ARIMA NASDAQ

Table of Contents

1) Stima modelli ARIMA

```
ARIMA(1,1,0) Model:
-------------------
Conditional Probability Distribution: Gaussian


                          Standard          t
   Parameter      Value     Error       Statistic
  -----------  -----------  ------------  -----------
   Constant    0.000555734  0.000271965    2.04341
     AR{1}      0.0228532    0.0206712     1.10556
   Variance    8.97064e-05  2.48051e-06    36.1645


ARIMA(0,1,1) Model:
-------------------
```

Conditional Probability Distribution: Gaussian

Parameter	Value	Standard Error	t Statistic
Constant	0.000567465	0.0002787	2.03611
MA{1}	0.0236948	0.0206558	1.14713
Variance	8.94659e-05	2.46873e-06	36.2396

ARIMA(1,1,1) Model:

Conditional Probability Distribution: Gaussian

Parameter	Value	Standard Error	t Statistic
Constant	0.000608959	0.000559077	1.08922
AR{1}	-0.0725011	0.970821	-0.0746802
MA{1}	0.0962038	0.970265	0.0991521
Variance	8.94876e-05	2.48987e-06	35.9406

ARIMA(2,1,1) Model:

Conditional Probability Distribution: Gaussian

Parameter	Value	Standard Error	t Statistic
Constant	0.000158659	0.000115054	1.37899
AR{1}	0.793469	0.125466	6.32418
AR{2}	-0.0655226	0.0218715	-2.9958
MA{1}	-0.775071	0.125727	-6.1647
Variance	8.89974e-05	2.53921e-06	35.0493

ARIMA(1,1,2) Model:

Conditional Probability Distribution: Gaussian

Parameter	Value	Standard Error	t Statistic
Constant	0.000148612	0.000111167	1.33684
AR{1}	0.746649	0.132966	5.61535
MA{1}	-0.732007	0.135118	-5.41753
MA{2}	-0.0609868	0.0226875	-2.68813
Variance	8.90161e-05	2.53561e-06	35.1064

ARIMA(2,1,2) Model:

Conditional Probability Distribution: Gaussian

Parameter	Value	Standard Error	t Statistic

```
 Constant      0.00023923    0.000126035        1.89812
    AR{1}         1.31209       0.114055         11.504
    AR{2}        -0.740851      0.0871666        -8.49925
    MA{1}        -1.28695       0.123105         -10.4541
    MA{2}         0.687409      0.0957948         7.17585
 Variance      8.87425e-05   2.52803e-06        35.1035
```

ARIMA(2,1,1) Model:

Conditional Probability Distribution: Gaussian

```
                             Standard           t
  Parameter      Value         Error        Statistic
 ----------    ----------    ------------   -----------
  Constant     0.000158659   0.000115054      1.37899
    AR{1}        0.793469      0.125466        6.32418
    AR{2}       -0.0655226     0.0218715       -2.9958
    MA{1}       -0.775071      0.125727        -6.1647
 Variance      8.89974e-05   2.53921e-06       35.0493
```

ARIMA(2,1,1) Model:

Conditional Probability Distribution: Gaussian

```
                             Standard           t
  Parameter      Value         Error        Statistic
 ----------    ----------    ------------   -----------
  Constant     0.000158659   0.000115054      1.37899
    AR{1}        0.793469      0.125466        6.32418
    AR{2}       -0.0655226     0.0218715       -2.9958
    MA{1}       -0.775071      0.125727        -6.1647
 Variance      8.89974e-05   2.53921e-06       35.0493
```

ARIMA(1,1,2) Model:

Conditional Probability Distribution: Gaussian

```
                             Standard           t
  Parameter      Value         Error        Statistic
 ----------    ----------    ------------   -----------
  Constant     0.000148612   0.000111167      1.33684
    AR{1}        0.746649      0.132966        5.61535
    MA{1}       -0.732007      0.135118        -5.41753
    MA{2}       -0.0609868     0.0226875       -2.68813
 Variance      8.90161e-05   2.53561e-06       35.1064
```

ARIMA(1,1,2) Model:

