Year	UnEmp	UNgr	GDPgr	Undif	GDPpcGr	Infl.CPI	LFpr	RDExpToGDP
2000	10,456		3,70		1,13	40,24	75,45	0,012
2001	9,602	-0,08	4,00	-0,85	1,27	41,51	75,16	0,07
2002	8,695	-0,09	4,50	-0,91	1,67	9,36	74,87	0,05
2003	7,72	-0,11	5,20	-0,98	2,40	29,77	74,58	0,08
2004	6,756	-0,12	5,60	-0,96	2,84	18,04	74,28	0,08
2005	5,816	-0,14	5,90	-0,94	3,16	15,44	73,98	0,011
2006	4,897	-0,16	6,40	-0,92	3,67	11,68	73,68	0,0131
2007	5,092	0,04	4,35	0,20	1,69	10,73	73,37	0,0232
2008	5,144	0,01	9,15	0,05	6,41	16,49	73,06	0,0222
2009	5,348	0,04	4,84	0,20	2,26	19,25	72,74	0,0352
2010	5,384	0,01	7,90	0,04	5,31	10,73	72,42	0,0377
2011	4,227	-0,21	14,05	-1,16	11,34	8,73	72,10	0,08
2012	3,141	-0,26	9,29	-1,09	6,68	11,19	71,77	0,0255
2013	2,173	-0,31	7,31	-0,97	4,76	11,67	71,44	0,05
2014	4,415	1,03	2,86	2,24	0,45	15,49	71,11	0,089
2015	6,806	0,54	2,12	2,39	(0,21)	17,15	70,78	0,1
2016	5,232	-0,23	3,37	-1,57	1,05	17,45	69,93	0,07
2017	3,369	-0,36	8,13	-1,86	5,78	12,37	69,08	0,05
2018	3,253	-0,03	6,20	-0,12	4,02	7,81	68,22	0,08
2019	3,16	-0,03	6,51	-0,09	4,39	7,14	67,37	0,08
2020	3,313	0,05	0,51	0,15	(1,47)	9,89	65,94	0,15
2021	3,384	0,02	5,08	0,07	3,04	9,97	65,49	0,12
2022	3,084	-0,09	3,82	-0,30	1,84	31,26	64,85	0,38
2023	3,063	-0,01	2,94	-0,02	1,00	38,11	64,85	0,38

Covid_Cases	CovidDeaths	Cases	Deaths	LockdownDays	GovSpToGDP
-	-	0	0	0	17,5213417512
-	-	0	0	0	18,7116417612
-	-	0	0	0	20,0290266465
-	-	0	0	0	22,0203756781
-	-	0	0	0	23,4793110247
-	-	0	0	0	22,7457889921
-	-	0	0	0	15,2883466766
-	-	0	0	0	17,8651441454
-	-	0	0	0	20,5460947523
-	-	0	0	0	18,027952391
-	-	0	0	0	20,1575042881
-	-	0	0	0	21,1409260462
-	-	0	0	0	26,8839178478
-	-	0	0	0	19,2811347819
-	-	0	0	0	18,2035086076
-	-	0	0	0	17,3642996459
-	-	0	0	0	18,2895853622
-	-	0	0	0	17,3552403052
-	-	0	0	0	17,6018475152
-	-	0	0	0	17,5109450941
23 712,07	0,93	54681	335	21	21,8835544057
102 527,85	2,61	86614	952	0	20,7508748713
164 546,33	0,48	29743	174	0	22,6789929508
171 558,83	0,00	796	1	0	19,552334565

