian

Hasil penelitian ini diharapkan memberikan manfaat terhadap berbagai pihak sebagai berikut :

1.1. Bagi Penulis

Memperdalam dan memperluas pengetahuan penulis tentang matematika statistik serta dapat mengaplikasikannya dalam kasus nyata.

1.2. Bagi Program Studi Matematika

Menambah referensi atau literatur tentang ilmu statistik.

1.3. Bagi Investor

Membantu investor dalam memilih sasaran investasi yang terbaik dan meminimalisir kerugian dalam berinvestasi.

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 (2009) yang berjudul “*Analisis Risiko Investasi dengan Value at Risk (VaR) – Generalized Autoregressive Conditional Heteroscedasticity (GARCH)*”, menjelaskan tentang metode atau cara dalam menghitung besaran risiko pada *return* indeks saham Syariah (JII) menggunakan model VaR-GARCH. Hasil dari penelitian ini menunjukkan bahwa model VaR-

GARCH (1,1) adalah model terbaik yang memenuhi asumsi-asumsi pada pemeriksaan diagnosa. Dengan menggunakan 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 Komang Dharmawan (2015) yang berjudul “*Estimasi Nilai AVaR menggunakan model GJR dan model GARCH*”, menjelaskan tentang nilai AVaR dengan menggunakan pendekatan model GJR dan GARCH. Tujuan dari penelitian ini adalah mengestimasi nilai VaR dan AVaR menggunakan model GARCH dan GJR kemudian membandingkan kinerja kedua model tersebut dalam memodelkan risiko investasi pada saham PT. Telkom. Hasil kajian menunjukkan bahwa VaR dan AVaR dengan pendekatan model GJR memberikan agresifitas yang lebih tinggi jika dibandingkan dengan model GARCH.

Penelitian yang sekarang memiliki persamaan dan perbedaan baik itu dari model yang akan digunakan maupun objek yang diteliti. Penelitian dari Hanggara (2009), objek yang diteliti sebelumnya sama menggunakan saham JII tetapi model yang digunakan berbeda, pada penelitian sebelumnya dengan model VaR-GARCH, pada penelitian sekarang yaitu dengan model AVaR-GARCH. Perbedaan dengan penelitian Komang Dharmawan, objek yang diteliti berbeda dengan objek yang diteliti sebelumnya. Dalam penelitian sebelumnya objek yang diteliti adalah saham PT TELKOM, pada penelitian yang sekarang model AVaR-GARCH objek yang diteliti adalah saham *Jakarta Islamic Index* (JII).

Tabel 1.1 : Kajian Pustaka

No	Nama Peneliti	Metode	Objek
1	Dian Harry Hanggara (UIN)	<i>Value at Risk (VaR) – Generalized Autoregressive Conditional Heterokedastic (GARCH)</i>	JII
2	Komang Dharmawan	AVaR – GJR & GARCH	PT TELKOM
3	Prof. Dr. Svetlozar Rachev	Portofolio and Asset Liability Management (Lecture 7 : Average value-at-risk)	
4	Qorina Dyah Fitriasari (UIN)	<i>Average Value at Risk (AVaR) - Generalized Autoregressive Conditional Heterokedastic (GARCH)</i>	JII

1.7. Sistematika Penulisan

Penulisan skripsi ini terdiri atas enam bab dengan sistematika penulisan sebagai berikut :

BAB I PENDAHULUAN

Bab ini berisi latar belakang masalah, batasan masalah, rumusan masalah, tujuan penelitian, manfaat penelitian, tinjauan pustaka dan sistematika penulisan.

BAB II LANDASAN TEORI

Bab ini berisi tentang suatu tinjauan yang merupakan uraian teori dari semua hal yang dibutuhkan untuk diterapkan dalam pembahasan *Average Value at Risk* (AVaR) dengan GARCH.

BAB III METODOLOGI PENELITIAN

Bab ini berisi tentang penelitian metodologi penelitian, jenis dan sumber data, populasi dan sampel, metode pengumpulan data, dan metode analisis data sampai pada flow chart.

BAB IV PEMBAHASAN

Bab ini berisi tentang pembahasan mengenai model analisis risiko investasi menggunakan AVaR dengan model GARCH.

BAB V STUDI KASUS

Bab ini membahas tentang penerapan dan aplikasi analisis risiko investasi estimasi AVaR dengan GARCH pada data indeks saham syariah JII dan memberikan interpretasi terhadap hasil yang diperoleh.

BAB VI KESIMPULAN DAN SARAN

Bab ini berisi tentang kesimpulan yang dapat diambil dari pembahasan permasalahan yang ada, pemecahan masalah, dan saran-saran yang berkaitan dengan penelitian sejenis untuk penelitian berikutnya

BAB VI

KESIMPULAN DAN SARAN

6.1. Kesimpulan

1. Ada beberapa langkah-langkah dalam analisis risiko investasi dengan menggunakan AVaR-GARCH yaitu menentukan nilai *return*, menguji kestasioneran data, menguji kenormalan data, menentukan model ARIMA yang sesuai, menguji ada tidaknya efek ARCH, menentukan model GARCH terbaik, menghitung nilai VaR-GARCH, menghitung AVaR-GARCH.
2. Model terbaik dalam penelitian ini adalah model GARCH (1,1) dan persamaannya sebagai berikut :
 - a. Model GARCH (1,1)
$$\hat{\sigma}_t^2 = (1.86E-06) + 0.054347 \varepsilon_{t-1}^2 + 0.932951 \sigma_{t-1}^2$$
3. Pengukuran besar risiko investasi pada index harga saham *Jakarta Islamic Index* periode Januari 2015 – Agustus 2019 menggunakan AVaR-GARCH dengan tingkat kepercayaan 95% menghasilkan nilai risiko sebesar 6,9411% dan *return* sebesar 0,0796%, sehingga jika seorang investor menginvestasika dana sebesar Rp. 100.000.000,- maka kemungkinan kerugian maximal pada satu hari kedepan yang dihadapi investor adalah sebesar Rp. 6.941.120,- dengan keuntungan sebesar Rp. 79.600,-

5.2. 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 menjadi bahan pertimbangan bagi para investor.
2. Untuk peneliti selanjutnya dapat melanjutkan pembahasan tentang Average Value at Risk dilakukan dengan metode lain seperti GARCH-M, TARCH, VGARCH, IGARCH, APARCH dll.

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



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LAMPIRAN 1**Data *return* indeks saham JII harian periode 01 Januari – 31 Agustus 2019**

DATE	RETURN	CLOSE
02/01/2015	-	694,4
05/01/2015	-0,007776498	689,0
06/01/2015	-0,01161103	681,0
07/01/2015	0,009544787	687,5
08/01/2015	0,000872727	688,1
09/01/2015	0,001162622	688,9
12/01/2015	-0,007548265	683,7
13/01/2015	0,01228609	692,1
14/01/2015	-0,015171218	681,6
15/01/2015	0,008656103	687,5
16/01/2015	-0,008581818	681,6
19/01/2015	0	681,6
20/01/2015	0,010269953	688,6
21/01/2015	0,019604996	702,1
22/01/2015	0,0095428	708,8
23/01/2015	0,011145598	716,7
26/01/2015	-0,015766709	705,4
27/01/2015	0,003260561	707,7
28/01/2015	-0,002402148	706,0
29/01/2015	-0,004249292	703,0
30/01/2015	0,00512091	706,6
02/02/2015	-0,007359185	701,4
03/02/2015	0,004562304	704,6
04/02/2015	0,005818904	708,7
05/02/2015	-0,011852688	700,3
06/02/2015	0,015993146	711,5
09/02/2015	-0,000983837	710,8
10/02/2015	-0,005346089	707,0
11/02/2015	0,007213579	712,1
12/02/2015	0,002527735	713,9
13/02/2015	0,010645749	721,5
16/02/2015	-0,016632017	709,5
17/02/2015	0,006765328	714,3
18/02/2015	0,00601988	718,6
20/02/2015	-0,004592263	715,3
23/02/2015	0,004194044	718,3

24/02/2015	0,00292357	720,4
25/02/2015	0,009716824	727,4
26/02/2015	-0,000845477	726,8
27/02/2015	-0,00658379	722,0
02/03/2015	0,009141274	728,6
03/03/2015	0,002195992	730,2
04/03/2015	-0,009449466	723,3
05/03/2015	-0,001797318	722,0
06/03/2015	0,017728532	734,8
09/03/2015	-0,013881328	724,6
10/03/2015	0,001656086	725,8
11/03/2015	-0,007302287	720,5
12/03/2015	0,00444136	723,7
13/03/2015	-0,000138179	723,6
16/03/2015	0,002349364	725,3
17/03/2015	-0,000965118	724,6
18/03/2015	-0,008694452	718,3
19/03/2015	0,009049144	724,8
20/03/2015	-0,004415011	721,6
23/03/2015	-0,000970067	720,9
24/03/2015	0,000693577	721,4
25/03/2015	-0,014416413	711,0
26/03/2015	-0,01068917	703,4
27/03/2015	0,00924083	709,9
30/03/2015	0,014790816	720,4
31/03/2015	0,010827318	728,2
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02/04/2015	-0,002505219	716,7
06/04/2015	0,005720664	720,8
07/04/2015	0,009295228	727,5
08/04/2015	-0,010446735	719,9
09/04/2015	0,005417419	723,8
10/04/2015	-0,002486875	722,0
13/04/2015	-0,006371191	717,4
14/04/2015	-0,008781712	711,1
15/04/2015	-0,000140627	711,0
16/04/2015	-0,000843882	710,4
17/04/2015	-0,001548423	709,3
20/04/2015	-0,007190188	704,2
21/04/2015	0,0194547	717,9
22/04/2015	-0,002507313	716,1
23/04/2015	0,003770423	718,8

24/04/2015	0,006121313	723,2
27/04/2015	-0,034568584	698,2
28/04/2015	0,004010312	701,0
29/04/2015	-0,037375178	674,8
30/04/2015	-0,014819206	664,8
04/05/2015	0,021510229	679,1
05/05/2015	0,010455014	686,2
06/05/2015	0,008889537	692,3
07/05/2015	-0,009244547	685,9
08/05/2015	0,015599942	696,6
11/05/2015	-0,000717772	696,1
12/05/2015	0,00114926	696,9
13/05/2015	0,013057828	706,0
15/05/2015	0,003966006	708,8
18/05/2015	-0,000423251	708,5
19/05/2015	0,004516584	711,7
20/05/2015	0,004215259	714,7
21/05/2015	-0,003497971	712,2
22/05/2015	-0,00070205	711,7
25/05/2015	-0,000702543	711,2
26/05/2015	0,011389201	719,3
27/05/2015	-0,01612679	707,7
28/05/2015	-0,000847817	707,1
29/05/2015	-0,012869467	698,0
01/06/2015	0,00380086	700,7
03/06/2015	-0,011784721	692,4
04/06/2015	-0,010257136	685,3
05/06/2015	-0,000866781	684,7
08/06/2015	-0,017379874	672,8
09/06/2015	-0,025416171	655,7
10/06/2015	0,013725789	664,7
11/06/2015	0,002858432	666,6
12/06/2015	-0,00150015	665,6
15/06/2015	-0,026442308	648,0
16/06/2015	0,007716049	653,0
17/06/2015	0,01194487	660,8
18/06/2015	0,006355932	665,0
19/06/2015	0,002706767	666,8
22/06/2015	-0,00779844	661,6
23/06/2015	-0,006801693	657,1
24/06/2015	0,014000913	666,3
25/06/2015	-0,009905448	659,7

26/06/2015	-0,001364256	658,8
29/06/2015	-0,009107468	652,8
30/06/2015	0,006280637	656,9
01/07/2015	-0,003184655	654,8
02/07/2015	0,011617146	662,4
03/07/2015	0,012860518	670,9
06/07/2015	-0,014259227	661,4
07/07/2015	-0,005512824	657,7
08/07/2015	-0,006805317	653,2
09/07/2015	-0,011726075	645,6
10/07/2015	0,004890138	648,7
13/07/2015	0,009361194	654,8
14/07/2015	0,001661538	655,9
15/07/2015	-0,00343191	653,7
22/07/2015	0,007250035	658,4
23/07/2015	-0,003119727	656,3
24/07/2015	-0,014323434	646,9
27/07/2015	-0,022867795	632,1
28/07/2015	-0,005558878	628,6
29/07/2015	0,000757205	629,1
30/07/2015	-0,000332219	628,9
31/07/2015	0,020792024	642,0
03/08/2015	-0,007765148	637,0
04/08/2015	-0,004345464	634,2
05/08/2015	0,015817905	644,3
06/08/2015	-0,01491657	634,6
07/08/2015	-0,004523825	631,8
10/08/2015	-0,004647268	628,8
11/08/2015	-0,033524004	607,8
12/08/2015	-0,036914728	585,3
13/08/2015	0,034142183	605,3
14/08/2015	0,001838755	606,4
18/08/2015	-0,015210731	597,2
19/08/2015	-0,008466317	592,1
20/08/2015	-0,007001794	588,0
21/08/2015	-0,027180827	572,0
24/08/2015	-0,048277466	544,4
25/08/2015	0,01925638	554,9
26/08/2015	-0,00321154	553,1
27/08/2015	0,058006625	585,2
28/08/2015	0,001556799	586,1
31/08/2015	0,020812645	598,3

01/09/2015	-0,023709476	584,1
02/09/2015	-0,00246876	582,7
03/09/2015	0,014130097	590,9
04/09/2015	-0,002968404	589,1
07/09/2015	-0,040416814	565,3
08/09/2015	0,003562553	567,3
09/09/2015	0,013487527	575,0
10/09/2015	0,003600056	577,1
11/09/2015	0,013575688	584,9
14/09/2015	0,011598663	591,7
15/09/2015	-0,019272274	580,3
16/09/2015	-0,005519787	577,1
17/09/2015	0,012750553	584,4
18/09/2015	0,000704959	584,8
21/09/2015	-0,002681061	583,3
22/09/2015	-0,012203506	576,2
23/09/2015	-0,025385442	561,5
25/09/2015	-0,007664759	557,2
28/09/2015	-0,027321002	542,0
29/09/2015	0,022931607	554,4
30/09/2015	0,002986841	556,1
01/10/2015	0,012539382	563,1
02/10/2015	-0,016319724	553,9
05/10/2015	0,040561718	576,3
06/10/2015	0,035302201	596,7
07/10/2015	0,009829323	602,5
08/10/2015	-0,002328441	601,1
09/10/2015	0,023756292	615,4
12/10/2015	0,005937341	619,1
13/10/2015	-0,042167342	593,0
15/10/2015	0,010975149	599,5
16/10/2015	0,004218628	602,0
19/10/2015	0,016773724	612,1
20/10/2015	0,001184426	612,8
21/10/2015	0,006677153	616,9
22/10/2015	-0,009059404	611,3
23/10/2015	0,014563115	620,2
26/10/2015	0,005426914	623,6
27/10/2015	-0,004278329	620,9
28/10/2015	-0,016170645	610,9
29/10/2015	-0,039166867	587,0
30/10/2015	-0,001492405	586,1

02/11/2015	0,012769239	593,6
03/11/2015	0,009922841	599,5
04/11/2015	0,01834287	610,5
05/11/2015	-0,008578692	605,2
06/11/2015	-0,002369351	603,8
09/11/2015	-0,020571552	591,4
10/11/2015	-0,015499498	582,2
11/11/2015	0,004594578	584,9
12/11/2015	-0,004106804	582,5
13/11/2015	0,00870243	587,6
16/11/2015	-0,010251042	581,5
17/11/2015	0,013364814	589,3
18/11/2015	0,007624313	593,8
19/11/2015	0,005165108	596,9
20/11/2015	0,012877413	604,5
23/11/2015	-0,014801214	595,6
24/11/2015	-0,001207192	594,9
25/11/2015	0,007406561	599,3
26/11/2015	0,004186663	601,8
27/11/2015	-0,001244614	601,0
30/11/2015	-0,035350157	579,8
01/12/2015	0,031443764	598,0
02/12/2015	-0,001887871	596,9
03/12/2015	-0,000556208	596,6
04/12/2015	-0,006148513	592,9
07/12/2015	0,004761351	595,7
08/12/2015	-0,022678363	582,2
10/12/2015	-0,006724355	578,3
11/12/2015	-0,022837746	565,1
14/12/2015	0,000960909	565,6
15/12/2015	0,013349645	573,2
16/12/2015	0,017427214	583,2
17/12/2015	0,029740746	600,5
18/12/2015	-0,020479021	588,2
21/12/2015	0,005894063	591,7
22/12/2015	0,006616685	595,6
23/12/2015	-0,003948952	593,2
28/12/2015	0,006789729	597,3
29/12/2015	0,003614738	599,4
30/12/2015	0,006527803	603,3
04/01/2016	-0,018631008	592,1
05/01/2016	0,008707871	597,3

06/01/2016	0,025045876	612,2
07/01/2016	-0,020974384	599,4
08/01/2016	0,00183856	600,5
11/01/2016	-0,022943159	586,7
12/01/2016	0,015914247	596,0
13/01/2016	0,009762702	601,9
14/01/2016	-0,012860069	594,1
15/01/2016	0,00087019	594,6
18/01/2016	-0,012013992	587,5
19/01/2016	0,008347291	592,4
20/01/2016	-0,016212019	582,8
21/01/2016	-0,001750184	581,8
22/01/2016	0,015294546	590,7
25/01/2016	0,00801288	595,4
26/01/2016	-0,000770901	594,9
27/01/2016	0,017283863	605,2
28/01/2016	0,004163699	607,8
29/01/2016	0,008225408	612,8
01/02/2016	-0,002687882	611,1
02/02/2016	-0,012079797	603,7
03/02/2016	0,010783127	610,2
04/02/2016	0,019256642	622,0
05/02/2016	0,033071697	642,6
09/02/2016	-0,009994522	636,1
10/02/2016	-0,003088991	634,2
11/02/2016	0,015480198	644,0
12/02/2016	-0,020949343	630,5
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16/02/2016	0,002078959	635,3
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28/12/2017	0,003586671	748,5
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08/01/2018	0,008058143	762,8
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23/05/2018	0,001986563	666,8
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22/06/2018	-0,004276197	652,7

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18/07/2018	0,007965444	663,0
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23/08/2018	0,006364182	652,6

24/08/2018	-0,009190929	646,6
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29/08/2018	0,009891808	668,6
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31/08/2018	-0,006406483	659,9
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12/09/2018	-0,005869801	634,1
13/09/2018	0,00898443	639,8
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26/02/2019	0,004393317	716,0
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23/05/2019	0,024095862	636,6
24/05/2019	0,008366045	641,9
27/05/2019	0,00787604	647,0
28/05/2019	-0,012799013	638,7
29/05/2019	0,012005223	646,4
31/05/2019	0,022662789	661,0
10/06/2019	0,023627955	676,7
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17/06/2019	-0,013832119	660,8
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24/06/2019	-0,007576964	666,6
25/06/2019	0,009918206	673,2
26/06/2019	-0,004854693	669,9
27/06/2019	0,014900843	679,9
28/06/2019	0,004074266	682,6
01/07/2019	0,010711246	690,0
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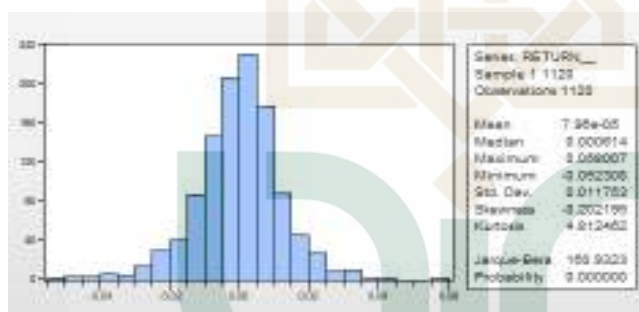
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16/08/2019	0,000615858	672,6
19/08/2019	0,004379712	675,6
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21/08/2019	-0,010146065	673,8
22/08/2019	0,001874577	675,0
23/08/2019	0,00627986	679,3
26/08/2019	-0,006454139	674,9
27/08/2019	0,017240357	686,5
28/08/2019	0,003666397	689,0
29/08/2019	0,003493357	691,4
30/08/2019	0,016141932	702,6

Lampiran 2 : Deskriptif, Uji Normalitas, dan Uji Stasioneritas Data

1. Deskriptif data *return* indeks saham JII

	RETURN_
Mean	7.96E-05
Median	0.000614
Maximum	0.058007
Minimum	-0.052308
Std. Dev.	0.011753
Skewness	-0.202195
Kurtosis	4.812462
Jarque-Bera	160.9323
Probability	0.000000
Sum	0.089146
Sum Sq. Dev.	0.154563
Observations	1120

2. Uji Normalitas data *return* indeks saham JII



3. Uji Stasioneri dengan Uji akar unit

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-33.84111	0.0000
Test critical values:		
1% level	-3.435978	
5% level	-2.863913	
10% level	-2.568084	

Lampiran 3 : Estimasi Model ARIMA

1. ARIMA (1,0,0) dengan konstanta

Dependent Variable: RETURN__
 Method: ARMA Maximum Likelihood (OPG - BHHH)
 Date: 06/25/20 Time: 11:00
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 7 iterations
 Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.95E-05	0.000354	0.224598	0.8223
AR(1)	-0.013105	0.024481	-0.535321	0.5925
SIGMASQ	0.000138	4.25E-06	32.46671	0.0000

R-squared	0.000172	Mean dependent var	7.96E-05
Adjusted R-squared	-0.001619	S.D. dependent var	0.011753
S.E. of regression	0.011762	Akaike info criterion	-6.045177
Sum squared resid	0.154536	Schwarz criterion	-6.031728
Log likelihood	3388.299	Hannan-Quinn criter.	-6.040094
F-statistic	0.095909	Durbin-Watson stat	1.999219
Prob(F-statistic)	0.908554		