Conditional Probability Distribution: Gaussian

```
                             Standard           t
  Parameter      Value         Error        Statistic
 ----------    ----------    ------------   -----------
  Constant     0.000148612   0.000111167      1.33684
```

```
    AR{1}        0.746649        0.132966        5.61535
    MA{1}       -0.732007        0.135118       -5.41753
    MA{2}       -0.0609868       0.0226875      -2.68813
Variance      8.90161e-05     2.53561e-06       35.1064


ARIMA(2,1,2) Model:
--------------------
Conditional Probability Distribution: Gaussian


                              Standard          t
 Parameter       Value         Error        Statistic
-----------   -----------   ------------   -----------
 Constant      0.00023923   0.000126035      1.89812
    AR{1}      1.31209        0.114055        11.504
    AR{2}     -0.740851       0.0871666      -8.49925
    MA{1}     -1.28695        0.123105       -10.4541
    MA{2}      0.687409       0.0957948       7.17585
Variance      8.87425e-05   2.52803e-06       35.1035
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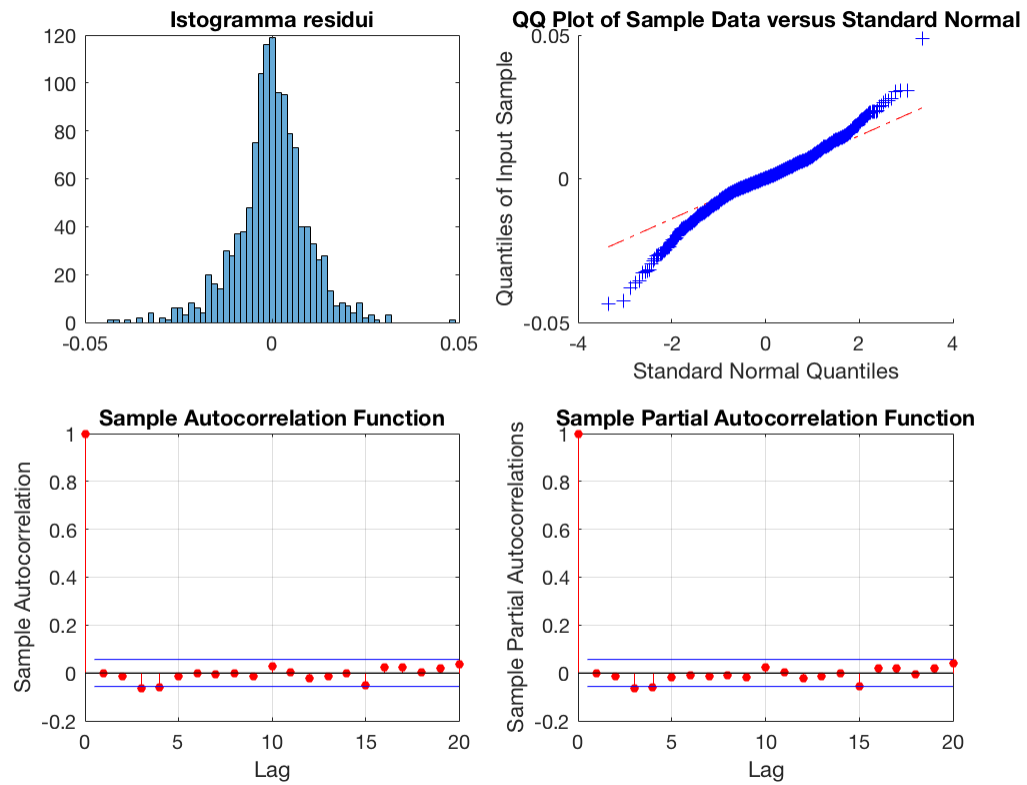