IntRate	FDInet	Exports	FExRateAvg	GovExpEduc	HealthExp	PopGrAvg
0,2699	165900000	48,802257619	0,54491917587	4,11037015915	1,79	2,51243584
0,275	89320000	45,233016467	0,71630515781	5,35444021225	2,00	2,663105441
0,255	58930000	42,616251893	0,79241708431	5,45	2,09	2,7501377
0,2475	136751000	40,679042651	0,86676432653	6,23	2,30	2,699996233
0,1925	139270000	39,303325121	0,89949485401	7,53558015823	2,53	2,648564224
0,16	144970000	36,449216951	0,90520948583	7,42208003998	3,50	2,622757231
0,135	636010000	24,656190491	0,91510679917	5,14794015884	3,92	2,599672365
0,135	1383177930	24,525090604	0,932619195	5,51986980438	3,96	2,577428818
0,1577	2714916344	25,0294573	1,052275	5,75795984268	3,95	2,537779829
0,1825	2372540000	29,291865979	1,40496666667	5,31744003296	4,40	2,495284986
0,1483	2527350000	29,476717983	1,42998333333	5,540599823	4,73	2,43301424
0,1275	3247588000	36,93660855	1,520625	8,1409702301	4,47	2,404971455
0,1433	3294520000	40,359218174	1,82486666667	7,91913986206	3,92	2,41990908
0,16	3227000000	25,440783397	1,98135	4,57646989822	4,59	2,409279309
0,1933	3363389444	28,231902161	2,896575	3,68234825134	4,02	2,364985531
0,2425	3192320531	33,831704823	3,71464166667	3,68874549866	4,54	2,307127331
0,255	3485333369	31,193239148	3,90981666667	3,45474433899	3,39	2,276212039
0,216	3254990000	33,87687478	4,35053333333	3,18611741066	2,69	2,195357928
0,165	2989035000	33,454895449	4,585325	3,01595592499	2,43	2,075171366
0,16	3879831469,7	37,449599863	5,21736666667	3,15307116508	3,25	2,0078052
0,145	1875782953	31,525420487	5,59570833333	3,40915989876	4,43	1,991819851
0,14	2533586462	30,05511947	5,8057	3,41949439049	3,86	1,959045844
0,219	1428411737	34,664043553	8,2724	2,90529441833	3,70	1,920290343
0,2917	1319315615	34,036759215	11,0204083333	3,18	2,02	1,908602897

Totalreservesincludesgold	TaxRevOfGDP	CurrentaccountbalanceBoPc
308900898,386218	17,43	-386417603,19361
375936405,544189	17,19	-427467882,44416
636059799,997825	17,49	-105237554,6132
1470061309,67805	18,48	101686603,45587
1749729259,35718	21,75	-590188288,77
1897057040,26241	21,32	-1104609520,85246
2268926566,51141	12,53	-1056074432,76184
2218311347,67966	13,88	-2378784231,83093
2014205287,49439	13,90	-3327428935,89148
3691822335,02409	12,61	-1897165484,24191
5158151628,84547	13,39	-2747340000
5913600037,24248	14,87	-3541315695,2523
5835098328,20187	15,37	-4911713679,07456
5587739126,3869	10,67	-5704034549,66674
5563709271,19552	11,25	-3694575338,27762
5742645886,29529	11,69	-2823640338,08023
5866729596,16504	11,06	-2832047270,61979
7015187159,64987	11,58	-2002640000
6294851564,02725	12,24	-2044594252,86237
7563210340,92838	12,00	-1863971933,06699
7884091538,70727	11,34	-2133965479,92186
9916916899,67781	12,24	-2541432817,34577
5205457212,278	12,30	-1740634666,64307
3623904994,58702	14,80	1407113627,39914

Imports	EXnetOfGDP
67,25	-18,44
64,81	-19,58
54,87	-12,26
56,61	-15,93
60,37	-21,06
61,72	-25,27
39,86	-15,21
40,83	-16,30
44,48	-19,46
42,30	-13,01
45,90	-16,42
49,36	-12,42
52,81	-12,45
35,32	-9,88
35,60	-7,37
42,69	-8,86
36,68	-5,49
36,67	-2,79
34,50	-1,05
39,38	-1,93
35,05	-3,52
32,65	-2,60
35,45	-0,79
35,00	-0,96

Model 1 (GDP growth)

GDP Growth = β0 + β1*d_Unemployment + β2*COVID.Cases + β3*COVID.Deaths + β4*Lockdown_days