Inverted AR Roots	-.01
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2. ARIMA (1,0,0) tanpa konstanta

Dependent Variable: RETURN__
 Method: ARMA Maximum Likelihood (OPG - BHHH)
 Date: 06/25/20 Time: 11:05
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 6 iterations
 Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	-0.013063	0.024113	-0.541752	0.5881
SIGMASQ	0.000138	4.23E-06	32.59720	0.0000

R-squared	0.000125	Mean dependent var	7.96E-05
Adjusted R-squared	-0.000770	S.D. dependent var	0.011753
S.E. of regression	0.011757	Akaike info criterion	-6.046916
Sum squared resid	0.154543	Schwarz criterion	-6.037950
Log likelihood	3388.273	Hannan-Quinn criter.	-6.043527
Durbin-Watson stat	1.999205		

Inverted AR Roots	-.01
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3. ARIMA (2,0,0) dengan konstanta

Dependent Variable: RETURN__
 Method: ARMA Maximum Likelihood (OPG - BHHH)
 Date: 06/25/20 Time: 11:06
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 5 iterations
 Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.96E-05	0.000336	0.236691	0.8129
AR(2)	-0.048881	0.026131	-1.870610	0.0617
SIGMASQ	0.000138	4.25E-06	32.35997	0.0000
R-squared	0.002391	Mean dependent var	7.96E-05	
Adjusted R-squared	0.000604	S.D. dependent var	0.011753	
S.E. of regression	0.011749	Akaike info criterion	-6.047395	
Sum squared resid	0.154193	Schwarz criterion	-6.033945	
Log likelihood	3389.541	Hannan-Quinn criter.	-6.042311	
F-statistic	1.338370	Durbin-Watson stat	2.031727	
Prob(F-statistic)	0.262693			
Inverted AR Roots	-.00+.22i	-.00-.22i		

4. ARIMA (2,0,0) tanpa konstanta

Dependent Variable: RETURN__
 Method: ARMA Maximum Likelihood (OPG - BHHH)
 Date: 06/25/20 Time: 11:06
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 6 iterations
 Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(2)	-0.048833	0.026108	-1.870415	0.0617
SIGMASQ	0.000138	4.24E-06	32.50753	0.0000
R-squared	0.002340	Mean dependent var	7.96E-05	
Adjusted R-squared	0.001448	S.D. dependent var	0.011753	
S.E. of regression	0.011744	Akaike info criterion	-6.049130	
Sum squared resid	0.154201	Schwarz criterion	-6.040164	
Log likelihood	3389.513	Hannan-Quinn criter.	-6.045741	
Durbin-Watson stat	2.031617			
Inverted AR Roots	-.00+.22i	-.00-.22i		

5. ARIMA (3,0,0) dengan konstanta

Dependent Variable: RETURN__
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 06/25/20 Time: 11:07
Sample: 1 1120
Included observations: 1120
Convergence achieved after 7 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.89E-05	0.000334	0.236454	0.8131
AR(3)	-0.063435	0.024850	-2.552766	0.0108
SIGMASQ	0.000137	4.34E-06	31.69699	0.0000
R-squared	0.004031	Mean dependent var	7.96E-05	
Adjusted R-squared	0.002247	S.D. dependent var	0.011753	
S.E. of regression	0.011739	Akaike info criterion	-6.049034	
Sum squared resid	0.153940	Schwarz criterion	-6.035584	
Log likelihood	3390.459	Hannan-Quinn criter.	-6.043950	
F-statistic	2.260260	Durbin-Watson stat	2.032919	
Prob(F-statistic)	0.104800			
Inverted AR Roots	.20+.35i	.20-.35i	-.40	

6. ARIMA (3,0,0) tanpa konstanta

Dependent Variable: RETURN__
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 06/25/20 Time: 11:08
Sample: 1 1120
Included observations: 1120
Convergence achieved after 7 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(3)	-0.063394	0.024706	-2.565921	0.0104
SIGMASQ	0.000137	4.30E-06	31.93902	0.0000
R-squared	0.003980	Mean dependent var	7.96E-05	
Adjusted R-squared	0.003089	S.D. dependent var	0.011753	
S.E. of regression	0.011735	Akaike info criterion	-6.050768	
Sum squared resid	0.153948	Schwarz criterion	-6.041802	
Log likelihood	3390.430	Hannan-Quinn criter.	-6.047379	
Durbin-Watson stat	2.032809			
Inverted AR Roots	.20+.35i	.20+.35i	-.40	

7. ARIMA (0,0,1) dengan konstanta

Dependent Variable: RETURN__
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 06/25/20 Time: 11:09
Sample: 1 1120
Included observations: 1120
Convergence achieved after 14 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.95E-05	0.000353	0.224925	0.8221
MA(1)	-0.014574	0.024405	-0.597177	0.5505
SIGMASQ	0.000138	4.25E-06	32.46160	0.0000
R-squared	0.000191	Mean dependent var	7.96E-05	
Adjusted R-squared	-0.001599	S.D. dependent var	0.011753	
S.E. of regression	0.011762	Akaike info criterion	-6.045196	
Sum squared resid	0.154533	Schwarz criterion	-6.031747	
Log likelihood	3388.310	Hannan-Quinn criter.	-6.040113	
F-statistic	0.106559	Durbin-Watson stat	1.996457	
Prob(F-statistic)	0.898931			
Inverted MA Roots	.01			

8. ARIMA (0,0,1) tanpa konstanta

Dependent Variable: RETURN__
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 06/25/20 Time: 11:09
Sample: 1 1120
Included observations: 1120
Convergence achieved after 14 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MA(1)	-0.014525	0.024037	-0.604277	0.5458
SIGMASQ	0.000138	4.23E-06	32.59119	0.0000
R-squared	0.000144	Mean dependent var	7.96E-05	
Adjusted R-squared	-0.000751	S.D. dependent var	0.011753	
S.E. of regression	0.011757	Akaike info criterion	-6.046935	
Sum squared resid	0.154540	Schwarz criterion	-6.037968	
Log likelihood	3388.283	Hannan-Quinn criter.	-6.043546	
Durbin-Watson stat	1.996455			
Inverted MA Roots	.01			

9. ARIMA (0,0,2) dengan konstanta

Dependent Variable: RETURN__
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 06/25/20 Time: 11:10
Sample: 1 1120
Included observations: 1120
Convergence achieved after 12 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.95E-05	0.000335	0.237622	0.8122
MA(2)	-0.051507	0.026191	-1.966620	0.0495
SIGMASQ	0.000138	4.25E-06	32.39945	0.0000

R-squared	0.002512	Mean dependent var	7.96E-05
Adjusted R-squared	0.000726	S.D. dependent var	0.011753
S.E. of regression	0.011748	Akaike info criterion	-6.047516
Sum squared resid	0.154174	Schwarz criterion	-6.034067
Log likelihood	3389.609	Hannan-Quinn criter.	-6.042432
F-statistic	1.406496	Durbin-Watson stat	2.032773
Prob(F-statistic)	0.245434		

Inverted MA Roots	.23	-.23
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10. ARIMA (0,0,2) tanpa konstanta

Dependent Variable: RETURN__
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 06/25/20 Time: 11:10
Sample: 1 1120
Included observations: 1120
Convergence achieved after 12 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MA(2)	-0.051452	0.026161	-1.966755	0.0495
SIGMASQ	0.000138	4.23E-06	32.54446	0.0000

R-squared	0.002461	Mean dependent var	7.96E-05
Adjusted R-squared	0.001569	S.D. dependent var	0.011753
S.E. of regression	0.011743	Akaike info criterion	-6.049251
Sum squared resid	0.154182	Schwarz criterion	-6.040284
Log likelihood	3389.580	Hannan-Quinn criter.	-6.045862
Durbin-Watson stat	2.032660		

Inverted MA Roots	.23	-.23
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11. ARIMA (0,0,3) dengan konstanta

Dependent Variable: RETURN__
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 06/25/20 Time: 11:11
Sample: 1 1120
Included observations: 1120
Convergence achieved after 12 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.87E-05	0.000330	0.238788	0.8113
MA(3)	-0.071189	0.025179	-2.827332	0.0048
SIGMASQ	0.000137	4.36E-06	31.53267	0.0000
R-squared	0.004521	Mean dependent var		7.96E-05
Adjusted R-squared	0.002738	S.D. dependent var		0.011753
S.E. of regression	0.011737	Akaike info criterion		-6.049523
Sum squared resid	0.153864	Schwarz criterion		-6.036073
Log likelihood	3390.733	Hannan-Quinn criter.		-6.044439
F-statistic	2.536185	Durbin-Watson stat		2.033816
Prob(F-statistic)	0.079624			
Inverted MA Roots	.41	-.21-.36i	-.21+.36i	

12. ARIMA (0,0,3) tanpa konstanta

Dependent Variable: RETURN__
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 06/25/20 Time: 11:11
Sample: 1 1120
Included observations: 1120
Convergence achieved after 11 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MA(3)	-0.071136	0.025030	-2.841989	0.0046
SIGMASQ	0.000137	4.32E-06	31.78588	0.0000
R-squared	0.004468	Mean dependent var		7.96E-05
Adjusted R-squared	0.003578	S.D. dependent var		0.011753
S.E. of regression	0.011732	Akaike info criterion		-6.051256
Sum squared resid	0.153872	Schwarz criterion		-6.042290
Log likelihood	3390.703	Hannan-Quinn criter.		-6.047867
Durbin-Watson stat	2.033702			
Inverted MA Roots	.41	-.21+.36i	-.21-.36i	

13. ARIMA (1,0,1) dengan konstanta

Dependent Variable: RETURN_
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 06/25/20 Time: 11:12
Sample: 1 1120
Included observations: 1120
Convergence achieved after 24 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.32E-05	0.000263	0.278214	0.7809
AR(1)	0.812086	0.082392	9.856378	0.0000
MA(1)	-0.866243	0.070711	-12.25048	0.0000
SIGMASQ	0.000137	4.25E-06	32.17451	0.0000
R-squared	0.008527	Mean dependent var	7.96E-05	
Adjusted R-squared	0.005862	S.D. dependent var	0.011753	
S.E. of regression	0.011718	Akaike info criterion	-6.051753	
Sum squared resid	0.153245	Schwarz criterion	-6.033821	
Log likelihood	3392.982	Hannan-Quinn criter.	-6.044975	
F-statistic	3.199458	Durbin-Watson stat	1.934364	
Prob(F-statistic)	0.022685			
Inverted AR Roots	.81			
Inverted MA Roots	.87			

14. ARIMA (1,0,1) tanpa konstanta

Dependent Variable: RETURN_
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 06/25/20 Time: 11:12
Sample: 1 1120
Included observations: 1120
Convergence achieved after 26 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	0.811953	0.082467	9.845751	0.0000
MA(1)	-0.866032	0.070616	-12.26391	0.0000
SIGMASQ	0.000137	4.20E-06	32.55188	0.0000
R-squared	0.008451	Mean dependent var	7.96E-05	
Adjusted R-squared	0.006676	S.D. dependent var	0.011753	
S.E. of regression	0.011713	Akaike info criterion	-6.053462	
Sum squared resid	0.153256	Schwarz criterion	-6.040013	
Log likelihood	3392.939	Hannan-Quinn criter.	-6.048379	
Durbin-Watson stat	1.934366			
Inverted AR Roots	.81			
Inverted MA Roots	.87			

15. ARIMA (1,0,2) dengan konstanta

Dependent Variable: RETURN__
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 06/25/20 Time: 11:13
Sample: 1 1120
Included observations: 1120
Convergence achieved after 14 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.94E-05	0.000334	0.237863	0.8120
AR(1)	-0.017649	0.024538	-0.719258	0.4721
MA(2)	-0.053223	0.026377	-2.017775	0.0439
SIGMASQ	0.000138	4.25E-06	32.40956	0.0000

R-squared	0.002820	Mean dependent var	7.96E-05
Adjusted R-squared	0.000140	S.D. dependent var	0.011753
S.E. of regression	0.011752	Akaike info criterion	-6.046039
Sum squared resid	0.154127	Schwarz criterion	-6.028106
Log likelihood	3389.782	Hannan-Quinn criter.	-6.039261
F-statistic	1.052057	Durbin-Watson stat	1.997736
Prob(F-statistic)	0.368613		

Inverted AR Roots	-.02	
Inverted MA Roots	.23	-.23

16. ARIMA (1,0,2) tanpa konstanta

Dependent Variable: RETURN__
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 06/25/20 Time: 11:14
Sample: 1 1120
Included observations: 1120
Convergence achieved after 13 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	-0.017596	0.024160	-0.728326	0.4666
MA(2)	-0.053160	0.026355	-2.017104	0.0439
SIGMASQ	0.000138	4.23E-06	32.54482	0.0000

R-squared	0.002767	Mean dependent var	7.96E-05
Adjusted R-squared	0.000982	S.D. dependent var	0.011753
S.E. of regression	0.011747	Akaike info criterion	-6.047771
Sum squared resid	0.154135	Schwarz criterion	-6.034322
Log likelihood	3389.752	Hannan-Quinn criter.	-6.042688
Durbin-Watson stat	1.997728		

Inverted AR Roots	-.02	
Inverted MA Roots	.23	-.23

17. ARIMA (1,0,3) dengan konstanta

Dependent Variable: RETURN__
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 06/25/20 Time: 11:14
Sample: 1 1120
Included observations: 1120
Convergence achieved after 13 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.86E-05	0.000329	0.238682	0.8114
AR(1)	-0.018170	0.024247	-0.749366	0.4538
MA(3)	-0.072587	0.025204	-2.880027	0.0041
SIGMASQ	0.000137	4.36E-06	31.47428	0.0000
R-squared	0.004848	Mean dependent var	7.96E-05	
Adjusted R-squared	0.002173	S.D. dependent var	0.011753	
S.E. of regression	0.011740	Akaike info criterion	-6.048065	
Sum squared resid	0.153813	Schwarz criterion	-6.030133	
Log likelihood	3390.916	Hannan-Quinn criter.	-6.041287	
F-statistic	1.812169	Durbin-Watson stat	1.999706	
Prob(F-statistic)	0.143149			
Inverted AR Roots	-.02			
Inverted MA Roots	.42	-.21-.36i	-.21+.36i	

18. ARIMA (1,0,3) tanpa konstanta

Dependent Variable: RETURN__
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 06/25/20 Time: 11:15
Sample: 1 1120
Included observations: 1120
Convergence achieved after 14 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	-0.018118	0.023854	-0.759539	0.4477
MA(3)	-0.072529	0.025074	-2.892625	0.0039
SIGMASQ	0.000137	4.33E-06	31.69214	0.0000
R-squared	0.004794	Mean dependent var	7.96E-05	
Adjusted R-squared	0.003012	S.D. dependent var	0.011753	
S.E. of regression	0.011735	Akaike info criterion	-6.049797	
Sum squared resid	0.153822	Schwarz criterion	-6.036347	
Log likelihood	3390.886	Hannan-Quinn criter.	-6.044713	
Durbin-Watson stat	1.999687			
Inverted AR Roots	-.02			
Inverted MA Roots	.42	-.21-.36i	-.21+.36i	

19. ARIMA (2,0,1) dengan konstanta

Dependent Variable: RETURN__
Method: ARMA Maximum Likelihood (OPG - BHHH)
Date: 06/25/20 Time: 11:16
Sample: 1 1120
Included observations: 1120
Convergence achieved after 14 iterations
Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.95E-05	0.000336	0.236678	0.8129
AR(2)	-0.049946	0.026410	-1.891151	0.0589
MA(1)	-0.017119	0.024539	-0.697634	0.4856
SIGMASQ	0.000138	4.25E-06	32.36633	0.0000
R-squared	0.002680	Mean dependent var	7.96E-05	
Adjusted R-squared	-0.000000	S.D. dependent var	0.011753	
S.E. of regression	0.011753	Akaike info criterion	-6.045899	
Sum squared resid	0.154148	Schwarz criterion	-6.027967	
Log likelihood	3389.704	Hannan-Quinn criter.	-6.039121	
F-statistic	0.999819	Durbin-Watson stat	1.997750	
Prob(F-statistic)	0.392123			
Inverted AR Roots	-.00+.22i	-.00-.22i		
Inverted MA Roots	.02			

20. ARIMA (2,0,1) tanpa konstanta

STATE ISLAMIC UNIVERSITY
SUNAN KALIJAGA
YOGYAKARTA

Dependent Variable: RETURN_
 Method: ARMA Maximum Likelihood (OPG - BHHH)
 Date: 06/25/20 Time: 11:16
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 13 iterations
 Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(2)	-0.049894	0.026390	-1.890617	0.0589
MA(1)	-0.017068	0.024157	-0.706556	0.4800
SIGMASQ	0.000138	4.23E-06	32.50360	0.0000
R-squared	0.002628	Mean dependent var		7.96E-05
Adjusted R-squared	0.000842	S.D. dependent var		0.011753
S.E. of regression	0.011748	Akaike info criterion		-6.047632
Sum squared resid	0.154156	Schwarz criterion		-6.034183
Log likelihood	3389.674	Hannan-Quinn criter.		-6.042549
Durbin-Watson stat	1.997742			
Inverted AR Roots	-.00+.22i	-.00-.22i		
Inverted MA Roots	.02			

21. ARIMA (2,0,2) dengan konstanta

Dependent Variable: RETURN_
 Method: ARMA Maximum Likelihood (OPG - BHHH)
 Date: 06/25/20 Time: 11:17
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 16 iterations
 Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.45E-05	0.000283	0.263082	0.7925
AR(2)	0.739535	0.136075	5.434751	0.0000
MA(2)	-0.795677	0.120395	-6.608862	0.0000
SIGMASQ	0.000137	4.23E-06	32.39267	0.0000
R-squared	0.006896	Mean dependent var		7.96E-05
Adjusted R-squared	0.004227	S.D. dependent var		0.011753
S.E. of regression	0.011728	Akaike info criterion		-6.050106
Sum squared resid	0.153497	Schwarz criterion		-6.032174
Log likelihood	3392.060	Hannan-Quinn criter.		-6.043328
F-statistic	2.583218	Durbin-Watson stat		2.039324
Prob(F-statistic)	0.052020			
Inverted AR Roots	.86	-.86		
Inverted MA Roots	.89	-.89		

22. ARIMA (2,0,2) tanpa konstanta

Dependent Variable: RETURN_
 Method: ARMA Maximum Likelihood (OPG - BHHH)
 Date: 06/25/20 Time: 11:18
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 16 iterations
 Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(2)	0.739313	0.135692	5.448471	0.0000
MA(2)	-0.795398	0.119877	-6.635096	0.0000
SIGMASQ	0.000137	4.20E-06	32.64401	0.0000
R-squared	0.006831	Mean dependent var	7.96E-05	
Adjusted R-squared	0.005053	S.D. dependent var	0.011753	
S.E. of regression	0.011723	Akaike info criterion	-6.051827	
Sum squared resid	0.153507	Schwarz criterion	-6.038377	
Log likelihood	3392.023	Hannan-Quinn criter.	-6.046743	
Durbin-Watson stat	2.039178			
Inverted AR Roots	.86	-.86		
Inverted MA Roots	.89	-.89		

23. ARIMA (2,0,3) dengan konstanta

Dependent Variable: RETURN_
 Method: ARMA Maximum Likelihood (OPG - BHHH)
 Date: 06/25/20 Time: 11:18
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 12 iterations
 Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.86E-05	0.000311	0.252745	0.8005
AR(2)	-0.054477	0.026386	-2.064574	0.0392
MA(3)	-0.075882	0.025313	-2.997701	0.0028
SIGMASQ	0.000137	4.35E-06	31.46535	0.0000
R-squared	0.007458	Mean dependent var	7.96E-05	
Adjusted R-squared	0.004790	S.D. dependent var	0.011753	
S.E. of regression	0.011725	Akaike info criterion	-6.050685	
Sum squared resid	0.153410	Schwarz criterion	-6.032752	
Log likelihood	3392.384	Hannan-Quinn criter.	-6.043907	
F-statistic	2.795193	Durbin-Watson stat	2.035780	
Prob(F-statistic)	0.039165			
Inverted AR Roots	-.00+.23i	-.00-.23i		
Inverted MA Roots	.42	-.21-.37i	-.21+.37i	

24. ARIMA (2,0,3) tanpa konstanta

Dependent Variable: RETURN__
 Method: ARMA Maximum Likelihood (OPG - BHHH)
 Date: 06/25/20 Time: 11:19
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 12 iterations
 Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(2)	-0.054417	0.026359	-2.064473	0.0392
MA(3)	-0.075817	0.025150	-3.014573	0.0026
SIGMASQ	0.000137	4.32E-06	31.72327	0.0000
R-squared	0.007400	Mean dependent var		7.96E-05
Adjusted R-squared	0.005622	S.D. dependent var		0.011753
S.E. of regression	0.011720	Akaike info criterion		-6.052412
Sum squared resid	0.153419	Schwarz criterion		-6.038963
Log likelihood	3392.351	Hannan-Quinn criter.		-6.047328
Durbin-Watson stat	2.035657			
Inverted AR Roots	-.00+.23i	-.00-.23i		
Inverted MA Roots	.42	-.21-.37i	-.21+.37i	