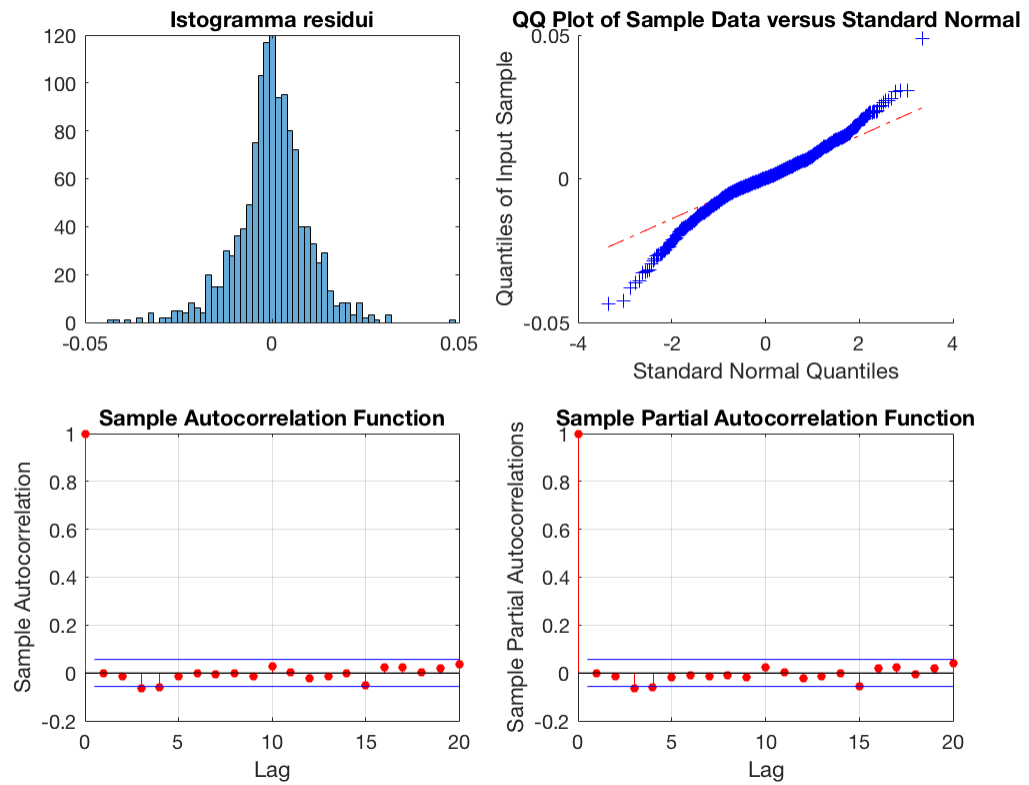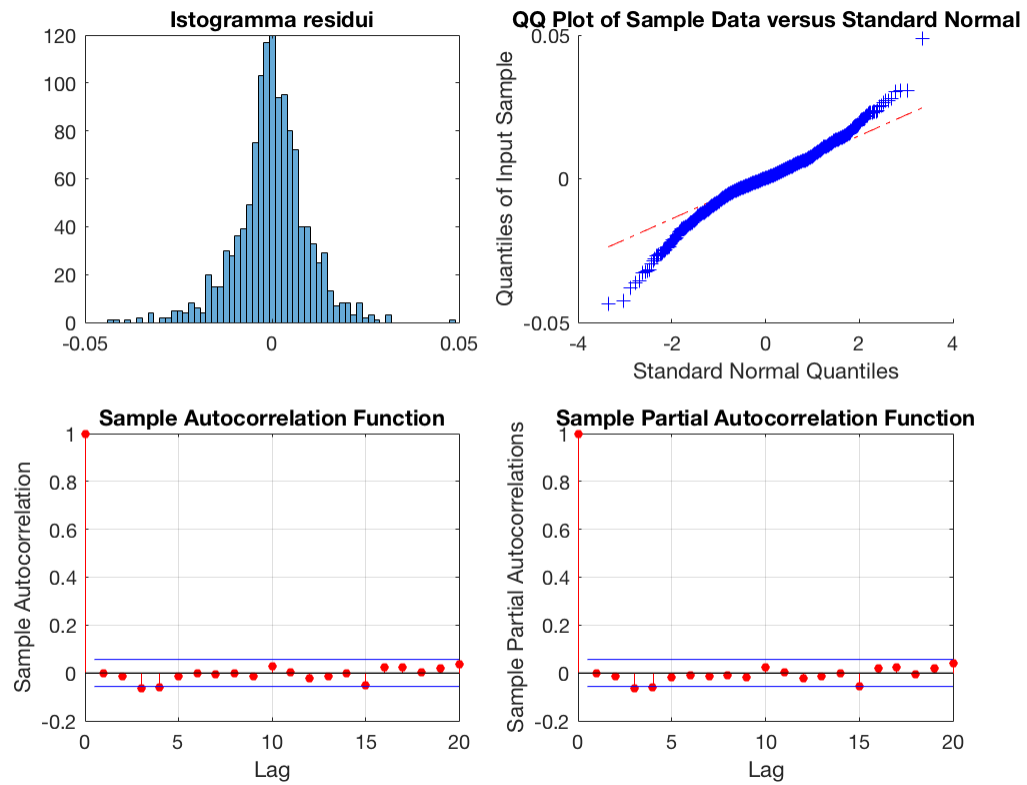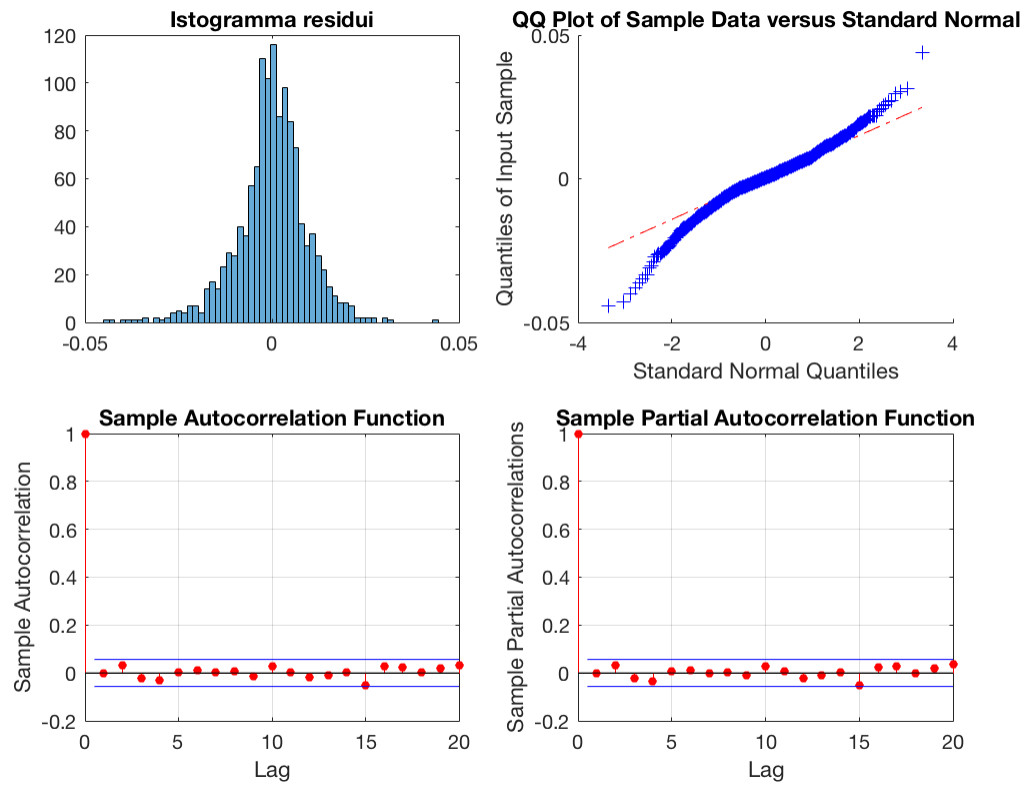
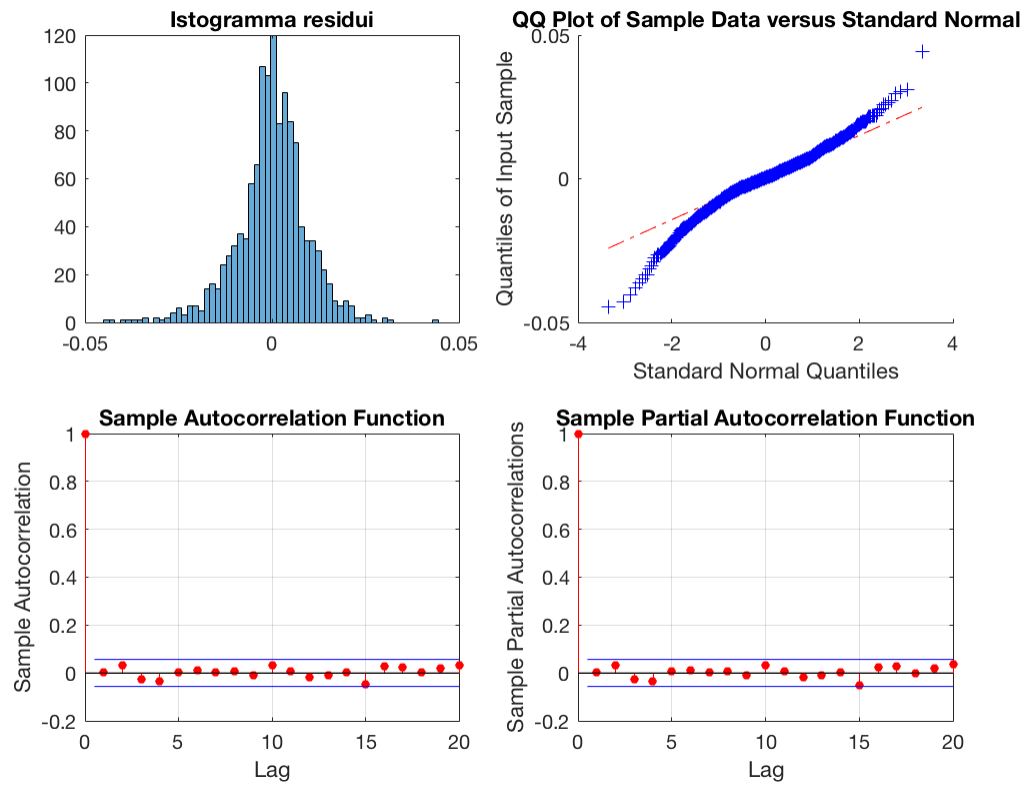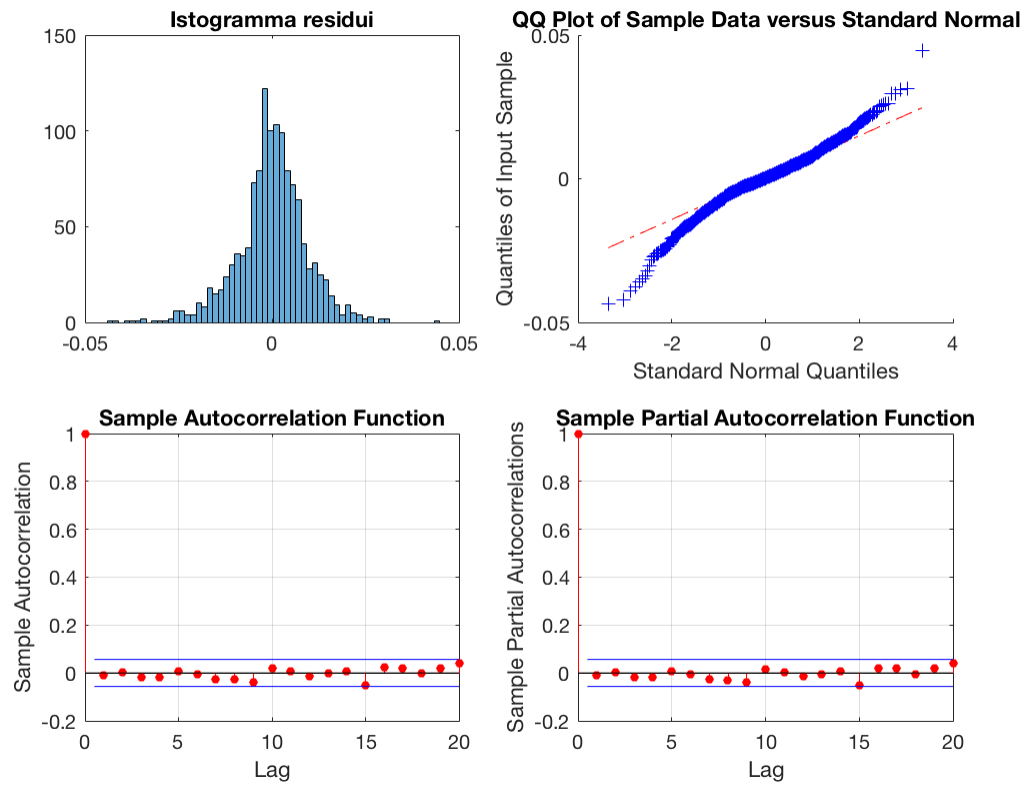# 2) GRAFICI

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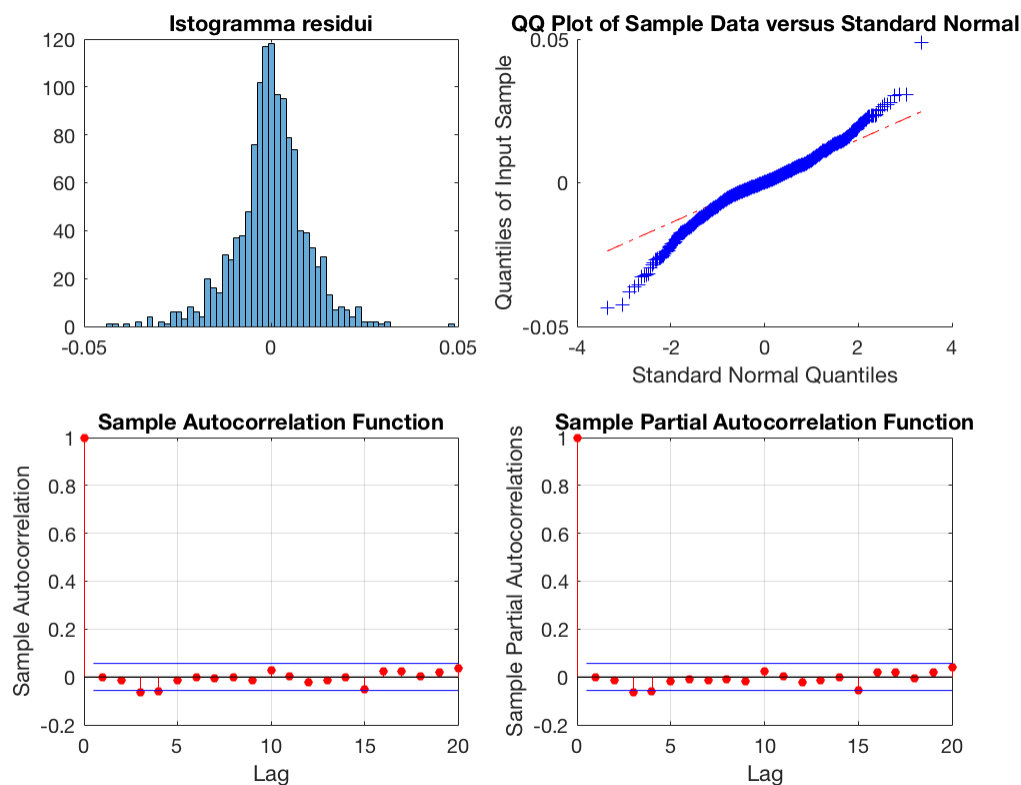
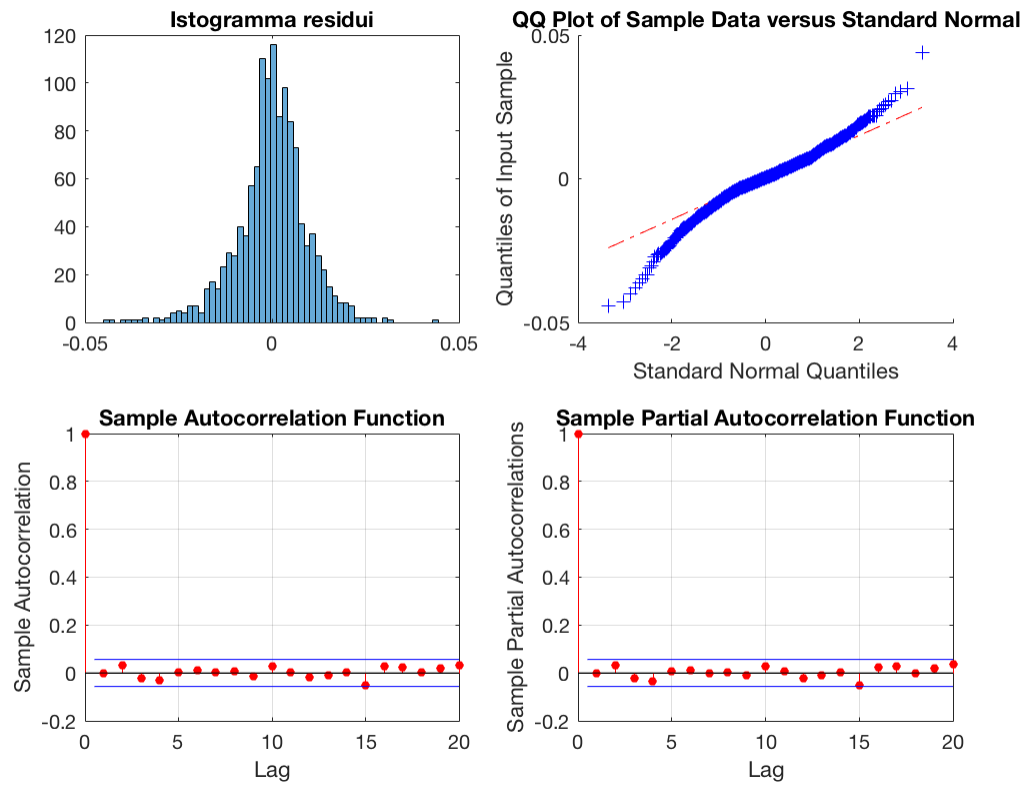# ARIMA(0,1,1)

ARIMA(0,1,1)

ARIMA(1,1,1)

ARIMA(2,1,1)

ARIMA(1,1,2)