OKUN'S LAW $\Delta Y_t = \alpha - \beta \cdot \Delta U_t + \varepsilon$

```
Model 1: OLS, using observations 2001-2023 (T = 23)
Dependent variable: GDPgr

                coefficient    std. error    t-ratio   p-value
  ------------------------------------------------------------
  const          5.70616       0.601540       9.486    2.00e-08 ***
  d_UnEmp       -1.14410       0.524318      -2.182    0.0426   **
  d_Cases        4.52189e-05   3.79250e-05    1.192    0.2486
  Deaths        -0.00196369    0.00286057    -0.6865   0.5012
  LockdownDays  -0.325331      0.155776      -2.088    0.0512   *

Mean dependent var   5.653612   S.D. dependent var   2.869018
Sum squared resid    112.4101   S.E. of regression   2.499001
R-squared            0.379251   Adjusted R-squared   0.241307
F(4, 18)             2.749306   P-value(F)           0.060395
Log-likelihood      -50.88217   Akaike criterion     111.7643
Schwarz criterion    117.4418   Hannan-Quinn         113.1922
rho                  0.370112   Durbin-Watson        1.190703

Excluding the constant, p-value was highest for variable 12 (Deaths)
```

```
LM test for autocorrelation up to order 1 -
  Null hypothesis: no autocorrelation
  Test statistic: LMF = 2.69685
  with p-value = P(F(1, 17) > 2.69685) = 0.118914

White's test for heteroskedasticity -
  Null hypothesis: heteroskedasticity not present
  Test statistic: LM = 3.13132
  with p-value = P(Chi-square(7) > 3.13132) = 0.872594

Test for normality of residual -
  Null hypothesis: error is normally distributed
  Test statistic: Chi-square(2) = 7.69054
  with p-value = 0.0213806
```

Model 2 (Inflation)

Inflation = β0 + β1* Unemployment + β2*COVID.Cases + β3*COVID.Deaths + β4*I

PHILIP'S CURVE $\pi t=\alpha-\beta \cdot Ut+\varepsilon t$

```
Model 2: OLS, using observations 2001-2023 (T = 23)
Dependent variable: InflCPI

                coefficient    std. error    t-ratio   p-value
  ------------------------------------------------------------
  const          2.09193       4.72803       0.4425   0.6634
  UnEmp          2.60922       0.847337      3.079    0.0065   ***
  d_Cases       -0.000452951   0.000112921  -4.011    0.0008   ***
  Deaths         0.0128895     0.00855843    1.506    0.1494
  LockdownDays   0.933373      0.459630      2.031    0.0573   *

Mean dependent var    16.57541   S.D. dependent var    9.579087
Sum squared resid     919.3042   S.E. of regression    7.146499
R-squared             0.544605   Adjusted R-squared    0.443406
F(4, 18)              5.381530   P-value(F)            0.004971
Log-likelihood       -75.04900   Akaike criterion      160.0980
Schwarz criterion     165.7755   Hannan-Quinn          161.5259
rho                  -0.614126   Durbin-Watson         2.465810

Excluding the constant, p-value was highest for variable 12 (Deaths
```

```
LM test for autocorrelation up to order 1 -
  Null hypothesis: no autocorrelation
  Test statistic: LMF = 7.49066
  with p-value = P(F(1, 17) > 7.49066) = 0.0140481

White's test for heteroskedasticity -
  Null hypothesis: heteroskedasticity not present
  Test statistic: LM = 20.6583
  with p-value = P(Chi-square(7) > 20.6583) = 0.00431029

Test for normality of residual -
  Null hypothesis: error is normally distributed
  Test statistic: Chi-square(2) = 6.53852
  with p-value = 0.0380345
```

Lockdown_days

```
23)

-ratio   p-value
----------------
0.4425   0.6634
3.079    0.0065   ***
4.011    0.0008   ***
1.506    0.1494
2.031    0.0573   *

var    9.579087
lon    7.146499
red    0.443406
       0.004971
       160.0980
       161.5259
       2.465810

variable 12 (Deaths)

-

.0140481

present

) = 0.00431029

ibuted
```

Model 3 (Unemployment)