25. ARIMA (3,0,1) dengan konstanta

Dependent Variable: RETURN__
 Method: ARMA Maximum Likelihood (OPG - BHHH)
 Date: 06/25/20 Time: 11:20
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 18 iterations
 Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.87E-05	0.000332	0.236919	0.8128
AR(3)	-0.064859	0.024906	-2.604118	0.0093
MA(1)	-0.019842	0.024221	-0.819243	0.4128
SIGMASQ	0.000137	4.34E-06	31.62955	0.0000
R-squared	0.004379	Mean dependent var		7.96E-05
Adjusted R-squared	0.001703	S.D. dependent var		0.011753
S.E. of regression	0.011743	Akaike info criterion		-6.047597
Sum squared resid	0.153886	Schwarz criterion		-6.029664
Log likelihood	3390.654	Hannan-Quinn criter.		-6.040819
F-statistic	1.636152	Durbin-Watson stat		1.995630
Prob(F-statistic)	0.179277			
Inverted AR Roots	.20+.35i	.20-.35i	-.40	
Inverted MA Roots	.02			

26. ARIMA (3,0,1) tanpa konstanta

Dependent Variable: RETURN__
 Method: ARMA Maximum Likelihood (OPG - BHHH)
 Date: 06/25/20 Time: 11:20
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 18 iterations
 Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(3)	-0.064812	0.024788	-2.614699	0.0091
MA(1)	-0.019784	0.023843	-0.829732	0.4069
SIGMASQ	0.000137	4.32E-06	31.83466	0.0000
R-squared	0.004326	Mean dependent var		7.96E-05
Adjusted R-squared	0.002543	S.D. dependent var		0.011753
S.E. of regression	0.011738	Akaike info criterion		-6.049329
Sum squared resid	0.153894	Schwarz criterion		-6.035880
Log likelihood	3390.624	Hannan-Quinn criter.		-6.044246
Durbin-Watson stat	1.995628			
Inverted AR Roots	.20+.35i	.20-.35i	-.40	
Inverted MA Roots	.02			

27. ARIMA (3,0,2) dengan konstanta

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Dependent Variable: RETURN__
 Method: ARMA Maximum Likelihood (OPG - BHHH)
 Date: 06/25/20 Time: 11:21
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 13 iterations
 Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.87E-05	0.000314	0.250804	0.8020
AR(3)	-0.067207	0.024979	-2.690482	0.0072
MA(2)	-0.056133	0.026379	-2.127899	0.0336
SIGMASQ	0.000137	4.33E-06	31.64818	0.0000
R-squared	0.007006	Mean dependent var		7.96E-05
Adjusted R-squared	0.004336	S.D. dependent var		0.011753
S.E. of regression	0.011727	Akaike info criterion		-6.050232
Sum squared resid	0.153480	Schwarz criterion		-6.032300
Log likelihood	3392.130	Hannan-Quinn criter.		-6.043454
F-statistic	2.624455	Durbin-Watson stat		2.036036
Prob(F-statistic)	0.049233			
Inverted AR Roots	.20+.35i	.20-.35i	-41	
Inverted MA Roots	.24	-.24		

28. ARIMA (3,0,2) tanpa konstanta

Dependent Variable: RETURN__
 Method: ARMA Maximum Likelihood (OPG - BHHH)
 Date: 06/25/20 Time: 11:22
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 12 iterations
 Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(3)	-0.067156	0.024822	-2.705559	0.0069
MA(2)	-0.056068	0.026343	-2.128388	0.0335
SIGMASQ	0.000137	4.30E-06	31.89139	0.0000
R-squared	0.006948	Mean dependent var		7.96E-05
Adjusted R-squared	0.005170	S.D. dependent var		0.011753
S.E. of regression	0.011722	Akaike info criterion		-6.051960
Sum squared resid	0.153489	Schwarz criterion		-6.038511
Log likelihood	3392.098	Hannan-Quinn criter.		-6.046877
Durbin-Watson stat	2.035914			
Inverted AR Roots	.20+.35i	.20-.35i	-41	
Inverted MA Roots	.24	-.24		

29. ARIMA (3,0,3) dengan konstanta

Dependent Variable: RETURN__
 Method: ARMA Maximum Likelihood (OPG - BHHH)
 Date: 06/25/20 Time: 11:23
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 11 iterations
 Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.67E-05	0.000305	0.251158	0.8017
AR(3)	0.469885	0.223917	2.098482	0.0361
MA(3)	-0.543817	0.215105	-2.528143	0.0116
SIGMASQ	0.000137	4.39E-06	31.23092	0.0000
R-squared	0.006960	Mean dependent var	7.96E-05	
Adjusted R-squared	0.004291	S.D. dependent var	0.011753	
S.E. of regression	0.011727	Akaike info criterion	-6.050178	
Sum squared resid	0.153487	Schwarz criterion	-6.032246	
Log likelihood	3392.100	Hannan-Quinn criter.	-6.043400	
F-statistic	2.607423	Durbin-Watson stat	2.035113	
Prob(F-statistic)	0.050366			
Inverted AR Roots	.78	-.39+.67i	-.39-.67i	
Inverted MA Roots	.82	-.41+.71i	-.41-.71i	

30. ARIMA (3,0,3) tanpa konstanta

Dependent Variable: RETURN__
 Method: ARMA Maximum Likelihood (OPG - BHHH)
 Date: 06/25/20 Time: 11:23
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 14 iterations
 Coefficient covariance computed using outer product of gradients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(3)	0.469630	0.223858	2.097894	0.0361
MA(3)	-0.543510	0.215170	-2.525953	0.0117
SIGMASQ	0.000137	4.35E-06	31.50091	0.0000
R-squared	0.006903	Mean dependent var	7.96E-05	
Adjusted R-squared	0.005125	S.D. dependent var	0.011753	
S.E. of regression	0.011723	Akaike info criterion	-6.051906	
Sum squared resid	0.153496	Schwarz criterion	-6.038456	
Log likelihood	3392.067	Hannan-Quinn criter.	-6.046822	
Durbin-Watson stat	2.034984			
Inverted AR Roots	.78	-.39+.67i	-.39-.67i	
Inverted MA Roots	.82	-.41+.71i	-.41-.71i	

Lampiran 4 : Uji ARCH-LM Model ARIMA

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

Heteroskedasticity Test: ARCH

F-statistic	29.53120	Prob. F(1,1117)	0.0000
Obs*R-squared	28.82208	Prob. Chi-Square(1)	0.0000

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 06/25/20 Time: 11:33

Sample (adjusted): 2 1120

Included observations: 1119 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000115	8.80E-06	13.11138	0.0000
RESID^2(-1)	0.160512	0.029537	5.434261	0.0000
R-squared	0.025757	Mean dependent var		0.000137
Adjusted R-squared	0.024885	S.D. dependent var		0.000265
S.E. of regression	0.000261	Akaike info criterion		-13.65914
Sum squared resid	7.63E-05	Schwarz criterion		-13.65017
Log likelihood	7644.290	Hannan-Quinn criter.		-13.65575
F-statistic	29.53120	Durbin-Watson stat		2.020020
Prob(F-statistic)	0.000000			

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

Heteroskedasticity Test: ARCH

F-statistic	29.01193	Prob. F(1,1117)	0.0000
Obs*R-squared	28.32811	Prob. Chi-Square(1)	0.0000

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 06/25/20 Time: 11:35

Sample (adjusted): 2 1120

Included observations: 1119 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000115	8.87E-06	12.97501	0.0000
RESID^2(-1)	0.159127	0.029543	5.386272	0.0000
R-squared	0.025316	Mean dependent var		0.000137
Adjusted R-squared	0.024443	S.D. dependent var		0.000268
S.E. of regression	0.000264	Akaike info criterion		-13.63670
Sum squared resid	7.81E-05	Schwarz criterion		-13.62773
Log likelihood	7631.736	Hannan-Quinn criter.		-13.63331
F-statistic	29.01193	Durbin-Watson stat		2.015995
Prob(F-statistic)	0.000000			

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

Heteroskedasticity Test: ARCH

F-statistic	23.56118	Prob. F(1,1117)	0.0000
Obs*R-squared	23.11578	Prob. Chi-Square(1)	0.0000

Test Equation:

Dependent Variable: RESID^2

Method: Least Squares

Date: 06/25/20 Time: 11:37

Sample (adjusted): 2 1120

Included observations: 1119 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000117	8.95E-06	13.12148	0.0000
RESID^2(-1)	0.143739	0.029613	4.853986	0.0000
R-squared	0.020658	Mean dependent var		0.000137
Adjusted R-squared	0.019781	S.D. dependent var		0.000270
S.E. of regression	0.000267	Akaike info criterion		-13.61745
Sum squared resid	7.96E-05	Schwarz criterion		-13.60847
Log likelihood	7620.961	Hannan-Quinn criter.		-13.61405
F-statistic	23.56118	Durbin-Watson stat		2.018836
Prob(F-statistic)	0.000001			

Lampiran 5 : Estimasi Model GARCH

1. Model GARCH (1,0)

Dependent Variable: RETURN__				
Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)				
Date: 06/25/20 Time: 11:45				
Sample: 1 1120				
Included observations: 1120				
Convergence achieved after 13 iterations				
Coefficient covariance computed using outer product of gradients				
Presample variance: backcast (parameter = 0.7)				
GARCH = C(2) + C(3)*RESID(-1)^2				
Variable	Coefficient	Std. Error	z-Statistic	Prob.
MA(3)	-0.107369	0.022129	-4.851947	0.0000
Variance Equation				
C	0.000112	4.90E-06	22.78306	0.0000
RESID(-1)^2	0.193060	0.039526	4.884420	0.0000
R-squared	0.003308	Mean dependent var	7.96E-05	
Adjusted R-squared	0.003308	S.D. dependent var	0.011753	
S.E. of regression	0.011733	Akaike info criterion	-6.083940	
Sum squared resid	0.154051	Schwarz criterion	-6.070491	
Log likelihood	3410.006	Hannan-Quinn criter.	-6.078856	
Durbin-Watson stat	2.038567			
Inverted MA Roots	.48	-.24-.41i	-.24+.41i	

2. Model GARCH (2,0)

Dependent Variable: RETURN__				
Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)				
Date: 06/25/20 Time: 11:46				
Sample: 1 1120				
Included observations: 1120				
Convergence achieved after 15 iterations				
Coefficient covariance computed using outer product of gradients				
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.
MA(3)	-0.080939	0.025307	-3.198258	0.0014
Variance Equation				
C	9.50E-05	5.41E-06	17.56793	0.0000
RESID(-1)^2	0.190883	0.038256	4.989623	0.0000
RESID(-2)^2	0.135559	0.034113	3.973794	0.0001
R-squared	0.004387	Mean dependent var	7.96E-05	
Adjusted R-squared	0.004387	S.D. dependent var	0.011753	
S.E. of regression	0.011727	Akaike info criterion	-6.097469	
Sum squared resid	0.153885	Schwarz criterion	-6.079537	
Log likelihood	3418.583	Hannan-Quinn criter.	-6.090691	
Durbin-Watson stat	2.035021			
Inverted MA Roots	.43	-.22-.37i	-.22+.37i	

3. Model GARCH (3,0)

Dependent Variable: RETURN_
 Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)
 Date: 06/25/20 Time: 11:47
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 17 iterations
 Coefficient covariance computed using outer product of gradients
 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.
MA(3)	-0.069228	0.030680	-2.256420	0.0240
Variance Equation				
C	8.80E-05	5.29E-06	16.62386	0.0000
RESID(-1)^2	0.190575	0.037108	5.135719	0.0000
RESID(-2)^2	0.106495	0.031902	3.338235	0.0008
RESID(-3)^2	0.074763	0.023226	3.219006	0.0013
R-squared	0.004465	Mean dependent var	7.96E-05	
Adjusted R-squared	0.004465	S.D. dependent var	0.011753	
S.E. of regression	0.011726	Akaike info criterion	-6.106391	
Sum squared resid	0.153873	Schwarz criterion	-6.083976	
Log likelihood	3424.579	Hannan-Quinn criter.	-6.097919	
Durbin-Watson stat	2.033445			
Inverted MA Roots	.41	-.21-.36i	-.21+.36i	

4. Model GARCH (0,1)

Dependent Variable: RETURN_
 Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)
 Date: 06/25/20 Time: 11:42
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 43 iterations
 Coefficient covariance computed using outer product of gradients
 Presample variance: backcast (parameter = 0.7)
 GARCH = C(2) + C(3)*GARCH(-1)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
MA(3)	-0.072115	0.025251	-2.855947	0.0043
Variance Equation				
C	3.76E-06	3.78E-06	0.994483	0.3200
GARCH(-1)	0.973049	0.027518	35.36095	0.0000
R-squared	0.004468	Mean dependent var	7.96E-05	
Adjusted R-squared	0.004468	S.D. dependent var	0.011753	
S.E. of regression	0.011726	Akaike info criterion	-6.052790	
Sum squared resid	0.153872	Schwarz criterion	-6.039340	
Log likelihood	3392.562	Hannan-Quinn criter.	-6.047706	
Durbin-Watson stat	2.033834			
Inverted MA Roots	.42	-.21-.36i	-.21+.36i	

5. Model GARCH (0,2)

Dependent Variable: RETURN__
 Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)
 Date: 06/25/20 Time: 11:44
 Sample: 1 1120
 Included observations: 1120
 Failure to improve likelihood (non-zero gradients) after 166 iterations
 Coefficient covariance computed using outer product of gradients
 Presample variance: backcast (parameter = 0.7)
 GARCH = C(2) + C(3)*GARCH(-1) + C(4)*GARCH(-2)

Variable	Coefficient	Std. Error	z-Statistic	Prob.
MA(3)	-0.071931	0.025666	-2.802589	0.0051
Variance Equation				
C	8.85E-08	3.79E-08	2.333140	0.0196
GARCH(-1)	1.969872	0.001487	1324.986	0.0000
GARCH(-2)	-0.970504	0.001474	-658.3604	0.0000
R-squared	0.004468	Mean dependent var	7.96E-05	
Adjusted R-squared	0.004468	S.D. dependent var	0.011753	
S.E. of regression	0.011726	Akaike info criterion	-6.057432	
Sum squared resid	0.153872	Schwarz criterion	-6.039499	
Log likelihood	3396.162	Hannan-Quinn criter.	-6.050654	
Durbin-Watson stat	2.033809			
Inverted MA Roots	.42	-.21-.36i	-.21+.36i	

6. Model GARCH (0,3)

Dependent Variable: RETURN__
 Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)
 Date: 06/25/20 Time: 11:45
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 104 iterations
 Coefficient covariance computed using outer product of gradients
 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.
MA(3)	-0.069976	0.025332	-2.762326	0.0057
Variance Equation				
C	1.19E-05	1.15E-05	1.035655	0.3004
GARCH(-1)	-0.051734	0.026641	-1.941918	0.0521
GARCH(-2)	-0.010470	0.027329	-0.383086	0.7017
GARCH(-3)	0.976690	0.029952	32.60830	0.0000
R-squared	0.004467	Mean dependent var	7.96E-05	
Adjusted R-squared	0.004467	S.D. dependent var	0.011753	
S.E. of regression	0.011726	Akaike info criterion	-6.052186	
Sum squared resid	0.153872	Schwarz criterion	-6.029771	
Log likelihood	3394.224	Hannan-Quinn criter.	-6.043714	
Durbin-Watson stat	2.033546			
Inverted MA Roots	.41	-.21-.36i	-.21+.36i	

7. Model GARCH (1,1)

Dependent Variable: RETURN__
 Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)
 Date: 06/25/20 Time: 11:48
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 30 iterations
 Coefficient covariance computed using outer product of gradients
 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.
MA(3)	-0.074502	0.031856	-2.338738	0.0193
Variance Equation				
C	1.86E-06	6.50E-07	2.865801	0.0042
RESID(-1)^2	0.054347	0.009888	5.496161	0.0000
GARCH(-1)	0.932951	0.012377	75.37892	0.0000
R-squared	0.004460	Mean dependent var	7.96E-05	
Adjusted R-squared	0.004460	S.D. dependent var	0.011753	
S.E. of regression	0.011726	Akaike info criterion	-6.153092	
Sum squared resid	0.153873	Schwarz criterion	-6.135160	
Log likelihood	3449.732	Hannan-Quinn criter.	-6.146314	
Durbin-Watson stat	2.034155			
Inverted MA Roots	.42	-.21-.36i	-.21+.36i	

8. Model GARCH (1,2)

Dependent Variable: RETURN__
 Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)
 Date: 06/25/20 Time: 11:48
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 32 iterations
 Coefficient covariance computed using outer product of gradients
 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.
MA(3)	-0.079565	0.032198	-2.471139	0.0135
Variance Equation				
C	2.84E-06	1.20E-06	2.365521	0.0180
RESID(-1)^2	0.077746	0.020598	3.774426	0.0002
GARCH(-1)	0.486294	0.290134	1.676098	0.0937
GARCH(-2)	0.416242	0.270169	1.540672	0.1234
R-squared	0.004408	Mean dependent var	7.96E-05	
Adjusted R-squared	0.004408	S.D. dependent var	0.011753	
S.E. of regression	0.011727	Akaike info criterion	-6.152966	
Sum squared resid	0.153881	Schwarz criterion	-6.130550	
Log likelihood	3450.661	Hannan-Quinn criter.	-6.144493	
Durbin-Watson stat	2.034836			
Inverted MA Roots	.43	-.22-.37i	-.22+.37i	

9. Model GARCH (1,3)

Dependent Variable: RETURN__

Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)

Date: 06/25/20 Time: 11:49

Sample: 1 1120

Included observations: 1120

Convergence achieved after 47 iterations

Coefficient covariance computed using outer product of gradients

Presample variance: backcast (parameter = 0.7)

$$\text{GARCH} = C(2) + C(3)*\text{RESID}(-1)^2 + C(4)*\text{GARCH}(-1) + C(5)*\text{GARCH}(-2) + C(6)*\text{GARCH}(-3)$$

Variable	Coefficient	Std. Error	z-Statistic	Prob.
MA(3)	-0.085414	0.031188	-2.738680	0.0062
Variance Equation				
C	3.55E-06	1.37E-06	2.583405	0.0098
RESID(-1) ²	0.097547	0.023766	4.104565	0.0000
GARCH(-1)	0.392763	0.221453	1.773569	0.0761
GARCH(-2)	0.179987	0.278864	0.645428	0.5186
GARCH(-3)	0.305071	0.215892	1.413073	0.1576
R-squared	0.004292	Mean dependent var	7.96E-05	
Adjusted R-squared	0.004292	S.D. dependent var	0.011753	
S.E. of regression	0.011727	Akaike info criterion	-6.152427	
Sum squared resid	0.153899	Schwarz criterion	-6.125528	
Log likelihood	3451.359	Hannan-Quinn criter.	-6.142260	
Durbin-Watson stat	2.035622			

10. Model GARCH (2,1)

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Dependent Variable: RETURN__
 Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)
 Date: 06/25/20 Time: 11:50
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 30 iterations
 Coefficient covariance computed using outer product of gradients
 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.
MA(3)	-0.087794	0.030842	-2.846628	0.0044
Variance Equation				
C	1.69E-06	6.03E-07	2.803311	0.0051
RESID(-1)^2	0.123361	0.037660	3.275652	0.0011
RESID(-2)^2	-0.077677	0.037403	-2.076729	0.0378
GARCH(-1)	0.942510	0.011704	80.52657	0.0000
R-squared	0.004227	Mean dependent var	7.96E-05	
Adjusted R-squared	0.004227	S.D. dependent var	0.011753	
S.E. of regression	0.011728	Akaike info criterion	-6.155327	
Sum squared resid	0.153909	Schwarz criterion	-6.132911	
Log likelihood	3451.983	Hannan-Quinn criter.	-6.146854	
Durbin-Watson stat	2.035942			
Inverted MA Roots	.44	-.22-.38i	-.22+.38i	

11. Model GARCH (2,2)

Dependent Variable: RETURN__
 Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)
 Date: 06/25/20 Time: 11:51
 Sample: 1 1120
 Included observations: 1120
 Failure to improve likelihood (singular hessian) after 73 iterations
 Coefficient covariance computed using outer product of gradients
 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.
MA(3)	-0.080988	0.031951	-2.534720	0.0113
Variance Equation				
C	6.21E-07	4.72E-07	1.315402	0.1884
RESID(-1)^2	0.117156	0.033717	3.474680	0.0005
RESID(-2)^2	-0.099256	0.030077	-3.300063	0.0010
GARCH(-1)	1.471317	0.231503	6.355509	0.0000
GARCH(-2)	-0.493524	0.218244	-2.261344	0.0237
R-squared	0.004386	Mean dependent var	7.96E-05	
Adjusted R-squared	0.004386	S.D. dependent var	0.011753	
S.E. of regression	0.011727	Akaike info criterion	-6.154695	
Sum squared resid	0.153885	Schwarz criterion	-6.127797	
Log likelihood	3452.629	Hannan-Quinn criter.	-6.144529	
Durbin-Watson stat	2.035028			
Inverted MA Roots	.43	-.22-.37i	-.22+.37i	

12. Model GARCH (2,3)

Dependent Variable: RETURN__
 Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)
 Date: 06/25/20 Time: 11:51
 Sample: 1 1120
 Included observations: 1120
 Failure to improve likelihood (singular hessian) after 84 iterations
 Coefficient covariance computed using outer product of gradients
 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.
MA(3)	-0.082777	0.032165	-2.573520	0.0101
Variance Equation				
C	5.68E-07	4.96E-07	1.144608	0.2524
RESID(-1) ²	0.122939	0.036630	3.356253	0.0008
RESID(-2) ²	-0.106782	0.033934	-3.146725	0.0017
GARCH(-1)	1.377623	0.279343	4.931655	0.0000
GARCH(-2)	-0.275667	0.453572	-0.607770	0.5433
GARCH(-3)	-0.122060	0.239381	-0.509898	0.6101
R-squared	0.004352	Mean dependent var	7.96E-05	
Adjusted R-squared	0.004352	S.D. dependent var	0.011753	
S.E. of regression	0.011727	Akaike info criterion	-6.153125	
Sum squared resid	0.153890	Schwarz criterion	-6.121744	
Log likelihood	3452.750	Hannan-Quinn criter.	-6.141264	
Durbin-Watson stat	2.035268			
Inverted MA Roots	.44	-.22-.38i	-.22+.38i	