ARIMA(2,1,2)

ARIMA(3,1,1)

ARIMA(3,1,2)
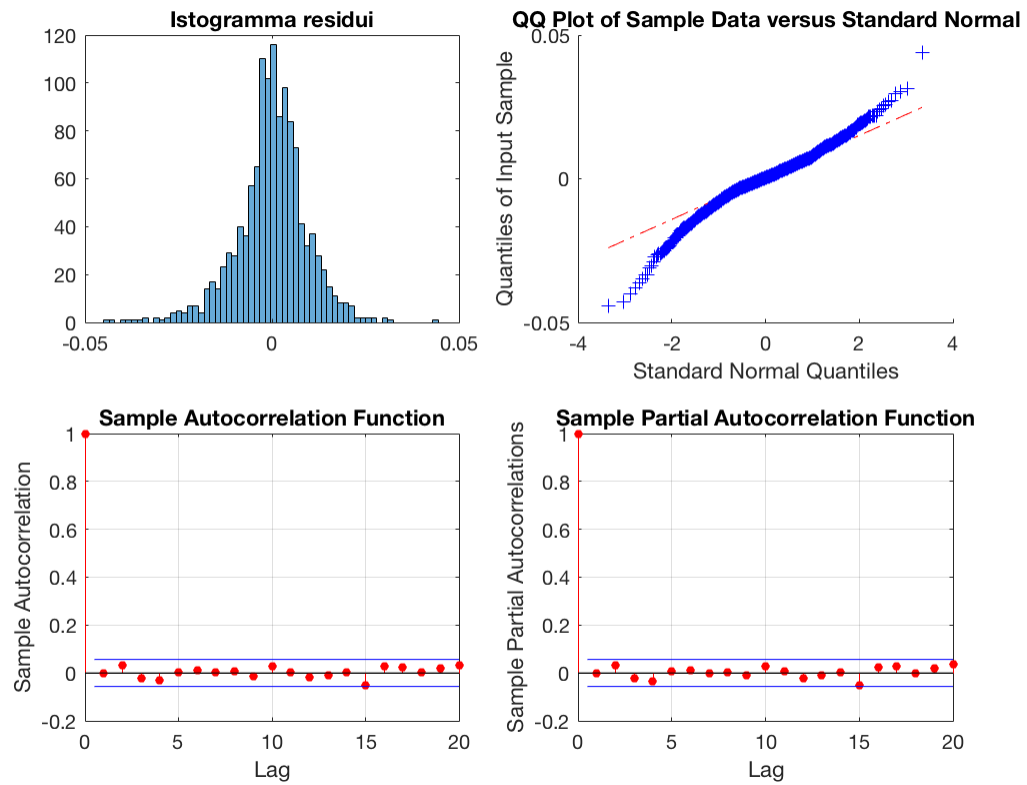
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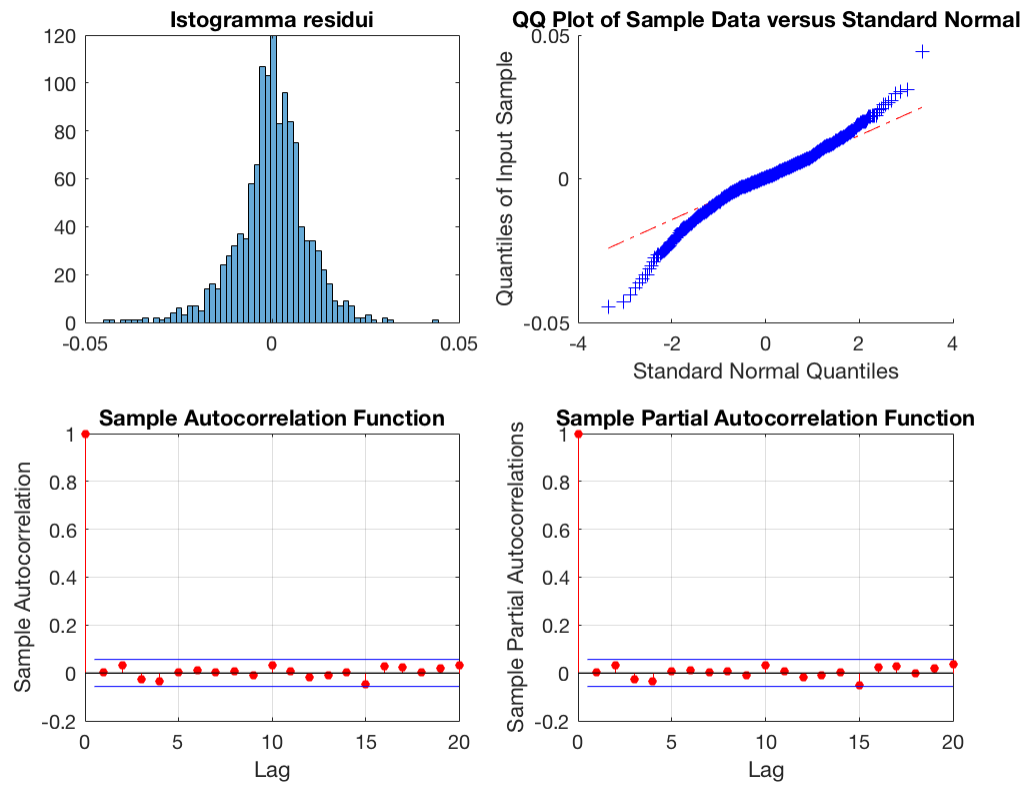
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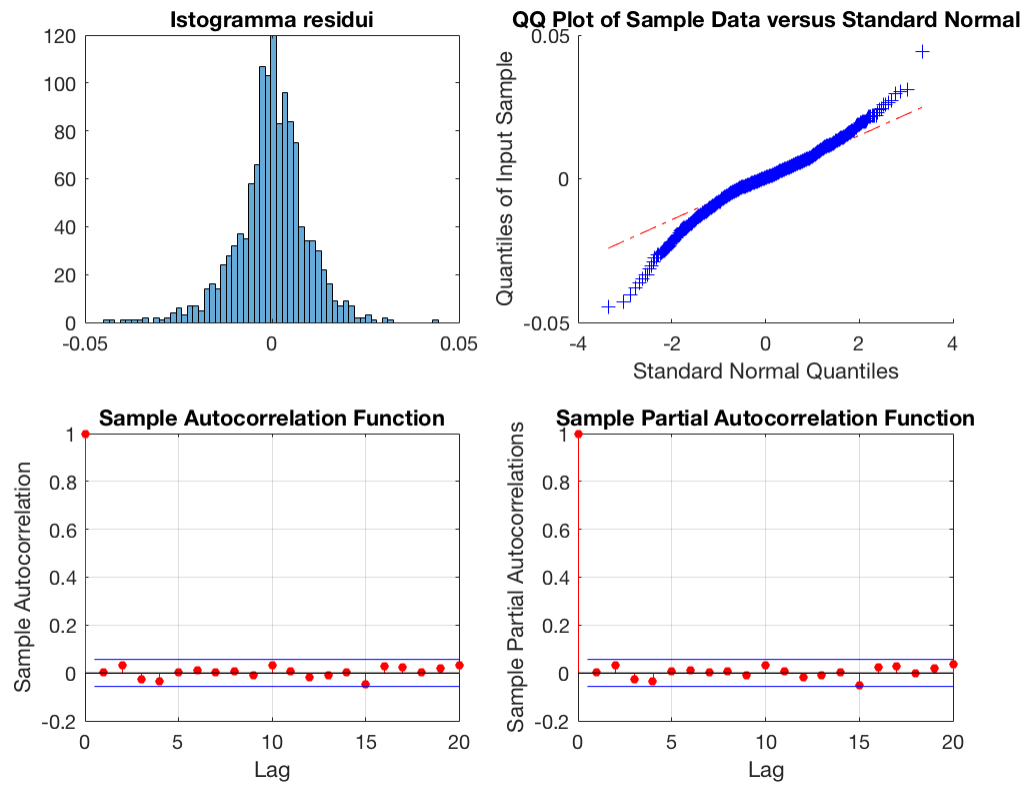
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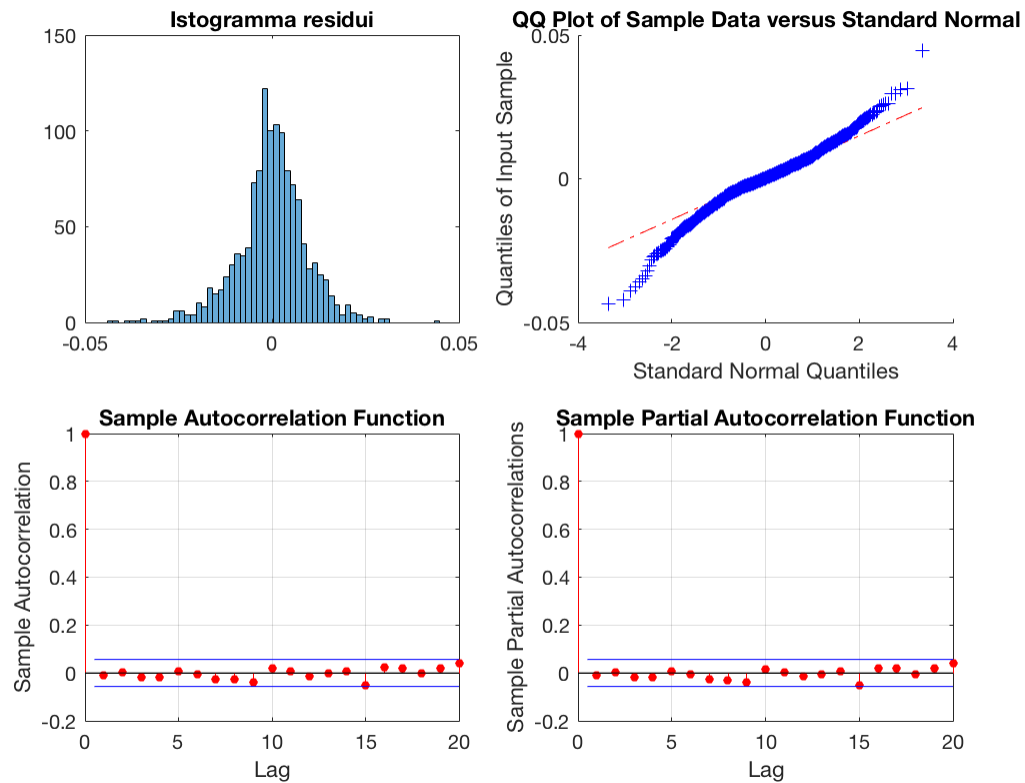
3) TABELLE

ARIMA(1,1,0)