Unemployment = β0 + β1*Inflation + β2*COVID.Cases + β3*CO

```
Model 3: OLS, using observations 2001-2023
Dependent variable: UnEmp

                coefficient    std. error
  ------------------------------------------
  const          3.15508       0.769547
  InflCPI        0.132235      0.0429430
  d_Cases        8.43220e-05   2.87901e-05
  Deaths        -0.00373756    0.00184495
  LockdownDays  -0.214679      0.102952

Mean dependent var    4.916261   S.D. depend
Sum squared resid     46.59024   S.E. of reg
R-squared             0.444081   Adjusted R-
F(4, 18)              3.594699   P-value(F)
Log-likelihood       -40.75340   Akaike crit
Schwarz criterion     97.18427   Hannan-Quin
rho                   0.293971   Durbin-Wats
```

```
LM test for autocorrelation up to order 1
  Null hypothesis: no autocorrelation
  Test statistic: LMF = 1.6924
  with p-value = P(F(1, 17) > 1.6924) = 0

White's test for heteroskedasticity -
  Null hypothesis: heteroskedasticity not
  Test statistic: LM = 7.78079
  with p-value = P(Chi-square(7) > 7.7807

Test for normality of residual -
  Null hypothesis: error is normally dist
  Test statistic: Chi-square(2) = 8.3381
  with p-value = 0.015467
```

VID.Deaths + β4*Lockdown_days

```
(T = 23)


    t-ratio   p-value
---------------------
     4.100    0.0007  ***
     3.079    0.0065  ***
     2.929    0.0090  ***
    -2.026    0.0579  *
    -2.085    0.0516  *

lent var    1.951777
gression    1.608834
-squared    0.320543
            0.025339
:erion      91.50680
ın          92.93467
son         1.328528




l -


).210643


: present

79) = 0.35232


:ributed
```

Model 1 (GDP growth)

GDP Growth = β0 + β1*d_Unemployment + β2*COVID.Cases + β3*COVID.Deaths + β4*Lockdown_days

```
Augmented regression for Chow test
OLS, using observations 2001-2023 (T = 23)
Dependent variable: GDPgr
Omitted due to exact collinearity: sd_d_UnEmp sd_d_Cases sd_Deaths sd_LockdownDays

                coefficient    std. error    t-ratio    p-value
  ---------------------------------------------------------------
  const          5.76344       0.617827       9.329     4.25e-08 ***
  d_UnEmp       -1.12048       0.534219      -2.097     0.0512   *
  d_Cases       -3.93759e-06   8.50832e-05   -0.04628   0.9636
  Deaths         0.00260198    0.00762134     0.3414    0.7370
  LockdownDays  -0.132174      0.337494      -0.3916    0.7002
  splitdum      -2.95876       4.56537       -0.6481    0.5256

Mean dependent var   5.653612   S.D. dependent var   2.869018
Sum squared resid    109.6997   S.E. of regression   2.540261
R-squared            0.394218   Adjusted R-squared   0.216047
F(5, 17)             2.212580   P-value(F)           0.100684
Log-likelihood      -50.60149   Akaike criterion     113.2030
Schwarz criterion    120.0159   Hannan-Quinn         114.9164
rho                  0.380739   Durbin-Watson        1.171063

Chow test for structural break at observation 2020
  F(1, 17) = 0.420019 with p-value 0.5256
```

Using first differences of Cases due High Multicollinearity between Deaths &

Model 2 (Inflation)

Inflation = β0 + β1* Unemployment + β2*COVID.Cases + β3*COVID.Deaths + β4*Loc

kdownDays

```
Augmented regression for Chow test
OLS, using observations 2001-2023 (T = 23)
Dependent variable: InflCPI
Omitted due to exact collinearity: sd_UnEmp sd_d_Cases sd_Deaths sd_Lockdow

                coefficient     std. error    t-ratio    p-value
  ------------------------------------------------------------------
  const          0.0731273      4.11951       0.01775   0.9860
  UnEmp          2.89957        0.734058      3.950     0.0010   ***
  d_Cases        4.16509e-05    0.000204957   0.2032    0.8414
  Deaths        -0.0332306      0.0183741    -1.809     0.0882   *
  LockdownDays  -1.01565        0.813660     -1.248     0.2289
  splitdum      30.3914         11.1007       2.738     0.0140   **

Mean dependent var   16.57541   S.D. dependent var   9.579087
Sum squared resid    638.0039   S.E. of regression   6.126144
R-squared            0.683952   Adjusted R-squared   0.590997
F(5, 17)             7.357875   P-value(F)           0.000778
Log-likelihood      -70.84836   Akaike criterion     153.6967
Schwarz criterion    160.5097   Hannan-Quinn         155.4102
rho                 -0.500926   Durbin-Watson        2.712172

Chow test for structural break at observation 2020
  F(1, 17) = 7.49542 with p-value 0.0140
```