13. Model GARCH (3,1)

Dependent Variable: RETURN__
 Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)
 Date: 06/25/20 Time: 11:52
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 35 iterations
 Coefficient covariance computed using outer product of gradients
 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.
MA(3)	-0.085502	0.030674	-2.787475	0.0053
Variance Equation				
C	1.50E-06	5.83E-07	2.580071	0.0099
RESID(-1) ²	0.123865	0.037626	3.291965	0.0010
RESID(-2) ²	-0.055769	0.044868	-1.242958	0.2139
RESID(-3) ²	-0.025791	0.025130	-1.026277	0.3048
GARCH(-1)	0.947252	0.011735	80.71883	0.0000
R-squared	0.004290	Mean dependent var	7.96E-05	
Adjusted R-squared	0.004290	S.D. dependent var	0.011753	
S.E. of regression	0.011727	Akaike info criterion	-6.154145	
Sum squared resid	0.153900	Schwarz criterion	-6.127247	
Log likelihood	3452.321	Hannan-Quinn criter.	-6.143978	
Durbin-Watson stat	2.035634			
Inverted MA Roots	.44	-.22-.38i	-.22+.38i	

14. Model GARCH (3,2)

Dependent Variable: RETURN__
 Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)
 Date: 06/25/20 Time: 11:53
 Sample: 1 1120
 Included observations: 1120
 Failure to improve likelihood (singular hessian) after 148 iterations
 Coefficient covariance computed using outer product of gradients
 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.
MA(3)	-0.083444	0.032050	-2.603530	0.0092
Variance Equation				
C	4.21E-07	5.73E-07	0.734306	0.4628
RESID(-1) ²	0.124946	0.037651	3.318521	0.0009
RESID(-2) ²	-0.139735	0.088085	-1.586371	0.1127
RESID(-3) ²	0.026756	0.053509	0.500032	0.6171
GARCH(-1)	1.620840	0.366382	4.423904	0.0000
GARCH(-2)	-0.635726	0.347474	-1.829565	0.0673
R-squared	0.004338	Mean dependent var	7.96E-05	
Adjusted R-squared	0.004338	S.D. dependent var	0.011753	
S.E. of regression	0.011727	Akaike info criterion	-6.153150	
Sum squared resid	0.153892	Schwarz criterion	-6.121769	
Log likelihood	3452.764	Hannan-Quinn criter.	-6.141289	
Durbin-Watson stat	2.035358			
Inverted MA Roots	.44	-.22+.38i	-.22-.38i	

15. Model GARCH (3,3)

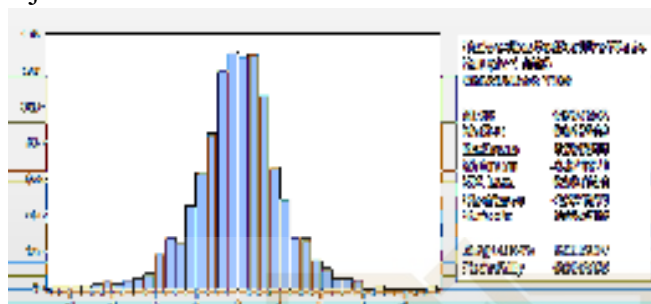
Dependent Variable: RETURN__
 Method: ML ARCH - Normal distribution (BFGS / Marquardt steps)
 Date: 06/25/20 Time: 11:53
 Sample: 1 1120
 Included observations: 1120
 Convergence achieved after 71 iterations
 Coefficient covariance computed using outer product of gradients
 Presample variance: backcast (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.
MA(3)	-0.081602	0.032685	-2.496664	0.0125
Variance Equation				
C	1.03E-06	8.59E-07	1.197626	0.2311
RESID(-1) ²	0.124494	0.034446	3.614202	0.0003
RESID(-2) ²	-0.013274	0.045651	-0.290781	0.7712
RESID(-3) ²	-0.082533	0.040285	-2.048713	0.0405
GARCH(-1)	0.607238	0.307087	1.977414	0.0480
GARCH(-2)	0.859510	0.220997	3.889234	0.0001
GARCH(-3)	-0.502612	0.195339	-2.573026	0.0101
R-squared	0.004375	Mean dependent var	7.96E-05	
Adjusted R-squared	0.004375	S.D. dependent var	0.011753	
S.E. of regression	0.011727	Akaike info criterion	-6.151805	
Sum squared resid	0.153886	Schwarz criterion	-6.115940	
Log likelihood	3453.011	Hannan-Quinn criter.	-6.138249	
Durbin-Watson stat	2.035110			
Inverted MA Roots	.43	-.22-.38i	-.22+.38i	

Lampiran 6 : Uji diagnosa Model GARCH

1. Model GARCH (0,2)

a. Uji Normalitas



b. Uji Autokorelasi

Uji Autokorelasi (ACF) untuk model GARCH(0,2). Hasil uji menunjukkan bahwa semua nilai korelasi parsial (PACF) dan korelasi serial (ACF) berada di dalam batas kritis, yang menunjukkan bahwa model GARCH(0,2) telah memenuhi asumsi tidak adanya autokorelasi.

Lag	ACF	PACF	95% CI	99% CI
1	0.000000	0.000000	0.000000	0.000000
2	0.000000	0.000000	0.000000	0.000000
3	0.000000	0.000000	0.000000	0.000000
4	0.000000	0.000000	0.000000	0.000000
5	0.000000	0.000000	0.000000	0.000000
6	0.000000	0.000000	0.000000	0.000000
7	0.000000	0.000000	0.000000	0.000000
8	0.000000	0.000000	0.000000	0.000000
9	0.000000	0.000000	0.000000	0.000000
10	0.000000	0.000000	0.000000	0.000000
11	0.000000	0.000000	0.000000	0.000000
12	0.000000	0.000000	0.000000	0.000000
13	0.000000	0.000000	0.000000	0.000000
14	0.000000	0.000000	0.000000	0.000000
15	0.000000	0.000000	0.000000	0.000000
16	0.000000	0.000000	0.000000	0.000000
17	0.000000	0.000000	0.000000	0.000000
18	0.000000	0.000000	0.000000	0.000000
19	0.000000	0.000000	0.000000	0.000000
20	0.000000	0.000000	0.000000	0.000000
21	0.000000	0.000000	0.000000	0.000000
22	0.000000	0.000000	0.000000	0.000000
23	0.000000	0.000000	0.000000	0.000000
24	0.000000	0.000000	0.000000	0.000000
25	0.000000	0.000000	0.000000	0.000000
26	0.000000	0.000000	0.000000	0.000000
27	0.000000	0.000000	0.000000	0.000000
28	0.000000	0.000000	0.000000	0.000000
29	0.000000	0.000000	0.000000	0.000000
30	0.000000	0.000000	0.000000	0.000000
31	0.000000	0.000000	0.000000	0.000000
32	0.000000	0.000000	0.000000	0.000000
33	0.000000	0.000000	0.000000	0.000000
34	0.000000	0.000000	0.000000	0.000000
35	0.000000	0.000000	0.000000	0.000000
36	0.000000	0.000000	0.000000	0.000000
37	0.000000	0.000000	0.000000	0.000000
38	0.000000	0.000000	0.000000	0.000000
39	0.000000	0.000000	0.000000	0.000000
40	0.000000	0.000000	0.000000	0.000000
41	0.000000	0.000000	0.000000	0.000000
42	0.000000	0.000000	0.000000	0.000000
43	0.000000	0.000000	0.000000	0.000000
44	0.000000	0.000000	0.000000	0.000000
45	0.000000	0.000000	0.000000	0.000000
46	0.000000	0.000000	0.000000	0.000000
47	0.000000	0.000000	0.000000	0.000000
48	0.000000	0.000000	0.000000	0.000000
49	0.000000	0.000000	0.000000	0.000000
50	0.000000	0.000000	0.000000	0.000000

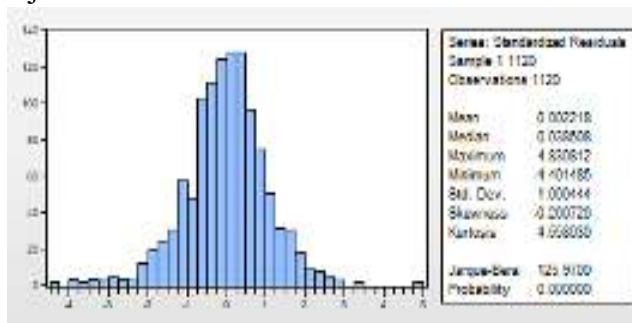
c. Uji Heterokedastisitas

Uji Heterokedastisitas (Heteroskedasticity Test) untuk model GARCH(0,2). Hasil uji menunjukkan bahwa nilai F-statistik (0.000000) lebih kecil dari nilai kritis (0.000000), yang menunjukkan bahwa model GARCH(0,2) telah memenuhi asumsi homoskedastisitas.

Variable	Mean	Std. Dev.	95% CI	99% CI
Mean	0.000000	0.000000	0.000000	0.000000
Std. Dev.	0.000000	0.000000	0.000000	0.000000
95% CI	0.000000	0.000000	0.000000	0.000000
99% CI	0.000000	0.000000	0.000000	0.000000
Range	0.000000	0.000000	0.000000	0.000000
Sum	0.000000	0.000000	0.000000	0.000000
Product	0.000000	0.000000	0.000000	0.000000

2. Model GARCH (1,0)

a. Uji Normalitas



b. Uji Autokorelasi

Dependent Variable: Y1120
Date: 01/01/2017
Time: 12:00
Sample: 1 1120
Model: AR(1)

Variable	Coefficient	Standard Error	t-Statistic	Prob > t
_cons	0.000000	0.000000	0.000000	1.000000
L1	0.000000	0.000000	0.000000	1.000000
L2	0.000000	0.000000	0.000000	1.000000
L3	0.000000	0.000000	0.000000	1.000000
L4	0.000000	0.000000	0.000000	1.000000
L5	0.000000	0.000000	0.000000	1.000000
L6	0.000000	0.000000	0.000000	1.000000
L7	0.000000	0.000000	0.000000	1.000000
L8	0.000000	0.000000	0.000000	1.000000
L9	0.000000	0.000000	0.000000	1.000000
L10	0.000000	0.000000	0.000000	1.000000
L11	0.000000	0.000000	0.000000	1.000000
L12	0.000000	0.000000	0.000000	1.000000
L13	0.000000	0.000000	0.000000	1.000000
L14	0.000000	0.000000	0.000000	1.000000
L15	0.000000	0.000000	0.000000	1.000000
L16	0.000000	0.000000	0.000000	1.000000
L17	0.000000	0.000000	0.000000	1.000000
L18	0.000000	0.000000	0.000000	1.000000
L19	0.000000	0.000000	0.000000	1.000000
L20	0.000000	0.000000	0.000000	1.000000

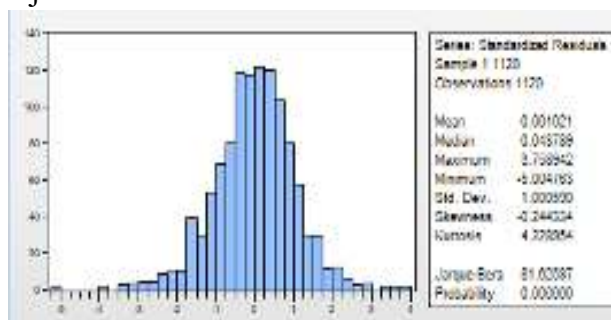
c. Uji Heterokedastisitas

Dependent Variable: Y1120
Date: 01/01/2017
Time: 12:00
Sample: 1 1120
Model: Heteroskedasticity Test

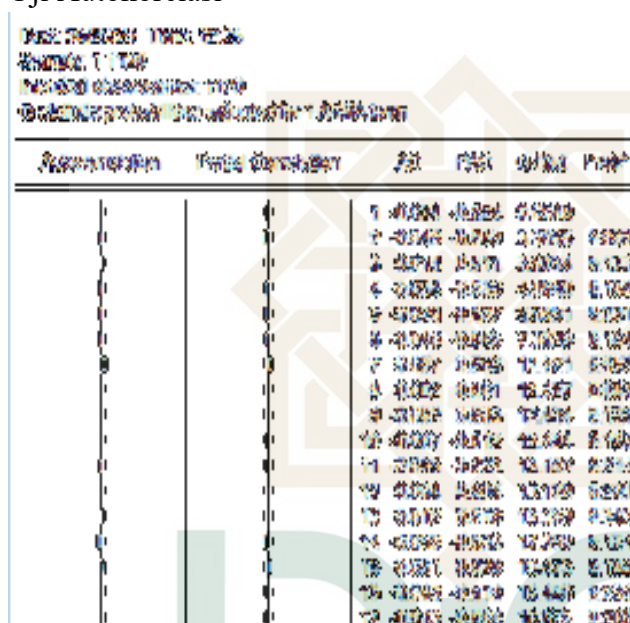
Variable	Coefficient	Standard Error	t-Statistic	Prob > t
_cons	0.000000	0.000000	0.000000	1.000000
L1	0.000000	0.000000	0.000000	1.000000
L2	0.000000	0.000000	0.000000	1.000000
L3	0.000000	0.000000	0.000000	1.000000
L4	0.000000	0.000000	0.000000	1.000000
L5	0.000000	0.000000	0.000000	1.000000
L6	0.000000	0.000000	0.000000	1.000000
L7	0.000000	0.000000	0.000000	1.000000
L8	0.000000	0.000000	0.000000	1.000000
L9	0.000000	0.000000	0.000000	1.000000
L10	0.000000	0.000000	0.000000	1.000000
L11	0.000000	0.000000	0.000000	1.000000
L12	0.000000	0.000000	0.000000	1.000000
L13	0.000000	0.000000	0.000000	1.000000
L14	0.000000	0.000000	0.000000	1.000000
L15	0.000000	0.000000	0.000000	1.000000
L16	0.000000	0.000000	0.000000	1.000000
L17	0.000000	0.000000	0.000000	1.000000
L18	0.000000	0.000000	0.000000	1.000000
L19	0.000000	0.000000	0.000000	1.000000
L20	0.000000	0.000000	0.000000	1.000000

3. Model GARCH (1,1)

a. Uji Normalitas



b. Uji Autokorelasi

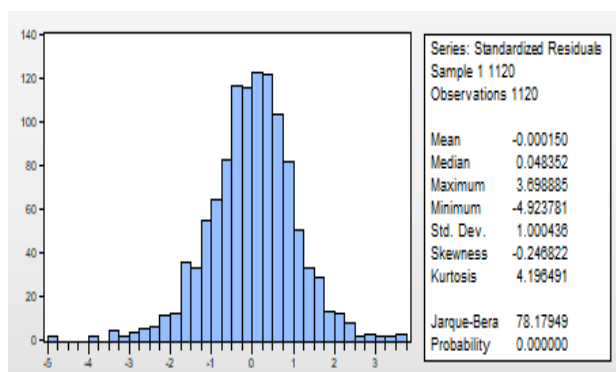


c. Uji Heterokedastisitas

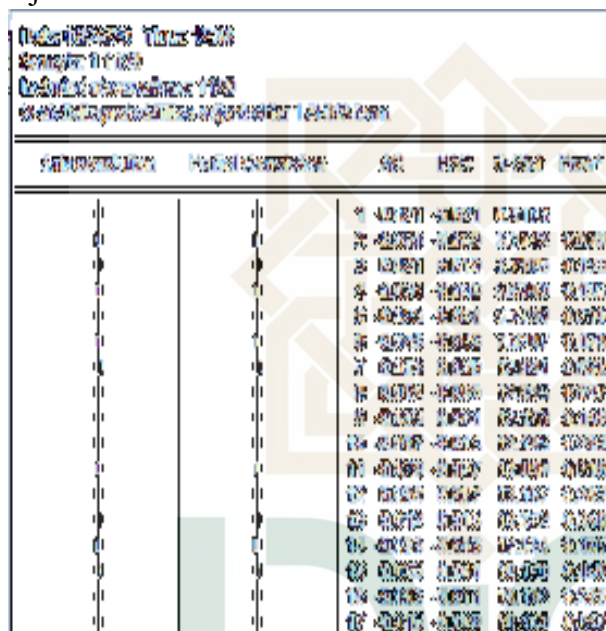


4. Model GARCH (2,0)

a. Uji Normalitas



b. Uji Autokorelasi

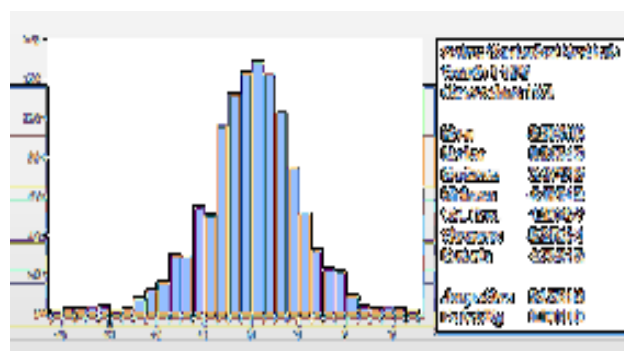


c. Uji Heterokedastisitas



6. Model GARCH (3,0)

a. Uji Normalitas



b. Uji Autokorelasi

Order: 1 (12/12/2018) Time: 12:00
 Sample Size: 17120
 Probability of autocorrelation: 1.125
 Autocorrelation function: 1.125

Autocorrelation	Partial Autocorrelation	ACF	PACF	Q-Statistic	P-Value
1	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	0.0000	0.0000
3	0.0000	0.0000	0.0000	0.0000	0.0000
4	0.0000	0.0000	0.0000	0.0000	0.0000
5	0.0000	0.0000	0.0000	0.0000	0.0000
6	0.0000	0.0000	0.0000	0.0000	0.0000
7	0.0000	0.0000	0.0000	0.0000	0.0000
8	0.0000	0.0000	0.0000	0.0000	0.0000
9	0.0000	0.0000	0.0000	0.0000	0.0000
10	0.0000	0.0000	0.0000	0.0000	0.0000
11	0.0000	0.0000	0.0000	0.0000	0.0000
12	0.0000	0.0000	0.0000	0.0000	0.0000
13	0.0000	0.0000	0.0000	0.0000	0.0000
14	0.0000	0.0000	0.0000	0.0000	0.0000
15	0.0000	0.0000	0.0000	0.0000	0.0000
16	0.0000	0.0000	0.0000	0.0000	0.0000
17	0.0000	0.0000	0.0000	0.0000	0.0000

c. Uji Heterokedastisitas

Heteroskedasticity Test Results				
Statistic	Value	Prob. (P-Value)	Significance Level	Result
F-Statistic	0.000000	0.999999	0.05	Not Significant
Chi-Square	0.000000	0.999999	0.05	Not Significant
White Heteroskedasticity Test Results				
Statistic	Value	Prob. (P-Value)	Significance Level	Result
F-Statistic	0.000000	0.999999	0.05	Not Significant
Chi-Square	0.000000	0.999999	0.05	Not Significant
LM-Statistic	0.000000	0.999999	0.05	Not Significant
Wald-Statistic	0.000000	0.999999	0.05	Not Significant
Score-Statistic	0.000000	0.999999	0.05	Not Significant

DF	0.005	0.01	0.025	0.05	0.1	0.25
1	7.879438577	6.634897	5.023886	3.841459	2.705543	1.323304
2	10.59663473	9.21034	7.377759	5.991465	4.60517	2.772589
3	12.83815647	11.34487	9.348404	7.814728	6.251389	4.108345
4	14.860259	13.2767	11.14329	9.487729	7.77944	5.385269
5	16.74960234	15.08627	12.8325	11.0705	9.236357	6.62568
6	18.54758418	16.81189	14.44938	12.59159	10.64464	7.840804
7	20.27773987	18.47531	16.01276	14.06714	12.01704	9.037148
8	21.95495499	20.09024	17.53455	15.50731	13.36157	10.21885
9	23.58935078	21.66599	19.02277	16.91898	14.68366	11.38875
10	25.18817957	23.20925	20.48318	18.30704	15.98718	12.54886
11	26.75684892	24.72497	21.92005	19.67514	17.27501	13.70069
12	28.29951882	26.21697	23.33666	21.02607	18.54935	14.8454
13	29.81947122	27.68825	24.7356	22.36203	19.81193	15.98391
14	31.31934962	29.14124	26.11895	23.68479	21.06414	17.11693
15	32.80132065	30.57791	27.48839	24.99579	22.30713	18.24509
16	34.26718654	31.99993	28.84535	26.29623	23.54183	19.36886
17	35.71846566	33.40866	30.19101	27.58711	24.76904	20.48868
18	37.15645146	34.80531	31.52638	28.8693	25.98942	21.60489
19	38.58225655	36.19087	32.85233	30.14353	27.20357	22.71781
20	39.99684631	37.56623	34.16961	31.41043	28.41198	23.82769
21	41.40106477	38.93217	35.47888	32.67057	29.61509	24.93478
22	42.795655	40.28936	36.78071	33.92444	30.81328	26.03927
23	44.18127525	41.6384	38.07563	35.17246	32.0069	27.14134
24	45.55851194	42.97982	39.36408	36.41503	33.19624	28.24115
25	46.92789016	44.3141	40.64647	37.65248	34.38159	29.33885
26	48.28988233	45.64168	41.92317	38.88514	35.56317	30.43457
27	49.6449153	46.96294	43.19451	40.11327	36.74122	31.52841
28	50.99337627	48.27824	44.46079	41.33714	37.91592	32.62049
29	52.33561779	49.58788	45.72229	42.55697	39.08747	33.71091
30	53.67196193	50.89218	46.97924	43.77297	40.25602	34.79974
31	55.00270388	52.19139	48.23189	44.98534	41.42174	35.88708
32	56.32811496	53.48577	49.48044	46.19426	42.58475	36.97298
33	57.64844526	54.77554	50.72508	47.39988	43.74518	38.05753
34	58.96392588	56.06091	51.966	48.60237	44.90316	39.14078
35	60.2747709	57.34207	53.20335	49.80185	46.05879	40.22279
36	61.58117911	58.61921	54.43729	50.99846	47.21217	41.30362
37	62.88333545	59.8925	55.66797	52.19232	48.36341	42.38331
38	64.18141236	61.16209	56.89552	53.38354	49.51258	43.46191
39	65.4755709	62.42812	58.12006	54.57223	50.65977	44.53946
40	66.76596183	63.69074	59.34171	55.75848	51.80506	45.61601
41	68.05272646	64.95007	60.56057	56.94239	52.94851	46.6916
42	69.33599746	66.20624	61.77676	58.12404	54.0902	47.76625
43	70.61589962	67.45935	62.99036	59.30351	55.23019	48.84001
44	71.89255046	68.70951	64.20146	60.48089	56.36854	49.9129