```
ans =

    K        H        pvalue       Qstat          Crit
   ___     _____     _____     _____     _____


    1      false      0.9904      0.00014481     3.8415
    2      false      0.87874     0.25853        5.9915
    3      false      0.15932     5.1765         7.8147
    4      true       0.042294    9.8916         9.4877
    5      false      0.070464    10.174         11.07
    6      false      0.11725     10.18          12.592
    7      false      0.17588     10.231         14.067
    8      false      0.24893     10.235         15.507
    9      false      0.30716     10.559         16.919
   10      false      0.31955     11.505         18.307
   11      false      0.40052     11.523         19.675
   12      false      0.44063     12.063         21.026
   13      false      0.505       12.278         22.362
```

14	false	0.58284	12.292	23.685
15	false	0.39882	15.751	24.996
16	false	0.41472	16.558	26.296
17	false	0.43047	17.357	27.587
18	false	0.49745	17.375	28.869
19	false	0.52712	17.93	30.144
20	false	0.48489	19.573	31.41

ARIMA(0,1,1)

ans =

K	H	pvalue	Qstat	Crit
1	false	0.98508	0.00034993	3.8415
2	false	0.88758	0.23852	5.9915
3	false	0.16153	5.1443	7.8147
4	true	0.043015	9.851	9.4877
5	false	0.071575	10.132	11.07
6	false	0.11891	10.139	12.592
7	false	0.17809	10.189	14.067
8	false	0.2517	10.194	15.507
9	false	0.31019	10.518	16.919
10	false	0.3225	11.464	18.307
11	false	0.40376	11.483	19.675
12	false	0.44405	12.02	21.026
13	false	0.50848	12.235	22.362
14	false	0.58631	12.249	23.685
15	false	0.40168	15.709	24.996
16	false	0.41746	16.518	26.296
17	false	0.43332	17.314	27.587
18	false	0.50037	17.332	28.869
19	false	0.53002	17.887	30.144
20	false	0.48808	19.523	31.41

ARIMA(0,1,1)

ans =

K	H	pvalue	Qstat	Crit
1	false	0.98187	0.00051658	3.8415
2	false	0.91165	0.18501	5.9915
3	false	0.16396	5.1094	7.8147
4	true	0.043606	9.8181	9.4877
5	false	0.072359	10.103	11.07
6	false	0.12006	10.111	12.592

```
     7    false    0.17959        10.162    14.067
     8    false    0.25359        10.166    15.507
     9    false    0.31236        10.489    16.919
    10    false    0.32474        11.434    18.307
    11    false    0.40624        11.452    19.675
    12    false    0.44702        11.983    21.026
    13    false    0.51133          12.2    22.362
    14    false    0.58908        12.215    23.685
    15    false    0.40435         15.67    24.996
    16    false    0.42012        16.478    26.296
    17    false    0.43611        17.272    27.587
    18    false    0.50315        17.292    28.869
    19    false    0.53246         17.85    30.144
    20    false    0.49077        19.481     31.41
```

ARIMA(1,1,1)

```
ans =

    K        H        pvalue         Qstat         Crit

   ___    _____    _____    _____    _____


    1    false    0.98187    0.00051658    3.8415
    2    false    0.91165      0.18501    5.9915
    3    false    0.16396       5.1094    7.8147
    4    true    0.043606       9.8181    9.4877
    5    false   0.072359       10.103     11.07
    6    false    0.12006       10.111    12.592
    7    false    0.17959       10.162    14.067
    8    false    0.25359       10.166    15.507
    9    false    0.31236       10.489    16.919
   10    false    0.32474       11.434    18.307
   11    false    0.40624       11.452    19.675
   12    false    0.44702       11.983    21.026
   13    false    0.51133         12.2    22.362
   14    false    0.58908       12.215    23.685
   15    false    0.40435        15.67    24.996
   16    false    0.42012       16.478    26.296
   17    false    0.43611       17.272    27.587
   18    false    0.50315       17.292    28.869
   19    false    0.53246        17.85    30.144
   20    false    0.49077       19.481     31.41
```

ARIMA(2,1,1)