Cases

ckdown_days

```
s sd_Deaths sd_LockdownDays

o    p-value
-----------
75   0.9860
     0.0010  ***
2    0.8414
     0.0882  *
     0.2289
     0.0140  **

9.579087
6.126144
0.590997
0.000778
153.6967
155.4102
2.712172
```

Model 3 (Unemployment)

Unemployment = β0 + β1*Inflation + β2*COVID.Cases + β3*COVID.Deaths

```
Augmented regression for Chow test
OLS, using observations 2001-2023 (T = 23)
Dependent variable: UnEmp
Omitted due to exact collinearity: sd_InflCPI sd_d_Cas

                coefficient    std. error    t-ratio
  ------------------------------------------------------
  const           2.73859       0.724459      3.780
  InflCPI         0.165050      0.0417843     3.950
  d_Cases        -6.37451e-06   4.89344e-05  -0.1303
  Deaths          0.00562872    0.00458816    1.227
  LockdownDays    0.169560      0.198615      0.8537
  splitdum       -6.15530       2.80684      -2.193

Mean dependent var   4.916261   S.D. dependent var   1
Sum squared resid    36.31667   S.E. of regression   1
R-squared            0.566666   Adjusted R-squared   0
F(5, 17)             4.446141   P-value(F)           0
Log-likelihood      -37.88859   Akaike criterion     8
Schwarz criterion    94.59014   Hannan-Quinn         8
rho                  0.196844   Durbin-Watson        1

Chow test for structural break at observation 2020
  F(1, 17) = 4.80911 with p-value 0.0425
```

s + β4*Lockdown_days

```
es sd_Deaths sd_LockdownDays

   p-value
---------
   0.0015  ***
   0.0010  ***
   0.8979
   0.2366
   0.4051
   0.0425  **

..951777
..461600
.439215
.008988
7.77717
9.49061
..606308
```

MODEL 1

Correlation Coefficients, using samples of size 23 to 24
(missing values were skipped)

Two-tailed critical values for n = 23: 5% 0.4132, 1% 0.5256

d_UnEmp	d_Cases	Deaths	LockdownDays	
1.0000	0.0660	0.1141	0.1008	d_UnEmp
	1.0000	0.4408	0.6215	d_Cases
		1.0000	0.2858	Deaths
			1.0000	Lockdowr

Using first differences of Cases due High Multicc

MODEL 2

```
Correlation Coefficients, using samples of siz
(missing values were skipped)

Two-tailed critical values for n = 23: 5% 0.41

           UnEmp          d_Cases           Deat
          1.0000           0.0258          -0.25
                           1.0000           0.44
                                            1.00
```