45	73.16606082	69.95683	65.41016	61.65623	57.5053	50.98495
46	74.43653537	71.2014	66.61653	62.82962	58.64054	52.05619
47	75.7040731	72.44331	67.82065	64.00111	59.77429	53.12666
48	76.96876773	73.68264	69.02259	65.17077	60.90661	54.19636
49	78.23070809	74.91947	70.22241	66.33865	62.03754	55.26534
50	79.48997847	76.15389	71.4202	67.50481	63.16712	56.3336
51	80.74665895	77.38596	72.61599	68.66929	64.2954	57.40118
52	82.0008257	78.61576	73.80986	69.83216	65.42241	58.46809
53	83.25255121	79.84334	75.00186	70.99345	66.5482	59.53435
54	84.50190453	81.06877	76.19205	72.15322	67.67279	60.59998
55	85.74895156	82.29212	77.38047	73.31149	68.79621	61.665
56	86.99375516	83.51343	78.56716	74.46832	69.91851	62.72942
57	88.23637541	84.73277	79.75219	75.62375	71.03971	63.79326
58	89.47686974	85.95018	80.93559	76.7778	72.15984	64.85654
59	90.71529311	87.16571	82.11741	77.93052	73.27893	65.91927
60	91.95169816	88.37942	83.29767	79.08194	74.39701	66.98146
61	93.18613531	89.59134	84.47644	80.2321	75.51409	68.04313
62	94.41865295	90.80153	85.65373	81.38102	76.63021	69.10429
63	95.64929748	92.01002	86.82959	82.52873	77.74538	70.16496
64	96.87811349	93.21686	88.00405	83.67526	78.85964	71.22514
65	98.10514381	94.42208	89.17714	84.82065	79.973	72.28485
66	99.33042963	95.62572	90.3489	85.96491	81.08549	73.34409
67	100.5540106	96.82782	91.51936	87.10807	82.19711	74.40289
68	101.7759248	98.0284	92.68854	88.25016	83.3079	75.46124
69	102.9962091	99.22752	93.85647	89.39121	84.41787	76.51916
70	104.2148988	100.4252	95.02318	90.53123	85.52704	77.57666
71	105.4320281	101.6214	96.1887	91.67024	86.63543	78.63374
72	106.6476299	102.8163	97.35305	92.80827	87.74305	79.69042
73	107.8617361	104.0098	98.51626	93.94534	88.84992	80.7467
74	109.0743774	105.202	99.67835	95.08147	89.95605	81.8026
75	110.2855834	106.3929	100.8393	96.21667	91.06146	82.85812
76	111.4953828	107.5825	101.9993	97.35097	92.16617	83.91326
77	112.7038034	108.7709	103.1581	98.48438	93.27018	84.96804
78	113.910872	109.9581	104.3159	99.61693	94.37352	86.02246
79	115.1166147	111.144	105.4728	100.7486	95.47619	87.07653
80	116.3210565	112.3288	106.6286	101.8795	96.5782	88.13026
81	117.5242219	113.5124	107.7834	103.0095	97.67958	89.18365
82	118.7261344	114.6949	108.9373	104.1387	98.78033	90.2367
83	119.926817	115.8763	110.0902	105.2672	99.88046	91.28944
84	121.1262919	117.0565	111.2423	106.3948	100.98	92.34185
85	122.3245807	118.2357	112.3934	107.5217	102.0789	93.39395
86	123.5217042	119.4139	113.5436	108.6479	103.1773	94.44574
87	124.7176828	120.591	114.6929	109.7733	104.275	95.49723
88	125.9125362	121.7671	115.8414	110.898	105.3722	96.54842
89	127.1062836	122.9422	116.9891	112.022	106.4689	97.59932

90	128.2989436	124.1163	118.1359	113.1453	107.565	98.64993
91	129.4905343	125.2895	119.2819	114.2679	108.6606	99.70026
92	130.6810733	126.4617	120.4271	115.3898	109.7556	100.7503
93	131.8705778	127.6329	121.5715	116.511	110.8502	101.8001
94	133.0590645	128.8032	122.7151	117.6317	111.9442	102.8496
95	134.2465495	129.9727	123.858	118.7516	113.0377	103.8988
96	135.4330487	131.1412	125.0001	119.8709	114.1307	104.9478
97	136.6185775	132.3089	126.1414	120.9896	115.2232	105.9966
98	137.8031509	133.4757	127.2821	122.1077	116.3153	107.045
99	138.9867835	134.6416	128.422	123.2252	117.4069	108.0933
100	140.1694894	135.8067	129.5612	124.3421	118.498	109.1412
101	141.3512828	136.971	130.6997	125.4584	119.5887	110.189
102	142.532177	138.1345	131.8375	126.5741	120.6789	111.2365
103	143.7121852	139.2971	132.9747	127.6893	121.7686	112.2838
104	144.8913205	140.459	134.1112	128.8039	122.858	113.3308
105	146.0695953	141.6201	135.247	129.918	123.9469	114.3776
106	147.247022	142.7804	136.3822	131.0315	125.0354	115.4242
107	148.4236125	143.94	137.5167	132.1444	126.1234	116.4706
108	149.5993786	145.0988	138.6506	133.2569	127.2111	117.5167
109	150.7743317	146.2569	139.7839	134.3688	128.2983	118.5627
110	151.9484829	147.4143	140.9166	135.4802	129.3851	119.6084
111	153.1218433	148.571	142.0486	136.5911	130.4716	120.6539
112	154.2944235	149.7269	143.1801	137.7015	131.5576	121.6992
113	155.4662339	150.8822	144.311	138.8114	132.6433	122.7443
114	156.6372848	152.0367	145.4413	139.9208	133.7286	123.7892
115	157.807586	153.1906	146.5711	141.0297	134.8135	124.8339
116	158.9771475	154.3438	147.7002	142.1382	135.898	125.8784
117	160.1459788	155.4964	148.8288	143.2461	136.9822	126.9228
118	161.3140892	156.6483	149.9569	144.3537	138.066	127.9669
119	162.4814879	157.7995	151.0844	145.4607	139.1495	129.0108
120	163.6481838	158.9502	152.2114	146.5674	140.2326	130.0546
121	164.8141858	160.1002	153.3379	147.6735	141.3153	131.0982
122	165.9795023	161.2495	154.4638	148.7793	142.3977	132.1416
123	167.144142	162.3983	155.5892	149.8846	143.4798	133.1848
124	168.3081129	163.5465	156.7141	150.9894	144.5616	134.2278
125	169.4714232	164.694	157.8385	152.0939	145.643	135.2707
126	170.6340808	165.841	158.9624	153.1979	146.7241	136.3134
127	171.7960935	166.9874	160.0858	154.3015	147.8048	137.3559
128	172.9574688	168.1332	161.2087	155.4047	148.8853	138.3983
129	174.1182144	169.2784	162.3312	156.5075	149.9654	139.4404
130	175.2783373	170.4231	163.4531	157.6099	151.0452	140.4825
131	176.437845	171.5673	164.5746	158.7119	152.1247	141.5243
132	177.5967443	172.7108	165.6957	159.8135	153.2039	142.566
133	178.7550422	173.8539	166.8162	160.9148	154.2828	143.6076
134	179.9127455	174.9963	167.9364	162.0156	155.3614	144.649

135	181.0698608	176.1383	169.056	163.1161	156.4397	145.6902
136	182.2263947	177.2797	170.1753	164.2162	157.5178	146.7313
137	183.3823535	178.4207	171.2941	165.3159	158.5955	147.7722
138	184.5377436	179.5611	172.4124	166.4153	159.6729	148.813
139	185.6925711	180.7009	173.5303	167.5143	160.7501	149.8536
140	186.8468422	181.8403	174.6478	168.613	161.827	150.8941
141	188.0005627	182.9792	175.7649	169.7113	162.9036	151.9344
142	189.1537385	184.1176	176.8816	170.8092	163.9799	152.9746
143	190.3063754	185.2555	177.9978	171.9068	165.056	154.0147
144	191.458479	186.393	179.1137	173.0041	166.1318	155.0546
145	192.6100548	187.5299	180.2291	174.101	167.2074	156.0944
146	193.7611084	188.6664	181.3442	175.1976	168.2826	157.134
147	194.9116451	189.8024	182.4588	176.2938	169.3577	158.1735
148	196.0616702	190.938	183.5731	177.3897	170.4324	159.2129
149	197.2111888	192.073	184.687	178.4854	171.5069	160.2521
150	198.360206	193.2077	185.8004	179.5806	172.5812	161.2912
151	199.5087269	194.3419	186.9136	180.6756	173.6552	162.3302
152	200.6567563	195.4756	188.0263	181.7702	174.729	163.369
153	201.8042992	196.6089	189.1387	182.8646	175.8025	164.4077
154	202.9513603	197.7418	190.2507	183.9586	176.8758	165.4463
155	204.0979442	198.8742	191.3623	185.0523	177.9488	166.4848
156	205.2440557	200.0062	192.4736	186.1458	179.0217	167.5231
157	206.3896992	201.1378	193.5845	187.2389	180.0942	168.5613
158	207.5348792	202.269	194.6951	188.3317	181.1666	169.5994
159	208.6796001	203.3998	195.8053	189.4242	182.2387	170.6374
160	209.8238662	204.5301	196.9151	190.5165	183.3106	171.6752
161	210.9676818	205.66	198.0247	191.6084	184.3822	172.7129
162	212.1110511	206.7896	199.1338	192.7001	185.4537	173.7505
163	213.2539782	207.9187	200.2427	193.7914	186.5249	174.788
164	214.3964673	209.0474	201.3512	194.8825	187.5959	175.8254
165	215.5385222	210.1758	202.4594	195.9734	188.6667	176.8627
166	216.6801469	211.3037	203.5672	197.0639	189.7373	177.8998
167	217.8213454	212.4313	204.6748	198.1542	190.8076	178.9369
168	218.9621214	213.5585	205.782	199.2442	191.8778	179.9738
169	220.1024787	214.6853	206.8889	200.3339	192.9477	181.0106
170	221.2424211	215.8117	207.9954	201.4234	194.0174	182.0473
171	222.3819521	216.9378	209.1017	202.5126	195.0869	183.0839
172	223.5210754	218.0635	210.2076	203.6015	196.1563	184.1204
173	224.6597946	219.1888	211.3133	204.6902	197.2254	185.1568
174	225.7981132	220.3138	212.4186	205.7786	198.2943	186.1931
175	226.9360345	221.4384	213.5236	206.8668	199.363	187.2293
176	228.0735621	222.5626	214.6284	207.9547	200.4315	188.2654
177	229.2106992	223.6865	215.7328	209.0424	201.4999	189.3013
178	230.3474492	224.8101	216.8369	210.1298	202.568	190.3372
179	231.4838153	225.9333	217.9408	211.217	203.6359	191.373

180	232.6198008	227.0561	219.0443	212.3039	204.7037	192.4086
181	233.7554088	228.1786	220.1476	213.3906	205.7712	193.4442
182	234.8906424	229.3008	221.2506	214.4771	206.8386	194.4797
183	236.0255047	230.4227	222.3533	215.5633	207.9058	195.5151
184	237.1599988	231.5442	223.4557	216.6492	208.9728	196.5503
185	238.2941277	232.6653	224.5578	217.735	210.0396	197.5855
186	239.4278943	233.7862	225.6597	218.8205	211.1063	198.6206
187	240.5613016	234.9067	226.7613	219.9058	212.1727	199.6556
188	241.6943524	236.0269	227.8626	220.9908	213.239	200.6905
189	242.8270495	237.1468	228.9636	222.0756	214.3051	201.7253
190	243.9593958	238.2664	230.0644	223.1602	215.3711	202.76
191	245.0913941	239.3856	231.1649	224.2446	216.4368	203.7946
192	246.2230471	240.5046	232.2651	225.3288	217.5024	204.8291
193	247.3543574	241.6232	233.3651	226.4127	218.5678	205.8636
194	248.4853278	242.7415	234.4649	227.4964	219.6331	206.8979
195	249.6159608	243.8595	235.5643	228.5799	220.6981	207.9322
196	250.7462591	244.9772	236.6635	229.6632	221.7631	208.9664
197	251.8762252	246.0947	237.7625	230.7463	222.8278	210.0004
198	253.0058616	247.2118	238.8612	231.8292	223.8924	211.0344
199	254.1351709	248.3286	239.9597	232.9118	224.9568	212.0684
200	255.2641555	249.4451	241.0579	233.9943	226.021	213.1022
201	256.3928178	250.5614	242.1559	235.0765	227.0851	214.1359
202	257.5211602	251.6773	243.2536	236.1585	228.1491	215.1696
203	258.6491852	252.793	244.3511	237.2404	229.2128	216.2032
204	259.7768951	253.9083	245.4483	238.322	230.2765	217.2367
205	260.9042921	255.0234	246.5453	239.4034	231.3399	218.2701
206	262.0313786	256.1382	247.6421	240.4847	232.4032	219.3034
207	263.1581568	257.2528	248.7386	241.5657	233.4664	220.3366
208	264.284629	258.367	249.8349	242.6465	234.5294	221.3698
209	265.4107973	259.481	250.931	243.7272	235.5922	222.4029
210	266.536664	260.5947	252.0268	244.8076	236.6549	223.4359
211	267.6622312	261.7082	253.1224	245.8879	237.7175	224.4688
212	268.787501	262.8213	254.2178	246.968	238.7799	225.5017
213	269.9124755	263.9342	255.313	248.0478	239.8421	226.5344
214	271.0371568	265.0469	256.4079	249.1275	240.9042	227.5671
215	272.161547	266.1592	257.5026	250.207	241.9662	228.5998
216	273.2856481	267.2714	258.5971	251.2864	243.028	229.6323
217	274.4094621	268.3832	259.6914	252.3655	244.0897	230.6648
218	275.532991	269.4948	260.7854	253.4445	245.1512	231.6972
219	276.6562367	270.6061	261.8793	254.5232	246.2126	232.7295
220	277.7792012	271.7172	262.9729	255.6018	247.2739	233.7617
221	278.9018864	272.8281	264.0663	256.6802	248.335	234.7939
222	280.0242942	273.9386	265.1595	257.7585	249.3959	235.826
223	281.1464265	275.049	266.2525	258.8365	250.4568	236.858
224	282.268285	276.1591	267.3453	259.9144	251.5175	237.89

225	283.3898717	277.2689	268.4378	260.9921	252.578	238.9218
226	284.5111884	278.3785	269.5302	262.0697	253.6384	239.9537
227	285.6322369	279.4879	270.6224	263.147	254.6987	240.9854
228	286.7530188	280.597	271.7143	264.2242	255.7589	242.0171
229	287.8735361	281.7058	272.8061	265.3012	256.8189	243.0487
230	288.9937903	282.8145	273.8976	266.3781	257.8788	244.0802
231	290.1137833	283.9229	274.989	267.4548	258.9386	245.1117
232	291.2335167	285.031	276.0802	268.5313	259.9982	246.1431
233	292.3529922	286.139	277.1711	269.6077	261.0577	247.1744
234	293.4722115	287.2467	278.2619	270.6839	262.1171	248.2056
235	294.5911761	288.3542	279.3525	271.7599	263.1764	249.2368
236	295.7098878	289.4614	280.4429	272.8358	264.2355	250.268
237	296.8283481	290.5684	281.533	273.9115	265.2945	251.299
238	297.9465586	291.6752	282.623	274.987	266.3534	252.33
239	299.064521	292.7818	283.7129	276.0624	267.4121	253.3609
240	300.1822367	293.8881	284.8025	277.1376	268.4707	254.3918
241	301.2997072	294.9942	285.8919	278.2127	269.5292	255.4226
242	302.4169342	296.1001	286.9812	279.2876	270.5876	256.4533
243	303.5339191	297.2058	288.0702	280.3624	271.6459	257.484
244	304.6506635	298.3113	289.1591	281.437	272.704	258.5146
245	305.7671687	299.4165	290.2478	282.5115	273.7621	259.5452
246	306.8834363	300.5215	291.3363	283.5858	274.82	260.5757
247	307.9994677	301.6264	292.4247	284.6599	275.8778	261.6061
248	309.1152644	302.731	293.5128	285.7339	276.9354	262.6364
249	310.2308277	303.8354	294.6008	286.8078	277.993	263.6667
250	311.3461591	304.9396	295.6886	287.8815	279.0504	264.697
251	312.4612599	306.0435	296.7763	288.9551	280.1077	265.7271
252	313.5761316	307.1473	297.8637	290.0285	281.165	266.7573
253	314.6907755	308.2509	298.951	291.1017	282.2221	267.7873
254	315.8051929	309.3542	300.0381	292.1749	283.279	268.8173
255	316.9193853	310.4574	301.125	293.2478	284.3359	269.8473
256	318.0333538	311.5603	302.2118	294.3207	285.3927	270.8771
257	319.1470998	312.6631	303.2984	295.3934	286.4493	271.907
258	320.2606247	313.7657	304.3848	296.4659	287.5059	272.9367
259	321.3739297	314.868	305.4711	297.5383	288.5623	273.9664
260	322.4870161	315.9702	306.5572	298.6106	289.6186	274.9961
261	323.599885	317.0721	307.6431	299.6827	290.6748	276.0257
262	324.7125379	318.1739	308.7289	300.7547	291.7309	277.0552
263	325.8249759	319.2755	309.8145	301.8266	292.7869	278.0847
264	326.9372003	320.3768	310.8999	302.8983	293.8428	279.1141
265	328.0492122	321.478	311.9852	303.9699	294.8986	280.1435
266	329.1610129	322.579	313.0703	305.0413	295.9543	281.1728
267	330.2726035	323.6798	314.1553	306.1126	297.0098	282.202
268	331.3839853	324.7804	315.2401	307.1838	298.0653	283.2312
269	332.4951594	325.8809	316.3247	308.2548	299.1207	284.2604

270	333.6061269	326.9811	317.4092	309.3258	300.1759	285.2895
271	334.716889	328.0812	318.4935	310.3965	301.2311	286.3185
272	335.8274469	329.181	319.5777	311.4672	302.2861	287.3475
273	336.9378017	330.2807	320.6617	312.5377	303.3411	288.3764
274	338.0479544	331.3802	321.7455	313.6081	304.3959	289.4053
275	339.1579062	332.4796	322.8293	314.6784	305.4507	290.4341
276	340.2676583	333.5787	323.9128	315.7485	306.5054	291.4629
277	341.3772115	334.6777	324.9962	316.8185	307.5599	292.4916
278	342.4865672	335.7765	326.0795	317.8884	308.6144	293.5203
279	343.5957262	336.8751	327.1626	318.9581	309.6687	294.5489
280	344.7046897	337.9735	328.2455	320.0278	310.723	295.5774
281	345.8134588	339.0718	329.3283	321.0973	311.7772	296.606
282	346.9220344	340.1698	330.411	322.1667	312.8312	297.6344
283	348.0304176	341.2677	331.4935	323.2359	313.8852	298.6628
284	349.1386093	342.3655	332.5759	324.3051	314.9391	299.6912
285	350.2466107	343.463	333.6581	325.3741	315.9929	300.7195
286	351.3544227	344.5604	334.7402	326.443	317.0465	301.7478
287	352.4620463	345.6577	335.8221	327.5117	318.1001	302.776
288	353.5694826	346.7547	336.9039	328.5804	319.1536	303.8041
289	354.6767323	347.8516	337.9855	329.6489	320.207	304.8323
290	355.7837966	348.9483	339.067	330.7174	321.2604	305.8603
291	356.8906764	350.0449	340.1484	331.7856	322.3136	306.8883
292	357.9973727	351.1412	341.2296	332.8538	323.3667	307.9163
293	359.1038863	352.2375	342.3107	333.9219	324.4198	308.9442
294	360.2102183	353.3335	343.3917	334.9898	325.4727	309.9721
295	361.3163695	354.4294	344.4725	336.0577	326.5256	310.9999
296	362.4223409	355.5251	345.5531	337.1254	327.5783	312.0277
297	363.5281333	356.6207	346.6337	338.193	328.631	313.0554
298	364.6337478	357.7161	347.7141	339.2605	329.6836	314.0831
299	365.7391851	358.8113	348.7943	340.3279	330.7361	315.1108
300	366.8444461	359.9064	349.8745	341.3951	331.7885	316.1384
301	367.9495319	361.0014	350.9545	342.4623	332.8408	317.1659
302	369.0544431	362.0961	352.0343	343.5293	333.8931	318.1934
303	370.1591807	363.1907	353.1141	344.5962	334.9452	319.2209
304	371.2637456	364.2852	354.1937	345.663	335.9973	320.2483
305	372.3681386	365.3795	355.2731	346.7297	337.0493	321.2756
306	373.4723605	366.4736	356.3525	347.7963	338.1012	322.3029
307	374.5764122	367.5676	357.4317	348.8628	339.153	323.3302
308	375.6802945	368.6615	358.5108	349.9292	340.2047	324.3574
309	376.7840082	369.7552	359.5897	350.9955	341.2564	325.3846
310	377.8875542	370.8487	360.6685	352.0616	342.3079	326.4118
311	378.9909333	371.9421	361.7472	353.1277	343.3594	327.4389
312	380.0941462	373.0353	362.8258	354.1937	344.4108	328.4659
313	381.1971938	374.1284	363.9043	355.2595	345.4621	329.4929
314	382.3000768	375.2213	364.9826	356.3252	346.5133	330.5199