```
ans =

    K        H        pvalue         Qstat         Crit
```

1	false	0.96168	0.0023085	3.8415
2	false	0.51161	1.3404	5.9915
3	false	0.55618	2.079	7.8147
4	false	0.49995	3.357	9.4877
5	false	0.64163	3.3799	11.07
6	false	0.74464	3.495	12.592
7	false	0.83524	3.4999	14.067
8	false	0.89652	3.5342	15.507
9	false	0.92807	3.7334	16.919
10	false	0.9032	4.8148	18.307
11	false	0.9385	4.8438	19.675
12	false	0.94763	5.2888	21.026
13	false	0.96384	5.4523	22.362
14	false	0.97845	5.4534	23.685
15	false	0.89578	8.6357	24.996
16	false	0.88916	9.5476	26.296
17	false	0.89063	10.298	27.587
18	false	0.92098	10.32	28.869
19	false	0.92793	10.876	30.144
20	false	0.90804	12.227	31.41

ARIMA(1,1,2)

ans =

K	H	pvalue	Qstat	Crit
1	false	0.92913	0.0079095	3.8415
2	false	0.5343	1.2536	5.9915
3	false	0.51994	2.2615	7.8147
4	false	0.44947	3.6907	9.4877
5	false	0.5919	3.7098	11.07
6	false	0.69754	3.8458	12.592
7	false	0.79581	3.8595	14.067
8	false	0.86474	3.9146	15.507
9	false	0.90713	4.0643	16.919
10	false	0.87387	5.2499	18.307
11	false	0.91594	5.2969	19.675
12	false	0.93114	5.6845	21.026
13	false	0.95215	5.8291	22.362
14	false	0.97058	5.8305	23.685
15	false	0.88066	8.9395	24.996
16	false	0.87384	9.8599	26.296
17	false	0.87534	10.626	27.587
18	false	0.90856	10.651	28.869
19	false	0.91618	11.221	30.144
20	false	0.89449	12.584	31.41

ARIMA(2,1,2)

ans =

K	H	pvalue	Qstat	Crit
1	false	0.76803	0.086994	3.8415
2	false	0.94945	0.10374	5.9915
3	false	0.89462	0.6079	7.8147
4	false	0.90527	1.0297	9.4877
5	false	0.95117	1.1327	11.07
6	false	0.97925	1.1507	12.592
7	false	0.95696	2.0511	14.067
8	false	0.93041	3.062	15.507
9	false	0.84282	4.9014	16.919
10	false	0.8696	5.3091	18.307
11	false	0.9128	5.3544	19.675
12	false	0.9369	5.5534	21.026
13	false	0.9605	5.5671	22.362
14	false	0.97527	5.6158	23.685
15	false	0.88968	8.761	24.996
16	false	0.89178	9.4921	26.296
17	false	0.90465	9.9751	27.587
18	false	0.93227	9.9889	28.869
19	false	0.94146	10.432	30.144
20	false	0.9017	12.398	31.41

ARIMA(3,1,1)

ans =

K	H	pvalue	Qstat	Crit
1	false	0.96168	0.0023085	3.8415
2	false	0.51161	1.3404	5.9915
3	false	0.55618	2.079	7.8147
4	false	0.49995	3.357	9.4877
5	false	0.64163	3.3799	11.07
6	false	0.74464	3.495	12.592
7	false	0.83524	3.4999	14.067
8	false	0.89652	3.5342	15.507
9	false	0.92807	3.7334	16.919
10	false	0.9032	4.8148	18.307
11	false	0.9385	4.8438	19.675
12	false	0.94763	5.2888	21.026
13	false	0.96384	5.4523	22.362
14	false	0.97845	5.4534	23.685

```
15    false    0.89578       8.6357      24.996
16    false    0.88916       9.5476      26.296
17    false    0.89063       10.298      27.587
18    false    0.92098        10.32      28.869
19    false    0.92793       10.876      30.144
20    false    0.90804       12.227       31.41
```

ARIMA(3,1,2)

```
ans =

K       H       pvalue        Qstat        Crit
__     _____   _____    _____    _____


1    false    0.96168     0.0023085      3.8415
2    false    0.51161        1.3404      5.9915
3    false    0.55618         2.079      7.8147
4    false    0.49995         3.357      9.4877
5    false    0.64163        3.3799       11.07
6    false    0.74464         3.495      12.592
7    false    0.83524        3.4999      14.067
8    false    0.89652        3.5342      15.507
9    false    0.92807        3.7334      16.919
10    false     0.9032        4.8148      18.307
11    false     0.9385        4.8438      19.675
12    false    0.94763        5.2888      21.026
13    false    0.96384        5.4523      22.362
14    false    0.97845        5.4534      23.685
15    false    0.89578        8.6357      24.996
16    false    0.88916        9.5476      26.296
17    false    0.89063        10.298      27.587
18    false    0.92098         10.32      28.869
19    false    0.92793        10.876      30.144
20    false    0.90804        12.227       31.41
```

ARIMA(1,1,3)

```
ans =

K       H       pvalue        Qstat        Crit
__     _____   _____    _____    _____


1    false    0.92913     0.0079095      3.8415
2    false     0.5343        1.2536      5.9915
3    false    0.51994        2.2615      7.8147
4    false    0.44947        3.6907      9.4877
5    false     0.5919        3.7098       11.07
6    false    0.69754        3.8458      12.592
7    false    0.79581        3.8595      14.067
```

```
 8     false     0.86474        3.9146       15.507
 9     false     0.90713        4.0643       16.919
10     false     0.87387        5.2499       18.307
11     false     0.91594        5.2969       19.675
12     false     0.93114        5.6845       21.026
13     false     0.95215        5.8291       22.362
14     false     0.97058        5.8305       23.685
15     false     0.88066        8.9395       24.996
16     false     0.87384        9.8599       26.296
17     false     0.87534       10.626        27.587
18     false     0.90856       10.651        28.869
19     false     0.91618       11.221        30.144
20     false     0.89449       12.584         31.41
```

ARIMA(2,1,3)

ans =

K	H	pvalue	Qstat	Crit
1	false	0.92913	0.0079095	3.8415
2	false	0.5343	1.2536	5.9915
3	false	0.51994	2.2615	7.8147
4	false	0.44947	3.6907	9.4877
5	false	0.5919	3.7098	11.07
6	false	0.69754	3.8458	12.592
7	false	0.79581	3.8595	14.067
8	false	0.86474	3.9146	15.507
9	false	0.90713	4.0643	16.919
10	false	0.87387	5.2499	18.307
11	false	0.91594	5.2969	19.675
12	false	0.93114	5.6845	21.026
13	false	0.95215	5.8291	22.362
14	false	0.97058	5.8305	23.685
15	false	0.88066	8.9395	24.996
16	false	0.87384	9.8599	26.296
17	false	0.87534	10.626	27.587
18	false	0.90856	10.651	28.869
19	false	0.91618	11.221	30.144
20	false	0.89449	12.584	31.41

ARIMA(3,1,3)

ans =

K	H	pvalue	Qstat	Crit

```
 1    false    0.76803    0.086994    3.8415
 2    false    0.94945    0.10374     5.9915
 3    false    0.89462    0.6079      7.8147
 4    false    0.90527    1.0297      9.4877
 5    false    0.95117    1.1327      11.07
 6    false    0.97925    1.1507      12.592
 7    false    0.95696    2.0511      14.067
 8    false    0.93041    3.062       15.507
 9    false    0.84282    4.9014      16.919
10    false    0.8696     5.3091      18.307
11    false    0.9128     5.3544      19.675
12    false    0.9369     5.5534      21.026
13    false    0.9605     5.5671      22.362
14    false    0.97527    5.6158      23.685
15    false    0.88968    8.761       24.996
16    false    0.89178    9.4921      26.296
17    false    0.90465    9.9751      27.587
18    false    0.93227    9.9889      28.869
19    false    0.94146    10.432      30.144
20    false    0.9017     12.398      31.41
```

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