ıDays

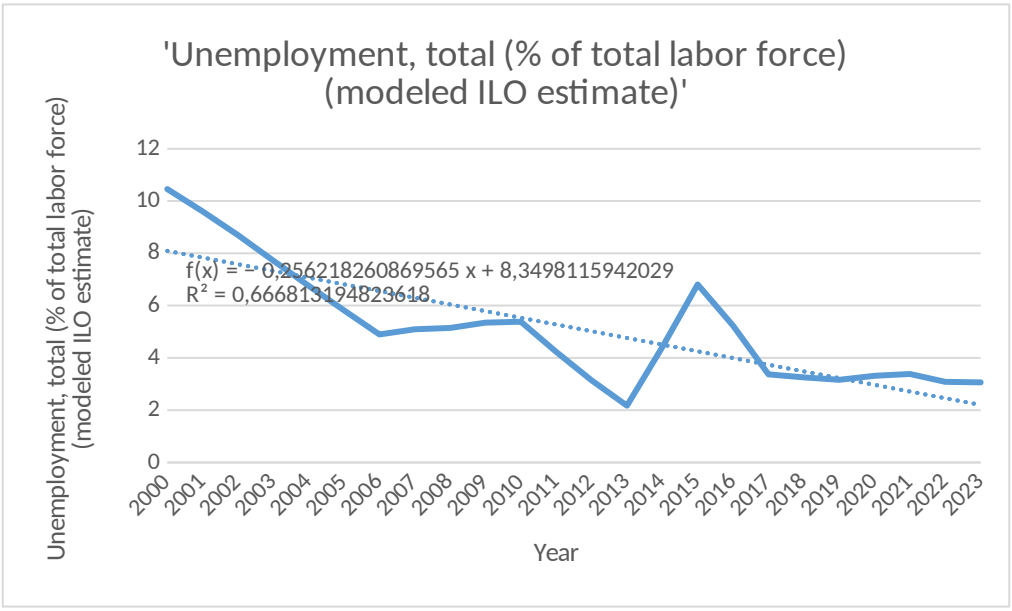
llinearity between Deaths & Cases

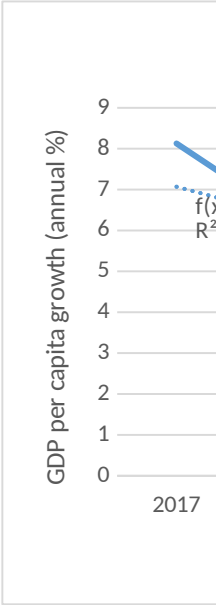
```
e 23 to 24


32, 1% 0.5256

hs     LockdownDays
46          -0.1761 UnEmp
08           0.6215 d_Cases
00           0.2858 Deaths
             1.0000 LockdownDays
```

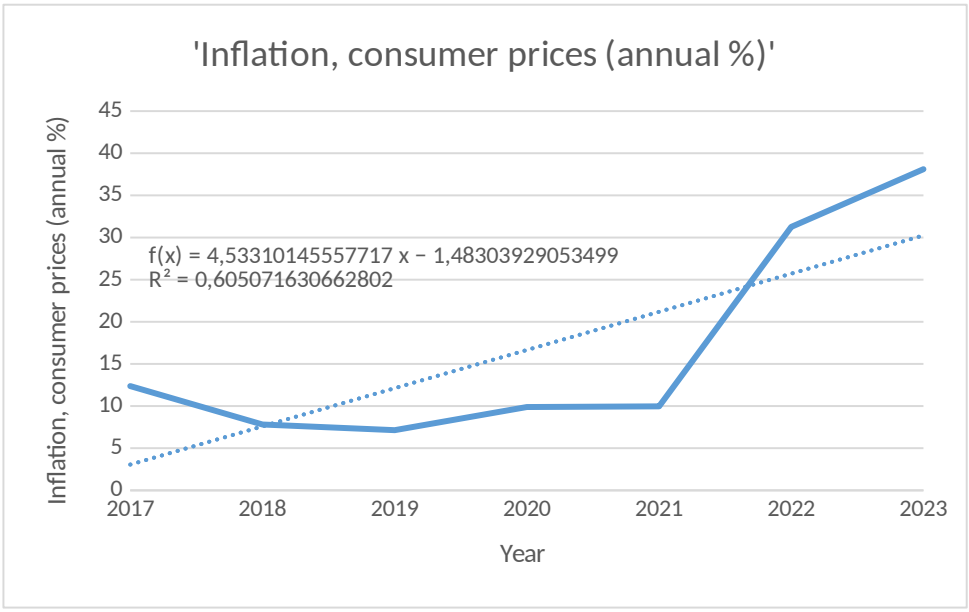
```
Correlation Coefficie
(missing values were

Two-tailed critical

          InflCPI
           1.0000
```