315	383.4027962	376.3141	366.0608	357.3909	347.5645	331.5468
316	384.5053525	377.4068	367.1388	358.4564	348.6156	332.5737
317	385.6077466	378.4993	368.2168	359.5218	349.6665	333.6005
318	386.7099793	379.5916	369.2946	360.5872	350.7174	334.6273
319	387.8120513	380.6838	370.3723	361.6524	351.7683	335.6541
320	388.9139635	381.7759	371.4499	362.7175	352.819	336.6808
321	390.0157164	382.8678	372.5274	363.7825	353.8697	337.7075
322	391.1173109	383.9596	373.6047	364.8474	354.9203	338.7341
323	392.2187477	385.0512	374.6819	365.9123	355.9708	339.7607
324	393.3200276	386.1427	375.759	366.977	357.0212	340.7872
325	394.4211513	387.234	376.836	368.0416	358.0716	341.8137
326	395.5221194	388.3252	377.9129	369.1061	359.1218	342.8402
327	396.6229328	389.4163	378.9896	370.1705	360.172	343.8666
328	397.723592	390.5072	380.0662	371.2348	361.2221	344.893
329	398.8240979	391.598	381.1427	372.2991	362.2722	345.9194
330	399.9244511	392.6887	382.2191	373.3632	363.3222	346.9457
331	401.0246524	393.7792	383.2954	374.4272	364.372	347.9719
332	402.1247023	394.8696	384.3716	375.4911	365.4219	348.9982
333	403.2246016	395.9598	385.4476	376.555	366.4716	350.0243
334	404.324351	397.0499	386.5235	377.6187	367.5213	351.0505
335	405.4239511	398.1399	387.5994	378.6823	368.5709	352.0766
336	406.5234026	399.2297	388.6751	379.7459	369.6204	353.1026
337	407.6227062	400.3194	389.7507	380.8093	370.6698	354.1287
338	408.7218626	401.409	390.8261	381.8727	371.7192	355.1547
339	409.8208723	402.4984	391.9015	382.9359	372.7685	356.1806
340	410.919736	403.5877	392.9768	383.9991	373.8177	357.2065
341	412.0184544	404.6769	394.0519	385.0622	374.8669	358.2324
342	413.1170281	405.7659	395.1269	386.1252	375.916	359.2582
343	414.2154578	406.8548	396.2019	387.1881	376.965	360.284
344	415.313744	407.9436	397.2767	388.2509	378.0139	361.3098
345	416.4118875	409.0323	398.3514	389.3136	379.0628	362.3355
346	417.5098888	410.1208	399.426	390.3762	380.1116	363.3612
347	418.6077485	411.2092	400.5005	391.4387	381.1603	364.3869
348	419.7054672	412.2975	401.5749	392.5012	382.2089	365.4125
349	420.8030456	413.3856	402.6492	393.5635	383.2575	366.438
350	421.9004843	414.4736	403.7233	394.6258	384.306	367.4636
351	422.9977838	415.5615	404.7974	395.6879	385.3545	368.4891
352	424.0949448	416.6493	405.8714	396.75	386.4029	369.5145
353	425.1919679	417.7369	406.9452	397.812	387.4512	370.54
354	426.2888535	418.8245	408.019	398.8739	388.4994	371.5654
355	427.3856024	419.9118	409.0926	399.9357	389.5476	372.5907
356	428.482215	420.9991	410.1662	400.9974	390.5957	373.616
357	429.5786921	422.0863	411.2396	402.0591	391.6437	374.6413
358	430.675034	423.1733	412.3129	403.1206	392.6917	375.6666
359	431.7712415	424.2602	413.3862	404.1821	393.7396	376.6918

360	432.867315	425.347	414.4593	405.2435	394.7874	377.717
361	433.9632551	426.4336	415.5323	406.3048	395.8352	378.7421
362	435.0590624	427.5202	416.6053	407.366	396.8829	379.7672
363	436.1547375	428.6066	417.6781	408.4271	397.9305	380.7923
364	437.2502808	429.6929	418.7508	409.4882	398.9781	381.8173
365	438.3456929	430.7791	419.8234	410.5492	400.0256	382.8423
366	439.4409743	431.8652	420.896	411.61	401.073	383.8673
367	440.5361257	432.9511	421.9684	412.6708	402.1204	384.8922
368	441.6311474	434.037	423.0407	413.7315	403.1677	385.9172
369	442.7260401	435.1227	424.113	414.7922	404.2149	386.942
370	443.8208043	436.2083	425.1851	415.8527	405.2621	387.9669
371	444.9154405	437.2938	426.2571	416.9132	406.3092	388.9917
372	446.0099491	438.3791	427.3291	417.9736	407.3563	390.0164
373	447.1043308	439.4644	428.4009	419.0339	408.4033	391.0412
374	448.1985861	440.5495	429.4727	420.0941	409.4502	392.0659
375	449.2927153	441.6345	430.5443	421.1542	410.4971	393.0905
376	450.3867191	442.7195	431.6159	422.2143	411.5439	394.1152
377	451.480598	443.8043	432.6873	423.2743	412.5906	395.1398
378	452.5743524	444.8889	433.7587	424.3342	413.6373	396.1643
379	453.6679828	445.9735	434.83	425.394	414.6839	397.1889
380	454.7614898	447.058	435.9011	426.4537	415.7305	398.2134
381	455.8548737	448.1423	436.9722	427.5134	416.777	399.2379
382	456.9481352	449.2266	438.0432	428.573	417.8234	400.2623
383	458.0412746	450.3107	439.1141	429.6325	418.8698	401.2867
384	459.1342925	451.3947	440.1849	430.6919	419.9161	402.3111
385	460.2271894	452.4786	441.2556	431.7513	420.9623	403.3354
386	461.3199656	453.5625	442.3262	432.8105	422.0085	404.3597
387	462.4126217	454.6461	443.3968	433.8697	423.0546	405.384
388	463.5051581	455.7297	444.4672	434.9289	424.1007	406.4083
389	464.5975753	456.8132	445.5376	435.9879	425.1467	407.4325
390	465.6898738	457.8966	446.6078	437.0469	426.1927	408.4567
391	466.782054	458.9799	447.678	438.1058	427.2386	409.4808
392	467.8741164	460.063	448.7481	439.1646	428.2844	410.505
393	468.9660613	461.1461	449.818	440.2233	429.3302	411.5291
394	470.0578894	462.229	450.8879	441.282	430.3759	412.5531
395	471.1496009	463.3119	451.9578	442.3406	431.4216	413.5772
396	472.2411964	464.3946	453.0275	443.3991	432.4672	414.6012
397	473.3326763	465.4772	454.0971	444.4576	433.5127	415.6251
398	474.4240411	466.5598	455.1667	445.5159	434.5582	416.6491
399	475.5152911	467.6422	456.2361	446.5742	435.6036	417.673
400	476.6064267	468.7245	457.3055	447.6325	436.649	418.6969
401	477.6974485	469.8067	458.3748	448.6906	437.6943	419.7207
402	478.7883569	470.8888	459.444	449.7487	438.7396	420.7446
403	479.8791522	471.9708	460.5131	450.8067	439.7848	421.7684
404	480.9698349	473.0528	461.5821	451.8646	440.8299	422.7921

405	482.0604055	474.1346	462.651	452.9225	441.875	423.8158
406	483.1508642	475.2163	463.7199	453.9803	442.92	424.8396
407	484.2412116	476.2979	464.7887	455.038	443.965	425.8632
408	485.3314481	477.3794	465.8574	456.0957	445.0099	426.8869
409	486.421574	478.4608	466.926	457.1533	446.0548	427.9105
410	487.5115897	479.5421	467.9945	458.2108	447.0996	428.9341
411	488.6014957	480.6233	469.0629	459.2682	448.1444	429.9576
412	489.6912924	481.7044	470.1313	460.3256	449.1891	430.9812
413	490.7809802	482.7855	471.1995	461.3829	450.2337	432.0047
414	491.8705594	483.8664	472.2677	462.4401	451.2783	433.0282
415	492.9600304	484.9472	473.3358	463.4973	452.3229	434.0516
416	494.0493938	486.0279	474.4038	464.5544	453.3674	435.075
417	495.1386497	487.1085	475.4718	465.6114	454.4118	436.0984
418	496.2277986	488.1891	476.5396	466.6683	455.4562	437.1218
419	497.316841	489.2695	477.6074	467.7252	456.5005	438.1451
420	498.4057771	490.3498	478.6751	468.7821	457.5448	439.1684
421	499.4946074	491.4301	479.7427	469.8388	458.589	440.1917
422	500.5833322	492.5102	480.8102	470.8955	459.6332	441.2149
423	501.671952	493.5903	481.8777	471.9521	460.6773	442.2382
424	502.760467	494.6702	482.9451	473.0087	461.7214	443.2614
425	503.8488777	495.7501	484.0124	474.0651	462.7654	444.2845
426	504.9371844	496.8298	485.0796	475.1216	463.8093	445.3077
427	506.0253875	497.9095	486.1467	476.1779	464.8532	446.3308
428	507.1134874	498.9891	487.2138	477.2342	465.8971	447.3539
429	508.2014843	500.0686	488.2808	478.2904	466.9409	448.3769
430	509.2893788	501.148	489.3477	479.3466	467.9847	449.4
431	510.3771711	502.2273	490.4145	480.4027	469.0284	450.423
432	511.4648615	503.3065	491.4812	481.4587	470.072	451.4459
433	512.5524505	504.3856	492.5479	482.5146	471.1156	452.4689
434	513.6399384	505.4646	493.6145	483.5705	472.1592	453.4918
435	514.7273256	506.5435	494.681	484.6264	473.2027	454.5147
436	515.8146123	507.6224	495.7475	485.6821	474.2461	455.5376
437	516.901799	508.7011	496.8138	486.7378	475.2895	456.5604
438	517.9888859	509.7798	497.8801	487.7935	476.3329	457.5833
439	519.0758735	510.8584	498.9463	488.849	477.3762	458.6061
440	520.162762	511.9369	500.0124	489.9045	478.4195	459.6288
441	521.2495518	513.0153	501.0785	490.96	479.4627	460.6516
442	522.3362433	514.0936	502.1445	492.0154	480.5058	461.6743
443	523.4228367	515.1718	503.2104	493.0707	481.5489	462.697
444	524.5093324	516.2499	504.2762	494.126	482.592	463.7196
445	525.5957308	517.328	505.342	495.1812	483.635	464.7423
446	526.6820321	518.4059	506.4077	496.2363	484.678	465.7649
447	527.7682367	519.4838	507.4733	497.2914	485.7209	466.7875
448	528.8543448	520.5616	508.5388	498.3464	486.7637	467.81
449	529.940357	521.6392	509.6043	499.4013	487.8066	468.8326

450	531.0262733	522.7169	510.6697	500.4562	488.8493	469.8551
451	532.1120943	523.7944	511.735	501.511	489.8921	470.8776
452	533.1978201	524.8718	512.8003	502.5658	490.9347	471.9
453	534.2834511	525.9492	513.8655	503.6205	491.9774	472.9225
454	535.3689877	527.0264	514.9306	504.6752	493.0199	473.9449
455	536.45443	528.1036	515.9956	505.7297	494.0625	474.9673
456	537.5397786	529.1807	517.0606	506.7843	495.105	475.9897
457	538.6250335	530.2577	518.1255	507.8387	496.1474	477.012
458	539.7101952	531.3346	519.1903	508.8931	497.1898	478.0343
459	540.795264	532.4115	520.255	509.9475	498.2321	479.0566
460	541.8802401	533.4882	521.3197	511.0018	499.2744	480.0789
461	542.9651239	534.5649	522.3843	512.056	500.3167	481.1011
462	544.0499157	535.6415	523.4489	513.1102	501.3589	482.1233
463	545.1346157	536.718	524.5133	514.1643	502.4011	483.1455
464	546.2192243	537.7944	525.5777	515.2183	503.4432	484.1677
465	547.3037418	538.8708	526.6421	516.2723	504.4853	485.1898
466	548.3881684	539.947	527.7063	517.3263	505.5273	486.212
467	549.4725044	541.0232	528.7705	518.3801	506.5693	487.2341
468	550.5567502	542.0993	529.8346	519.434	507.6112	488.2561
469	551.640906	543.1753	530.8987	520.4877	508.6531	489.2782
470	552.7249721	544.2512	531.9627	521.5414	509.695	490.3002
471	553.8089488	545.3271	533.0266	522.5951	510.7368	491.3222
472	554.8928364	546.4029	534.0904	523.6487	511.7785	492.3442
473	555.9766352	547.4786	535.1542	524.7022	512.8202	493.3662
474	557.0603454	548.5542	536.2179	525.7557	513.8619	494.3881
475	558.1439673	549.6297	537.2816	526.8091	514.9035	495.41
476	559.2275012	550.7052	538.3452	527.8625	515.9451	496.4319
477	560.3109474	551.7805	539.4087	528.9158	516.9867	497.4538
478	561.3943062	552.8558	540.4721	529.969	518.0282	498.4756
479	562.4775778	553.931	541.5355	531.0222	519.0696	499.4974
480	563.5607625	555.0062	542.5988	532.0754	520.111	500.5192
481	564.6438606	556.0812	543.6621	533.1285	521.1524	501.541
482	565.7268723	557.1562	544.7253	534.1815	522.1937	502.5627
483	566.809798	558.2311	545.7884	535.2345	523.235	503.5845
484	567.8926378	559.3059	546.8514	536.2874	524.2762	504.6062
485	568.9753921	560.3807	547.9144	537.3403	525.3174	505.6279
486	570.0580611	561.4554	548.9773	538.3931	526.3586	506.6495
487	571.140645	562.53	550.0402	539.4458	527.3997	507.6712
488	572.2231443	563.6045	551.103	540.4985	528.4407	508.6928
489	573.305559	564.6789	552.1657	541.5512	529.4818	509.7144
490	574.3878894	565.7533	553.2284	542.6038	530.5228	510.7359
491	575.4701359	566.8276	554.291	543.6563	531.5637	511.7575
492	576.5522987	567.9018	555.3535	544.7088	532.6046	512.779
493	577.6343779	568.9759	556.416	545.7612	533.6455	513.8005
494	578.716374	570.05	557.4784	546.8136	534.6863	514.822

495	579.7982871	571.124	558.5407	547.866	535.727	515.8435
496	580.8801175	572.1979	559.603	548.9182	536.7678	516.8649
497	581.9618654	573.2717	560.6652	549.9705	537.8085	517.8863
498	583.0435311	574.3455	561.7274	551.0226	538.8491	518.9077
499	584.1251148	575.4192	562.7895	552.0747	539.8897	519.9291
500	585.2066168	576.4928	563.8515	553.1268	540.9303	520.9505
501	586.2880374	577.5664	564.9135	554.1788	541.9708	521.9718
502	587.3693767	578.6398	565.9754	555.2308	543.0113	522.9931
503	588.450635	579.7132	567.0373	556.2827	544.0518	524.0144
504	589.5318125	580.7865	568.099	557.3346	545.0922	525.0357
505	590.6129096	581.8598	569.1608	558.3864	546.1326	526.0569
506	591.6939264	582.933	570.2224	559.4381	547.1729	527.0782
507	592.7748631	584.0061	571.284	560.4898	548.2132	528.0994
508	593.8557201	585.0791	572.3456	561.5415	549.2534	529.1205
509	594.9364975	586.1521	573.4071	562.5931	550.2936	530.1417
510	596.0171955	587.225	574.4685	563.6446	551.3338	531.1629
511	597.0978145	588.2978	575.5298	564.6961	552.3739	532.184
512	598.1783546	589.3705	576.5911	565.7476	553.414	533.2051
513	599.2588161	590.4432	577.6524	566.799	554.4541	534.2262
514	600.3391992	591.5158	578.7136	567.8503	555.4941	535.2472
515	601.4195041	592.5884	579.7747	568.9016	556.5341	536.2683
516	602.4997311	593.6608	580.8357	569.9529	557.574	537.2893
517	603.5798804	594.7332	581.8968	571.0041	558.6139	538.3103
518	604.6599521	595.8055	582.9577	572.0552	559.6538	539.3313
519	605.7399466	596.8778	584.0186	573.1063	560.6936	540.3522
520	606.8198641	597.95	585.0794	574.1574	561.7334	541.3732
521	607.8997047	599.0221	586.1402	575.2084	562.7731	542.3941
522	608.9794688	600.0942	587.2009	576.2594	563.8128	543.415
523	610.0591564	601.1661	588.2615	577.3103	564.8525	544.4359
524	611.1387679	602.238	589.3221	578.3611	565.8921	545.4567
525	612.2183035	603.3099	590.3827	579.4119	566.9317	546.4776
526	613.2977633	604.3817	591.4431	580.4627	567.9712	547.4984
527	614.3771477	605.4534	592.5036	581.5134	569.0108	548.5192
528	615.4564567	606.525	593.5639	582.5641	570.0502	549.54
529	616.5356906	607.5966	594.6242	583.6147	571.0897	550.5607
530	617.6148497	608.6681	595.6845	584.6653	572.1291	551.5815
531	618.6939341	609.7395	596.7447	585.7158	573.1684	552.6022
532	619.7729441	610.8109	597.8048	586.7662	574.2078	553.6229
533	620.8518798	611.8822	598.8649	587.8167	575.2471	554.6436
534	621.9307416	612.9534	599.9249	588.867	576.2863	555.6642
535	623.0095294	614.0246	600.9849	589.9174	577.3255	556.6849
536	624.0882437	615.0957	602.0448	590.9677	578.3647	557.7055
537	625.1668846	616.1667	603.1046	592.0179	579.4039	558.7261
538	626.2454523	617.2377	604.1644	593.0681	580.443	559.7467
539	627.323947	618.3086	605.2242	594.1182	581.482	560.7673

540	628.4023688	619.3794	606.2839	595.1683	582.5211	561.7878
541	629.4807181	620.4502	607.3435	596.2184	583.5601	562.8083
542	630.558995	621.5209	608.4031	597.2684	584.599	563.8288
543	631.6371997	622.5915	609.4626	598.3183	585.638	564.8493
544	632.7153325	623.6621	610.5221	599.3683	586.6769	565.8698
545	633.7933934	624.7326	611.5815	600.4181	587.7157	566.8903
546	634.8713827	625.803	612.6408	601.4679	588.7545	567.9107
547	635.9493007	626.8734	613.7001	602.5177	589.7933	568.9311
548	637.0271474	627.9437	614.7594	603.5674	590.8321	569.9515
549	638.1049231	629.014	615.8186	604.6171	591.8708	570.9719
550	639.182628	630.0842	616.8777	605.6668	592.9095	571.9922
551	640.2602623	631.1543	617.9368	606.7164	593.9481	573.0126
552	641.3378262	632.2243	618.9959	607.7659	594.9867	574.0329
553	642.4153198	633.2943	620.0548	608.8154	596.0253	575.0532
554	643.4927434	634.3643	621.1138	609.8649	597.0638	576.0735
555	644.5700971	635.4341	622.1726	610.9143	598.1023	577.0938
556	645.6473811	636.5039	623.2315	611.9637	599.1408	578.114
557	646.7245957	637.5737	624.2902	613.013	600.1792	579.1342
558	647.801741	638.6434	625.3489	614.0623	601.2176	580.1544
559	648.8788171	639.713	626.4076	615.1115	602.256	581.1746
560	649.9558244	640.7826	627.4662	616.1607	603.2943	582.1948
561	651.0327629	641.852	628.5248	617.2098	604.3326	583.215
562	652.1096329	642.9215	629.5833	618.2589	605.3709	584.2351
563	653.1864344	643.9908	630.6417	619.308	606.4091	585.2552
564	654.2631678	645.0602	631.7001	620.357	607.4473	586.2753
565	655.3398332	646.1294	632.7585	621.406	608.4855	587.2954
566	656.4164308	647.1986	633.8168	622.4549	609.5236	588.3155
567	657.4929607	648.2677	634.875	623.5038	610.5617	589.3355
568	658.5694232	649.3368	635.9332	624.5527	611.5998	590.3556
569	659.6458183	650.4058	636.9914	625.6015	612.6378	591.3756
570	660.7221464	651.4747	638.0495	626.6502	613.6758	592.3956
571	661.7984075	652.5436	639.1075	627.6989	614.7137	593.4156
572	662.8746018	653.6124	640.1655	628.7476	615.7517	594.4355
573	663.9507296	654.6812	641.2234	629.7962	616.7896	595.4555
574	665.026791	655.7499	642.2813	630.8448	617.8274	596.4754
575	666.1027861	656.8185	643.3392	631.8934	618.8653	597.4953
576	667.1787151	657.8871	644.397	632.9419	619.903	598.5152
577	668.2545783	658.9556	645.4547	633.9903	620.9408	599.5351
578	669.3303757	660.0241	646.5124	635.0388	621.9785	600.555
579	670.4061076	661.0925	647.57	636.0871	623.0162	601.5748
580	671.4817741	662.1609	648.6276	637.1355	624.0539	602.5946
581	672.5573754	663.2291	649.6852	638.1838	625.0915	603.6144
582	673.6329117	664.2974	650.7427	639.232	626.1291	604.6342
583	674.708383	665.3655	651.8001	640.2802	627.1667	605.654
584	675.7837897	666.4337	652.8575	641.3284	628.2042	606.6737