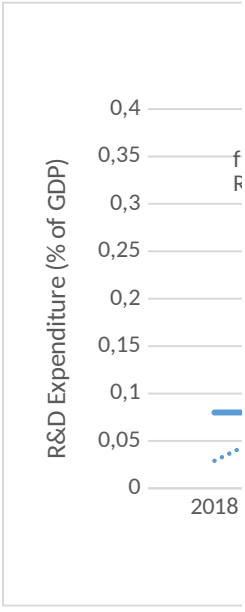
MODEL 3

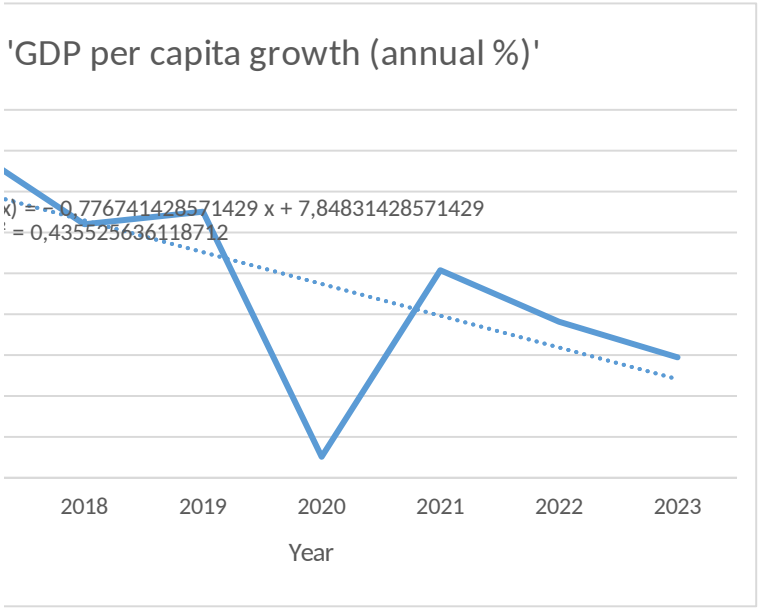
```
ents, using samples of size 23 to 24
 skipped)

values for n = 23: 5% 0.4132, 1% 0.5256

     d_Cases          Deaths    LockdownDays
     -0.5038         -0.1493         -0.1551 InflCPI
      1.0000          0.4408          0.6215 d_Cases
                      1.0000          0.2858 Deaths
                                      1.0000 LockdownDays
```

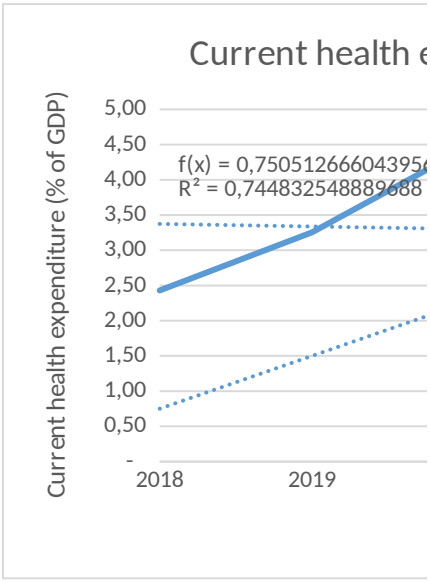

'Unemployment, total (% of total labor force) (modeled ILO estimate)'
Unemployment, total (% of total labor force) (modeled ILO estimate)
f(x) = -0,256218260869565 x + 8,3498115942029
R² = 0,666813194829618
Year

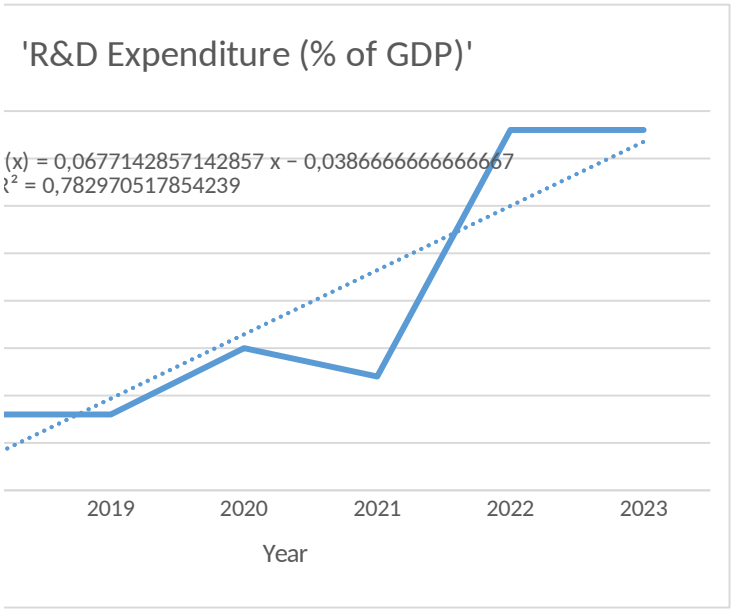

GDP per capita growth (annual %)
2017

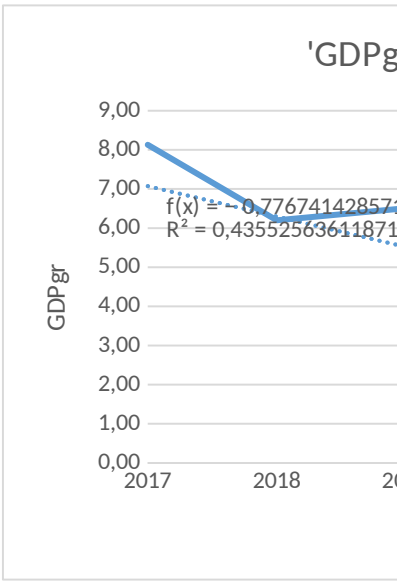

'Inflation, consumer prices (annual %)'
Inflation, consumer prices (annual %)
f(x) = 4,53310145557717 x − 1,48303929053499
R² = 0,605071630662802
Year

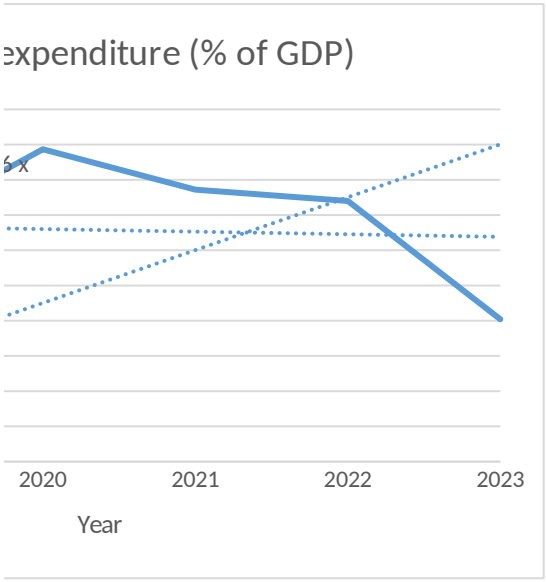

R&D Expenditure (% of GDP)
2018

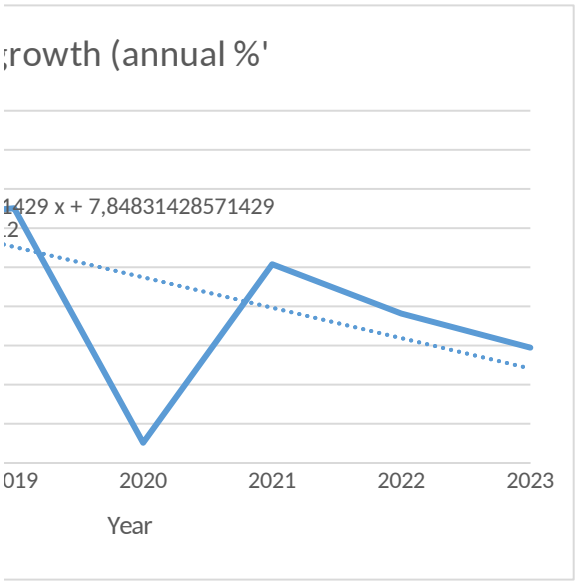

'GDP per capita growth (annual %)'
x) = -0,776741428571429 x + 7,84831428571429
= 0,435525636118712
2018
2019
2020
2021
2022
2023
Year


Current health e
Current health expenditure (% of GDP)
5,00
4,50
4,00
3,50
3,00
2,50
2,00
1,50
1,00
0,50
-
f(x) = 0,750512666043956
R² = 0,744832548889688
2018
2019


'R&D Expenditure (% of GDP)'
(x) = 0,0677142857142857 x − 0,0386666666666667
² = 0,782970517854239
2019
2020
2021
2022
2023
Year


'GDPg
GDPgr
9,00
8,00
7,00
6,00
5,00
4,00
3,00
2,00
1,00
0,00
f(x) = -0,776741428574
R² = 0,435525636118711
2017
2018


expenditure (% of GDP)
2020
2021
2022
2023
Year


growth (annual %'
2020
2021
2022
2023
Year