585	676.8591318	667.5017	653.9148	642.3765	629.2417	607.6935
586	677.9344096	668.5697	654.9721	643.4246	630.2792	608.7132
587	679.0096231	669.6376	656.0294	644.4727	631.3166	609.7329
588	680.0847726	670.7055	657.0866	645.5207	632.354	610.7526
589	681.1598582	671.7733	658.1437	646.5686	633.3914	611.7723
590	682.2348801	672.8411	659.2008	647.6166	634.4288	612.7919
591	683.3098384	673.9088	660.2579	648.6644	635.4661	613.8116
592	684.3847333	674.9764	661.3149	649.7123	636.5033	614.8312
593	685.459565	676.044	662.3718	650.7601	637.5406	615.8508
594	686.5343336	677.1116	663.4287	651.8078	638.5778	616.8704
595	687.6090392	678.1791	664.4856	652.8556	639.615	617.89
596	688.6836821	679.2465	665.5424	653.9032	640.6521	618.9095
597	689.7582625	680.3138	666.5991	654.9509	641.6893	619.9291
598	690.8327803	681.3811	667.6559	655.9985	642.7264	620.9486
599	691.9072359	682.4484	668.7125	657.0461	643.7634	621.9681
600	692.9816293	683.5156	669.7692	658.0936	644.8004	622.9876
601	694.0559608	684.5827	670.8257	659.1411	645.8374	624.007
602	695.1302304	685.6498	671.8823	660.1885	646.8744	625.0265
603	696.2044384	686.7168	672.9387	661.2359	647.9113	626.0459
604	697.2785849	687.7838	673.9952	662.2833	648.9483	627.0654
605	698.35267	688.8507	675.0515	663.3306	649.9851	628.0848
606	699.4266939	689.9176	676.1079	664.3779	651.022	629.1042
607	700.5006567	690.9844	677.1642	665.4251	652.0588	630.1236
608	701.5745586	692.0511	678.2204	666.4723	653.0956	631.1429
609	702.6483997	693.1178	679.2766	667.5195	654.1323	632.1623
610	703.7221803	694.1845	680.3328	668.5666	655.1691	633.1816
611	704.7959004	695.2511	681.3889	669.6137	656.2057	634.2009
612	705.8695601	696.3176	682.4449	670.6608	657.2424	635.2202
613	706.9431597	697.3841	683.501	671.7078	658.279	636.2395
614	708.0166993	698.4505	684.5569	672.7548	659.3156	637.2588
615	709.0901791	699.5169	685.6129	673.8017	660.3522	638.278
616	710.1635991	700.5832	686.6687	674.8486	661.3888	639.2972
617	711.2369595	701.6495	687.7246	675.8955	662.4253	640.3165
618	712.3102605	702.7157	688.7804	676.9423	663.4618	641.3357
619	713.3835022	703.7818	689.8361	677.9891	664.4982	642.3549
620	714.4566847	704.8479	690.8918	679.0358	665.5346	643.374
621	715.5298083	705.914	691.9475	680.0825	666.571	644.3932
622	716.6028729	706.98	693.0031	681.1292	667.6074	645.4123
623	717.6758789	708.0459	694.0586	682.1758	668.6437	646.4315
624	718.7488263	709.1118	695.1141	683.2224	669.6801	647.4506
625	719.8217152	710.1776	696.1696	684.269	670.7163	648.4697
626	720.8945459	711.2434	697.225	685.3155	671.7526	649.4887
627	721.9673184	712.3091	698.2804	686.362	672.7888	650.5078
628	723.0400329	713.3748	699.3358	687.4085	673.825	651.5269
629	724.1126895	714.4404	700.3911	688.4549	674.8612	652.5459

630	725.1852884	715.506	701.4463	689.5012	675.8973	653.5649
631	726.2578296	716.5715	702.5015	690.5476	676.9334	654.5839
632	727.3303134	717.637	703.5567	691.5939	677.9695	655.6029
633	728.4027399	718.7024	704.6118	692.6401	679.0055	656.6219
634	729.4751091	719.7678	705.6669	693.6864	680.0416	657.6408
635	730.5474213	720.8331	706.7219	694.7326	681.0775	658.6598
636	731.6196766	721.8984	707.7769	695.7787	682.1135	659.6787
637	732.6918751	722.9636	708.8319	696.8248	683.1494	660.6976
638	733.764017	724.0287	709.8868	697.8709	684.1854	661.7165
639	734.8361023	725.0939	710.9416	698.917	685.2212	662.7354
640	735.9081312	726.1589	711.9965	699.963	686.2571	663.7543
641	736.9801039	727.2239	713.0512	701.009	687.2929	664.7731
642	738.0520204	728.2889	714.106	702.0549	688.3287	665.792
643	739.1238809	729.3538	715.1607	703.1008	689.3645	666.8108
644	740.1956856	730.4186	716.2153	704.1467	690.4002	667.8296
645	741.2674346	731.4835	717.2699	705.1925	691.4359	668.8484
646	742.3391279	732.5482	718.3245	706.2383	692.4716	669.8672
647	743.4107658	733.6129	719.379	707.284	693.5073	670.886
648	744.4823483	734.6776	720.4335	708.3298	694.5429	671.9047
649	745.5538756	735.7422	721.4879	709.3755	695.5785	672.9235
650	746.6253478	736.8067	722.5423	710.4211	696.6141	673.9422
651	747.696765	737.8712	723.5967	711.4667	697.6496	674.9609
652	748.7681274	738.9357	724.651	712.5123	698.6851	675.9796
653	749.8394351	740.0001	725.7053	713.5579	699.7206	676.9983
654	750.9106882	741.0645	726.7595	714.6034	700.7561	678.0169
655	751.9818868	742.1288	727.8137	715.6489	701.7915	679.0356
656	753.0530311	743.193	728.8678	716.6943	702.8269	680.0542
657	754.1241212	744.2572	729.9219	717.7397	703.8623	681.0729
658	755.1951572	745.3214	730.976	718.7851	704.8977	682.0915
659	756.2661392	746.3855	732.03	719.8304	705.933	683.1101
660	757.3370674	747.4496	733.084	720.8757	706.9683	684.1286
661	758.4079419	748.5136	734.1379	721.921	708.0036	685.1472
662	759.4787628	749.5776	735.1918	722.9663	709.0388	686.1658
663	760.5495302	750.6415	736.2457	724.0115	710.0741	687.1843
664	761.6202442	751.7054	737.2995	725.0566	711.1092	688.2028
665	762.690905	752.7692	738.3533	726.1018	712.1444	689.2213
666	763.7615127	753.833	739.407	727.1469	713.1796	690.2398
667	764.8320674	754.8967	740.4607	728.1919	714.2147	691.2583
668	765.9025692	755.9604	741.5144	729.237	715.2498	692.2768
669	766.9730182	757.024	742.568	730.282	716.2848	693.2952
670	768.0434147	758.0876	743.6216	731.3269	717.3199	694.3137
671	769.1137585	759.1511	744.6751	732.3719	718.3549	695.3321
672	770.18405	760.2146	745.7286	733.4168	719.3899	696.3505
673	771.2542892	761.278	746.7821	734.4616	720.4248	697.3689
674	772.3244763	762.3414	747.8355	735.5065	721.4598	698.3873

675	773.3946112	763.4048	748.8889	736.5513	722.4947	699.4057
676	774.4646943	764.4681	749.9422	737.596	723.5296	700.4241
677	775.5347255	765.5313	750.9955	738.6408	724.5644	701.4424
678	776.604705	766.5946	752.0488	739.6855	725.5992	702.4607
679	777.6746329	767.6577	753.102	740.7301	726.634	703.4791
680	778.7445093	768.7208	754.1552	741.7748	727.6688	704.4974
681	779.8143344	769.7839	755.2083	742.8194	728.7036	705.5157
682	780.8841082	770.8469	756.2614	743.8639	729.7383	706.5339
683	781.9538308	771.9099	757.3145	744.9085	730.773	707.5522
684	783.0235025	772.9728	758.3675	745.953	731.8077	708.5705
685	784.0931232	774.0357	759.4205	746.9975	732.8423	709.5887
686	785.1626931	775.0985	760.4734	748.0419	733.877	710.6069
687	786.2322123	776.1613	761.5263	749.0863	734.9116	711.6251
688	787.3016809	777.2241	762.5792	750.1307	735.9461	712.6433
689	788.3710991	778.2868	763.632	751.175	736.9807	713.6615
690	789.4404669	779.3494	764.6848	752.2193	738.0152	714.6797
691	790.5097844	780.412	765.7376	753.2636	739.0497	715.6978
692	791.5790518	781.4746	766.7903	754.3079	740.0842	716.716
693	792.6482692	782.5371	767.843	755.3521	741.1186	717.7341
694	793.7174366	783.5996	768.8956	756.3962	742.1531	718.7522
695	794.7865542	784.662	769.9482	757.4404	743.1875	719.7704
696	795.8556221	785.7244	771.0008	758.4845	744.2218	720.7884
697	796.9246404	786.7868	772.0533	759.5286	745.2562	721.8065
698	797.9936092	787.8491	773.1058	760.5727	746.2905	722.8246
699	799.0625286	788.9113	774.1583	761.6167	747.3248	723.8427
700	800.1313987	789.9735	775.2107	762.6607	748.3591	724.8607
701	801.2002196	791.0357	776.2631	763.7046	749.3934	725.8787
702	802.2689914	792.0978	777.3154	764.7486	750.4276	726.8967
703	803.3377143	793.1599	778.3677	765.7925	751.4618	727.9147
704	804.4063883	794.2219	779.42	766.8363	752.496	728.9327
705	805.4750136	795.2839	780.4722	767.8802	753.5301	729.9507
706	806.5435902	796.3458	781.5244	768.924	754.5643	730.9687
707	807.6121182	797.4077	782.5765	769.9677	755.5984	731.9866
708	808.6805978	798.4696	783.6287	771.0115	756.6324	733.0046
709	809.749029	799.5314	784.6807	772.0552	757.6665	734.0225
710	810.817412	800.5931	785.7328	773.0989	758.7005	735.0404
711	811.8857468	801.6549	786.7848	774.1425	759.7346	736.0583
712	812.9540336	802.7165	787.8368	775.1861	760.7685	737.0762
713	814.0222724	803.7782	788.8887	776.2297	761.8025	738.0941
714	815.0904634	804.8398	789.9406	777.2733	762.8364	739.1119
715	816.1586067	805.9013	790.9925	778.3168	763.8704	740.1298
716	817.2267023	806.9628	792.0443	779.3603	764.9043	741.1476
717	818.2947504	808.0243	793.0961	780.4038	765.9381	742.1655
718	819.362751	809.0857	794.1478	781.4472	766.972	743.1833
719	820.4307043	810.1471	795.1995	782.4906	768.0058	744.2011

720	821.4986104	811.2084	796.2512	783.534	769.0396	745.2189
721	822.5664693	812.2697	797.3029	784.5773	770.0734	746.2366
722	823.6342811	813.3309	798.3545	785.6206	771.1071	747.2544
723	824.702046	814.3922	799.406	786.6639	772.1408	748.2722
724	825.7697641	815.4533	800.4576	787.7072	773.1745	749.2899
725	826.8374354	816.5144	801.5091	788.7504	774.2082	750.3076
726	827.90506	817.5755	802.5605	789.7936	775.2419	751.3253
727	828.9726381	818.6366	803.612	790.8368	776.2755	752.343
728	830.0401697	819.6976	804.6634	791.8799	777.3091	753.3607
729	831.1076549	820.7585	805.7147	792.923	778.3427	754.3784
730	832.1750939	821.8194	806.7661	793.9661	779.3763	755.3961
731	833.2424867	822.8803	807.8173	795.0091	780.4098	756.4137
732	834.3098333	823.9411	808.8686	796.0522	781.4433	757.4314
733	835.377134	825.0019	809.9198	797.0951	782.4768	758.449
734	836.4443888	826.0627	810.971	798.1381	783.5103	759.4666
735	837.5115978	827.1234	812.0222	799.181	784.5438	760.4842
736	838.5787611	828.184	813.0733	800.2239	785.5772	761.5018
737	839.6458788	829.2446	814.1244	801.2668	786.6106	762.5194
738	840.7129509	830.3052	815.1754	802.3096	787.644	763.537
739	841.7799777	831.3658	816.2264	803.3525	788.6773	764.5545
740	842.846959	832.4263	817.2774	804.3952	789.7107	765.5721
741	843.9138952	833.4867	818.3283	805.438	790.744	766.5896
742	844.9807861	834.5471	819.3792	806.4807	791.7773	767.6072
743	846.047632	835.6075	820.4301	807.5234	792.8105	768.6247
744	847.114433	836.6679	821.481	808.5661	793.8438	769.6422
745	848.181189	837.7282	822.5318	809.6087	794.877	770.6597
746	849.2479003	838.7884	823.5825	810.6513	795.9102	771.6771
747	850.3145668	839.8486	824.6333	811.6939	796.9434	772.6946
748	851.3811888	840.9088	825.684	812.7365	797.9766	773.712
749	852.4477662	841.9689	826.7346	813.779	799.0097	774.7295
750	853.5142992	843.029	827.7853	814.8215	800.0428	775.7469
751	854.5807878	844.0891	828.8359	815.864	801.0759	776.7643
752	855.6472322	845.1491	829.8864	816.9064	802.109	777.7817
753	856.7136324	846.2091	830.937	817.9488	803.142	778.7991
754	857.7799885	847.269	831.9875	818.9912	804.175	779.8165
755	858.8463006	848.3289	833.0379	820.0336	805.208	780.8339
756	859.9125689	849.3888	834.0884	821.0759	806.241	781.8512
757	860.9787933	850.4486	835.1388	822.1182	807.274	782.8686
758	862.044974	851.5083	836.1891	823.1605	808.3069	783.8859
759	863.111111	852.5681	837.2395	824.2027	809.3398	784.9033
760	864.1772045	853.6278	838.2898	825.2449	810.3727	785.9206
761	865.2432545	854.6874	839.34	826.2871	811.4056	786.9379
762	866.3092611	855.7471	840.3903	827.3293	812.4385	787.9552
763	867.3752244	856.8066	841.4405	828.3714	813.4713	788.9724
764	868.4411445	857.8662	842.4906	829.4135	814.5041	789.9897

765	869.5070215	858.9257	843.5408	830.4556	815.5369	791.007
766	870.5728554	859.9851	844.5909	831.4977	816.5697	792.0242
767	871.6386463	861.0446	845.641	832.5397	817.6024	793.0415
768	872.7043944	862.1039	846.691	833.5817	818.6351	794.0587
769	873.7700997	863.1633	847.741	834.6236	819.6678	795.0759
770	874.8357622	864.2226	848.791	835.6656	820.7005	796.0931
771	875.9013822	865.2819	849.8409	836.7075	821.7332	797.1103
772	876.9669596	866.3411	850.8908	837.7494	822.7658	798.1275
773	878.0324945	867.4003	851.9407	838.7913	823.7984	799.1446
774	879.097987	868.4594	852.9905	839.8331	824.831	800.1618
775	880.1634373	869.5186	854.0404	840.8749	825.8636	801.1789
776	881.2288453	870.5776	855.0901	841.9167	826.8961	802.1961
777	882.2942112	871.6367	856.1399	842.9584	827.9287	803.2132
778	883.359535	872.6957	857.1896	844.0001	828.9612	804.2303
779	884.4248169	873.7546	858.2393	845.0418	829.9937	805.2474
780	885.4900569	874.8136	859.2889	846.0835	831.0261	806.2645
781	886.555255	875.8725	860.3385	847.1252	832.0586	807.2816
782	887.6204115	876.9313	861.3881	848.1668	833.091	808.2986
783	888.6855263	877.9901	862.4377	849.2084	834.1234	809.3157
784	889.7505995	879.0489	863.4872	850.2499	835.1558	810.3327
785	890.8156312	880.1076	864.5367	851.2915	836.1882	811.3498
786	891.8806215	881.1663	865.5862	852.333	837.2205	812.3668
787	892.9455705	882.225	866.6356	853.3745	838.2529	813.3838
788	894.0104782	883.2836	867.685	854.4159	839.2852	814.4008
789	895.0753447	884.3422	868.7344	855.4574	840.3174	815.4178
790	896.1401701	885.4008	869.7837	856.4988	841.3497	816.4348
791	897.2049546	886.4593	870.833	857.5402	842.3819	817.4518
792	898.269698	887.5178	871.8823	858.5815	843.4142	818.4687
793	899.3344007	888.5762	872.9315	859.6228	844.4464	819.4857
794	900.3990625	889.6346	873.9807	860.6641	845.4786	820.5026
795	901.4636836	890.693	875.0299	861.7054	846.5107	821.5195
796	902.5282641	891.7513	876.0791	862.7467	847.5429	822.5365
797	903.592804	892.8096	877.1282	863.7879	848.575	823.5534
798	904.6573034	893.8679	878.1773	864.8291	849.6071	824.5703
799	905.7217625	894.9261	879.2263	865.8703	850.6392	825.5872
800	906.7861812	895.9843	880.2753	866.9114	851.6712	826.604
801	907.8505596	897.0424	881.3243	867.9525	852.7033	827.6209
802	908.9148979	898.1005	882.3733	868.9936	853.7353	828.6377
803	909.9791961	899.1586	883.4222	870.0347	854.7673	829.6546
804	911.0434542	900.2166	884.4711	871.0757	855.7993	830.6714
805	912.1076724	901.2746	885.52	872.1168	856.8312	831.6882
806	913.1718508	902.3326	886.5688	873.1577	857.8632	832.7051
807	914.2359893	903.3905	887.6177	874.1987	858.8951	833.7219
808	915.300088	904.4484	888.6664	875.2397	859.927	834.7386
809	916.3641472	905.5063	889.7152	876.2806	860.9589	835.7554

810	917.4281667	906.5641	890.7639	877.3215	861.9907	836.7722
811	918.4921467	907.6219	891.8126	878.3623	863.0226	837.789
812	919.5560873	908.6796	892.8613	879.4032	864.0544	838.8057
813	920.6199885	909.7374	893.9099	880.444	865.0862	839.8224
814	921.6838505	910.795	894.9585	881.4848	866.118	840.8392
815	922.7476732	911.8527	896.0071	882.5255	867.1497	841.8559
816	923.8114568	912.9103	897.0556	883.5663	868.1815	842.8726
817	924.8752013	913.9679	898.1041	884.607	869.2132	843.8893
818	925.9389067	915.0254	899.1526	885.6477	870.2449	844.906
819	927.0025733	916.0829	900.2011	886.6884	871.2766	845.9227
820	928.066201	917.1404	901.2495	887.729	872.3083	846.9393
821	929.1297899	918.1978	902.2979	888.7696	873.3399	847.956
822	930.1933401	919.2552	903.3462	889.8102	874.3715	848.9726
823	931.2568516	920.3126	904.3946	890.8508	875.4032	849.9893
824	932.3203246	921.3699	905.4429	891.8913	876.4347	851.0059
825	933.3837591	922.4272	906.4912	892.9318	877.4663	852.0225
826	934.4471551	923.4845	907.5394	893.9723	878.4979	853.0391
827	935.5105127	924.5417	908.5876	895.0128	879.5294	854.0557
828	936.5738321	925.5989	909.6358	896.0532	880.5609	855.0723
829	937.6371132	926.656	910.684	897.0937	881.5924	856.0889
830	938.7003562	927.7132	911.7321	898.1341	882.6239	857.1055
831	939.7635611	928.7703	912.7802	899.1744	883.6553	858.122
832	940.8267279	929.8273	913.8283	900.2148	884.6868	859.1386
833	941.8898568	930.8843	914.8763	901.2551	885.7182	860.1551
834	942.9529478	931.9413	915.9243	902.2954	886.7496	861.1716
835	944.016001	932.9983	916.9723	903.3357	887.781	862.1881
836	945.0790165	934.0552	918.0203	904.3759	888.8123	863.2047
837	946.1419942	935.1121	919.0682	905.4161	889.8437	864.2211
838	947.2049344	936.1689	920.1161	906.4563	890.875	865.2376
839	948.267837	937.2257	921.164	907.4965	891.9063	866.2541
840	949.3307021	938.2825	922.2118	908.5367	892.9376	867.2706
841	950.3935298	939.3393	923.2596	909.5768	893.9689	868.287
842	951.4563202	940.396	924.3074	910.6169	895.0001	869.3035
843	952.5190733	941.4526	925.3552	911.657	896.0313	870.3199
844	953.5817892	942.5093	926.4029	912.6971	897.0626	871.3364
845	954.6444679	943.5659	927.4506	913.7371	898.0938	872.3528
846	955.7071096	944.6225	928.4983	914.7771	899.1249	873.3692
847	956.7697142	945.679	929.5459	915.8171	900.1561	874.3856
848	957.8322819	946.7355	930.5935	916.857	901.1872	875.402
849	958.8948127	947.792	931.6411	917.897	902.2183	876.4184
850	959.9573067	948.8485	932.6887	918.9369	903.2495	877.4347
851	961.0197639	949.9049	933.7362	919.9768	904.2805	878.4511
852	962.0821844	950.9613	934.7837	921.0167	905.3116	879.4674
853	963.1445684	952.0176	935.8312	922.0565	906.3426	880.4838
854	964.2069157	953.0739	936.8787	923.0963	907.3737	881.5001

855	965.2692266	954.1302	937.9261	924.1361	908.4047	882.5164
856	966.331501	955.1864	938.9735	925.1759	909.4357	883.5327
857	967.3937391	956.2427	940.0208	926.2157	910.4667	884.549
858	968.4559408	957.2988	941.0682	927.2554	911.4976	885.5653
859	969.5181063	958.355	942.1155	928.2951	912.5286	886.5816
860	970.5802357	959.4111	943.1628	929.3348	913.5595	887.5979
861	971.6423289	960.4672	944.21	930.3744	914.5904	888.6142
862	972.704386	961.5232	945.2573	931.4141	915.6213	889.6304
863	973.7664072	962.5793	946.3045	932.4537	916.6521	890.6467
864	974.8283925	963.6352	947.3516	933.4933	917.683	891.6629
865	975.8903419	964.6912	948.3988	934.5329	918.7138	892.6791
866	976.9522555	965.7471	949.4459	935.5724	919.7446	893.6954
867	978.0141333	966.803	950.493	936.6119	920.7754	894.7116
868	979.0759755	967.8589	951.54	937.6514	921.8062	895.7278
869	980.137782	968.9147	952.5871	938.6909	922.837	896.744
870	981.199553	969.9705	953.6341	939.7304	923.8677	897.7601
871	982.2612885	971.0262	954.6811	940.7698	924.8984	898.7763
872	983.3229886	972.082	955.728	941.8092	925.9291	899.7925
873	984.3846533	973.1377	956.775	942.8486	926.9598	900.8086
874	985.4462827	974.1933	957.8219	943.888	927.9905	901.8248
875	986.5078768	975.249	958.8687	944.9273	929.0211	902.8409
876	987.5694358	976.3046	959.9156	945.9666	930.0518	903.857
877	988.6309596	977.3601	960.9624	947.0059	931.0824	904.8731
878	989.6924483	978.4157	962.0092	948.0452	932.113	905.8892
879	990.7539021	979.4712	963.056	949.0844	933.1436	906.9053
880	991.8153209	980.5266	964.1027	950.1237	934.1741	907.9214
881	992.8767048	981.5821	965.1494	951.1629	935.2047	908.9375
882	993.9380538	982.6375	966.1961	952.2021	936.2352	909.9536
883	994.9993681	983.6929	967.2428	953.2412	937.2657	910.9696
884	996.0606477	984.7482	968.2894	954.2804	938.2962	911.9857
885	997.1218926	985.8035	969.336	955.3195	939.3267	913.0017
886	998.183103	986.8588	970.3826	956.3586	940.3572	914.0178
887	999.2442788	987.9141	971.4292	957.3977	941.3876	915.0338
888	1000.30542	988.9693	972.4757	958.4367	942.4181	916.0498
889	1001.366527	990.0245	973.5222	959.4757	943.4485	917.0658
890	1002.4276	991.0797	974.5687	960.5147	944.4789	918.0818
891	1003.488638	992.1348	975.6151	961.5537	945.5092	919.0978
892	1004.549642	993.1899	976.6616	962.5927	946.5396	920.1138
893	1005.610612	994.245	977.708	963.6316	947.5699	921.1298
894	1006.671547	995.3	978.7543	964.6706	948.6003	922.1457
895	1007.732449	996.355	979.8007	965.7095	949.6306	923.1617
896	1008.793316	997.41	980.847	966.7483	950.6609	924.1776
897	1009.85415	998.4649	981.8933	967.7872	951.6912	925.1936
898	1010.91495	999.5198	982.9396	968.826	952.7214	926.2095
899	1011.975716	1000.575	983.9858	969.8648	953.7517	927.2254

900	1013.036448	1001.63	985.032	970.9036	954.7819	928.2413
901	1014.097146	1002.684	986.0782	971.9424	955.8121	929.2572
902	1015.157811	1003.739	987.1244	972.9811	956.8423	930.2731
903	1016.218442	1004.794	988.1705	974.0199	957.8725	931.289
904	1017.279039	1005.849	989.2166	975.0586	958.9026	932.3049
905	1018.339603	1006.903	990.2627	976.0973	959.9327	933.3207
906	1019.400134	1007.958	991.3088	977.1359	960.9629	934.3366
907	1020.460631	1009.013	992.3548	978.1746	961.993	935.3524
908	1021.521095	1010.067	993.4009	979.2132	963.0231	936.3683
909	1022.581525	1011.122	994.4468	980.2518	964.0531	937.3841
910	1023.641922	1012.176	995.4928	981.2904	965.0832	938.3999
911	1024.702286	1013.231	996.5388	982.3289	966.1132	939.4157
912	1025.762617	1014.285	997.5847	983.3674	967.1433	940.4315
913	1026.822915	1015.34	998.6306	984.406	968.1733	941.4473
914	1027.88318	1016.394	999.6764	985.4444	969.2033	942.4631
915	1028.943412	1017.449	1000.722	986.4829	970.2332	943.4789
916	1030.003611	1018.503	1001.768	987.5214	971.2632	944.4947
917	1031.063777	1019.557	1002.814	988.5598	972.2932	945.5104
918	1032.12391	1020.612	1003.86	989.5982	973.3231	946.5262
919	1033.184011	1021.666	1004.905	990.6366	974.353	947.5419
920	1034.244079	1022.72	1005.951	991.675	975.3829	948.5576
921	1035.304114	1023.775	1006.997	992.7133	976.4128	949.5734
922	1036.364117	1024.829	1008.042	993.7516	977.4426	950.5891
923	1037.424087	1025.883	1009.088	994.7899	978.4725	951.6048
924	1038.484025	1026.937	1010.134	995.8282	979.5023	952.6205
925	1039.54393	1027.991	1011.179	996.8665	980.5321	953.6362
926	1040.603803	1029.045	1012.225	997.9047	981.5619	954.6519
927	1041.663643	1030.099	1013.27	998.9429	982.5917	955.6675
928	1042.723451	1031.153	1014.316	999.9811	983.6215	956.6832
929	1043.783228	1032.207	1015.361	1001.019	984.6512	957.6989
930	1044.842971	1033.261	1016.407	1002.057	985.6809	958.7145
931	1045.902683	1034.315	1017.452	1003.096	986.7107	959.7302
932	1046.962363	1035.369	1018.498	1004.134	987.7404	960.7458
933	1048.022011	1036.423	1019.543	1005.172	988.77	961.7614
934	1049.081626	1037.477	1020.588	1006.21	989.7997	962.777
935	1050.14121	1038.531	1021.634	1007.248	990.8294	963.7926
936	1051.200762	1039.584	1022.679	1008.286	991.859	964.8082
937	1052.260282	1040.638	1023.724	1009.324	992.8886	965.8238
938	1053.319771	1041.692	1024.77	1010.362	993.9182	966.8394
939	1054.379227	1042.746	1025.815	1011.4	994.9478	967.855
940	1055.438652	1043.799	1026.86	1012.438	995.9774	968.8706
941	1056.498046	1044.853	1027.905	1013.476	997.0069	969.8861
942	1057.557408	1045.907	1028.951	1014.514	998.0365	970.9017
943	1058.616738	1046.96	1029.996	1015.552	999.066	971.9172
944	1059.676037	1048.014	1031.041	1016.59	1000.096	972.9327

945	1060.735304	1049.067	1032.086	1017.627	1001.125	973.9483
946	1061.794541	1050.121	1033.131	1018.665	1002.155	974.9638
947	1062.853746	1051.174	1034.176	1019.703	1003.184	975.9793
948	1063.912919	1052.228	1035.221	1020.741	1004.213	976.9948
949	1064.972062	1053.281	1036.266	1021.779	1005.243	978.0103
950	1066.031173	1054.334	1037.311	1022.816	1006.272	979.0258
951	1067.090253	1055.388	1038.356	1023.854	1007.302	980.0412
952	1068.149302	1056.441	1039.401	1024.892	1008.331	981.0567
953	1069.20832	1057.494	1040.446	1025.93	1009.36	982.0722
954	1070.267307	1058.548	1041.491	1026.967	1010.39	983.0876
955	1071.326263	1059.601	1042.536	1028.005	1011.419	984.1031
956	1072.385189	1060.654	1043.581	1029.043	1012.448	985.1185
957	1073.444083	1061.707	1044.625	1030.08	1013.478	986.1339
958	1074.502947	1062.761	1045.67	1031.118	1014.507	987.1493
959	1075.56178	1063.814	1046.715	1032.155	1015.536	988.1647
960	1076.620583	1064.867	1047.76	1033.193	1016.566	989.1802
961	1077.679354	1065.92	1048.804	1034.23	1017.595	990.1955
962	1078.738096	1066.973	1049.849	1035.268	1018.624	991.2109
963	1079.796806	1068.026	1050.894	1036.305	1019.653	992.2263
964	1080.855486	1069.079	1051.938	1037.343	1020.683	993.2417
965	1081.914136	1070.132	1052.983	1038.38	1021.712	994.257
966	1082.972756	1071.185	1054.028	1039.418	1022.741	995.2724
967	1084.031345	1072.238	1055.072	1040.455	1023.77	996.2877
968	1085.089903	1073.291	1056.117	1041.493	1024.799	997.3031
969	1086.148432	1074.344	1057.161	1042.53	1025.828	998.3184
970	1087.20693	1075.396	1058.206	1043.567	1026.857	999.3337
971	1088.265398	1076.449	1059.25	1044.605	1027.886	1000.349
972	1089.323836	1077.502	1060.295	1045.642	1028.916	1001.364
973	1090.382244	1078.555	1061.339	1046.679	1029.945	1002.38
974	1091.440622	1079.607	1062.384	1047.717	1030.974	1003.395
975	1092.498971	1080.66	1063.428	1048.754	1032.003	1004.41
976	1093.557289	1081.713	1064.473	1049.791	1033.032	1005.426
977	1094.615577	1082.765	1065.517	1050.828	1034.061	1006.441
978	1095.673835	1083.818	1066.561	1051.866	1035.09	1007.456
979	1096.732064	1084.871	1067.606	1052.903	1036.119	1008.471
980	1097.790263	1085.923	1068.65	1053.94	1037.148	1009.487
981	1098.848432	1086.976	1069.694	1054.977	1038.177	1010.502
982	1099.906572	1088.028	1070.738	1056.014	1039.206	1011.517
983	1100.964682	1089.081	1071.783	1057.051	1040.235	1012.532
984	1102.022762	1090.133	1072.827	1058.088	1041.263	1013.547
985	1103.080813	1091.186	1073.871	1059.126	1042.292	1014.563
986	1104.138834	1092.238	1074.915	1060.163	1043.321	1015.578
987	1105.196827	1093.29	1075.959	1061.2	1044.35	1016.593
988	1106.254789	1094.343	1077.003	1062.237	1045.379	1017.608
989	1107.312723	1095.395	1078.047	1063.274	1046.408	1018.623

990	1108.370627	1096.447	1079.091	1064.311	1047.437	1019.639
991	1109.428501	1097.5	1080.136	1065.348	1048.465	1020.654
992	1110.486347	1098.552	1081.18	1066.385	1049.494	1021.669
993	1111.544164	1099.604	1082.224	1067.421	1050.523	1022.684
994	1112.601951	1100.656	1083.268	1068.458	1051.552	1023.699
995	1113.659709	1101.709	1084.311	1069.495	1052.58	1024.714
996	1114.717439	1102.761	1085.355	1070.532	1053.609	1025.729
997	1115.775139	1103.813	1086.399	1071.569	1054.638	1026.745
998	1116.83281	1104.865	1087.443	1072.606	1055.667	1027.76
999	1117.890453	1105.917	1088.487	1073.643	1056.695	1028.775
1000	1118.948066	1106.969	1089.531	1074.679	1057.724	1029.79
1001	1120.005651	1108.021	1090.575	1075.716	1058.753	1030.805
1002	1121.063207	1109.073	1091.619	1076.753	1059.781	1031.82
1003	1122.120735	1110.125	1092.662	1077.79	1060.81	1032.835
1004	1123.178233	1111.177	1093.706	1078.826	1061.838	1033.85
1005	1124.235703	1112.229	1094.75	1079.863	1062.867	1034.865
1006	1125.293145	1113.281	1095.794	1080.9	1063.896	1035.88
1007	1126.350558	1114.333	1096.837	1081.937	1064.924	1036.895
1008	1127.407942	1115.384	1097.881	1082.973	1065.953	1037.91
1009	1128.465298	1116.436	1098.925	1084.01	1066.981	1038.925
1010	1129.522626	1117.488	1099.968	1085.046	1068.01	1039.94
1011	1130.579925	1118.54	1101.012	1086.083	1069.038	1040.955
1012	1131.637196	1119.591	1102.055	1087.12	1070.067	1041.97
1013	1132.694438	1120.643	1103.099	1088.156	1071.095	1042.985
1014	1133.751653	1121.695	1104.142	1089.193	1072.124	1044
1015	1134.808839	1122.746	1105.186	1090.229	1073.152	1045.015
1016	1135.865997	1123.798	1106.229	1091.266	1074.181	1046.03
1017	1136.923126	1124.85	1107.273	1092.302	1075.209	1047.045
1018	1137.980228	1125.901	1108.316	1093.339	1076.238	1048.06
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1022	1142.208355	1130.107	1112.49	1097.484	1080.351	1052.12
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1024	1144.322251	1132.21	1114.577	1099.557	1082.408	1054.15
1025	1145.379157	1133.262	1115.62	1100.593	1083.436	1055.165
1026	1146.436036	1134.313	1116.663	1101.63	1084.464	1056.18
1027	1147.492887	1135.364	1117.707	1102.666	1085.493	1057.194
1028	1148.54971	1136.416	1118.75	1103.702	1086.521	1058.209
1029	1149.606505	1137.467	1119.793	1104.739	1087.549	1059.224
1030	1150.663273	1138.518	1120.836	1105.775	1088.577	1060.239
1031	1151.720014	1139.569	1121.879	1106.811	1089.606	1061.254
1032	1152.776727	1140.621	1122.923	1107.847	1090.634	1062.269
1033	1153.833412	1141.672	1123.966	1108.884	1091.662	1063.284
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1035	1155.946701	1143.774	1126.052	1110.956	1093.719	1065.313
1036	1157.003304	1144.825	1127.095	1111.992	1094.747	1066.328
1037	1158.05988	1145.876	1128.138	1113.028	1095.775	1067.343
1038	1159.116428	1146.927	1129.181	1114.064	1096.803	1068.358
1039	1160.17295	1147.979	1130.224	1115.1	1097.831	1069.373
1040	1161.229444	1149.03	1131.267	1116.137	1098.859	1070.387
1041	1162.285911	1150.081	1132.31	1117.173	1099.887	1071.402
1042	1163.342351	1151.132	1133.353	1118.209	1100.915	1072.417
1043	1164.398764	1152.182	1134.396	1119.245	1101.944	1073.432
1044	1165.45515	1153.233	1135.439	1120.281	1102.972	1074.447
1045	1166.511508	1154.284	1136.482	1121.317	1104	1075.461
1046	1167.56784	1155.335	1137.525	1122.353	1105.028	1076.476
1047	1168.624145	1156.386	1138.567	1123.389	1106.056	1077.491
1048	1169.680423	1157.437	1139.61	1124.425	1107.084	1078.506
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1050	1171.792899	1159.538	1141.696	1126.496	1109.14	1080.535
1051	1172.849096	1160.589	1142.739	1127.532	1110.168	1081.55
1052	1173.905267	1161.64	1143.781	1128.568	1111.196	1082.564
1053	1174.961411	1162.691	1144.824	1129.604	1112.224	1083.579
1054	1176.017529	1163.741	1145.867	1130.64	1113.251	1084.594
1055	1177.07362	1164.792	1146.91	1131.676	1114.279	1085.609
1056	1178.129684	1165.843	1147.952	1132.712	1115.307	1086.623
1057	1179.185722	1166.893	1148.995	1133.747	1116.335	1087.638
1058	1180.241733	1167.944	1150.037	1134.783	1117.363	1088.653
1059	1181.297718	1168.994	1151.08	1135.819	1118.391	1089.667
1060	1182.353676	1170.045	1152.123	1136.855	1119.419	1090.682
1061	1183.409608	1171.095	1153.165	1137.89	1120.447	1091.697
1062	1184.465514	1172.146	1154.208	1138.926	1121.474	1092.711
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1064	1186.577247	1174.247	1156.293	1140.997	1123.53	1094.74
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1066	1188.688874	1176.348	1158.378	1143.069	1125.586	1096.77
1067	1189.744648	1177.398	1159.42	1144.104	1126.613	1097.784
1068	1190.800397	1178.448	1160.463	1145.14	1127.641	1098.799
1069	1191.856119	1179.499	1161.505	1146.176	1128.669	1099.813
1070	1192.911815	1180.549	1162.547	1147.211	1129.696	1100.828
1071	1193.967485	1181.599	1163.59	1148.247	1130.724	1101.843
1072	1195.023129	1182.65	1164.632	1149.282	1131.752	1102.857
1073	1196.078748	1183.7	1165.674	1150.318	1132.78	1103.872
1074	1197.13434	1184.75	1166.717	1151.353	1133.807	1104.886
1075	1198.189906	1185.8	1167.759	1152.389	1134.835	1105.901
1076	1199.245447	1186.85	1168.801	1153.424	1135.863	1106.915
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1078	1201.356451	1188.951	1170.886	1155.495	1137.918	1108.945
1079	1202.411914	1190.001	1171.928	1156.531	1138.945	1109.959

1080	1203.467351	1191.051	1172.97	1157.566	1139.973	1110.974
1081	1204.522763	1192.101	1174.012	1158.601	1141.001	1111.988
1082	1205.57815	1193.151	1175.054	1159.637	1142.028	1113.003
1083	1206.63351	1194.201	1176.097	1160.672	1143.056	1114.017
1084	1207.688845	1195.251	1177.139	1161.707	1144.083	1115.032
1085	1208.744155	1196.301	1178.181	1162.743	1145.111	1116.046
1086	1209.799439	1197.351	1179.223	1163.778	1146.138	1117.061
1087	1210.854698	1198.401	1180.265	1164.813	1147.166	1118.075
1088	1211.909931	1199.451	1181.307	1165.849	1148.193	1119.09
1089	1212.965139	1200.5	1182.349	1166.884	1149.221	1120.104
1090	1214.020322	1201.55	1183.391	1167.919	1150.248	1121.118
1091	1215.075479	1202.6	1184.433	1168.954	1151.276	1122.133
1092	1216.130611	1203.65	1185.475	1169.99	1152.303	1123.147
1093	1217.185717	1204.7	1186.517	1171.025	1153.33	1124.162
1094	1218.240799	1205.749	1187.559	1172.06	1154.358	1125.176
1095	1219.295855	1206.799	1188.601	1173.095	1155.385	1126.191
1096	1220.350886	1207.849	1189.643	1174.13	1156.413	1127.205
1097	1221.405893	1208.899	1190.684	1175.165	1157.44	1128.219
1098	1222.460874	1209.948	1191.726	1176.2	1158.467	1129.234
1099	1223.51583	1210.998	1192.768	1177.236	1159.495	1130.248
1100	1224.570761	1212.047	1193.81	1178.271	1160.522	1131.263
1101	1225.625667	1213.097	1194.852	1179.306	1161.549	1132.277
1102	1226.680548	1214.147	1195.893	1180.341	1162.577	1133.291
1103	1227.735404	1215.196	1196.935	1181.376	1163.604	1134.306
1104	1228.790235	1216.246	1197.977	1182.411	1164.631	1135.32
1105	1229.845042	1217.295	1199.019	1183.446	1165.659	1136.334
1106	1230.899824	1218.345	1200.06	1184.481	1166.686	1137.349
1107	1231.954581	1219.394	1201.102	1185.516	1167.713	1138.363
1108	1233.009313	1220.444	1202.144	1186.551	1168.74	1139.377
1109	1234.06402	1221.493	1203.185	1187.586	1169.768	1140.392
1110	1235.118703	1222.542	1204.227	1188.621	1170.795	1141.406
1111	1236.173361	1223.592	1205.268	1189.656	1171.822	1142.42
1112	1237.227995	1224.641	1206.31	1190.69	1172.849	1143.435
1113	1238.282604	1225.69	1207.352	1191.725	1173.876	1144.449
1114	1239.337189	1226.74	1208.393	1192.76	1174.903	1145.463
1115	1240.391749	1227.789	1209.435	1193.795	1175.931	1146.478
1116	1241.446284	1228.838	1210.476	1194.83	1176.958	1147.492
1117	1242.500796	1229.887	1211.518	1195.865	1177.985	1148.506
1118	1243.555282	1230.937	1212.559	1196.899	1179.012	1149.52
1119	1244.609745	1231.986	1213.601	1197.934	1180.039	1150.535
1120	1245.664183	1233.035	1214.642	1198.969	1181.066	1151.549
1121	1246.718597	1234.084	1215.683	1200.004	1182.093	1152.563
1122	1247.772986	1235.133	1216.725	1201.039	1183.12	1153.577
1123	1248.827352	1236.182	1217.766	1202.073	1184.147	1154.592

CURRICULUM VITAE

DATA PRIBADI

Nama : Qorina Dyah Fitriasari

Tempat, Tanggal Lahir : Bantul, 30 Oktober 1995

Alamat : Perum GKP Blok B2 no 1, JL.Wates
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Motto : Banyaknya kegagalan dalam hidup ini dikarenakan orang-orang tidak menyadari betapa dekatnya mereka dengan keberhasilan saat mereka menyerah

Riwayat Pendidikan

Formal

- a. SD : SDN 1 Pedes
- b. MTS : Madrasah Mu'allimmat Muhammadiyah Yogyakarta
- c. MAN : SMA Islam 1 Gamping
- d. S1 : Matematika FST UIN Sunan Kalijaga Yogyakarta