LAMPIRAN

Lampiran 1. Data PDRB ADHK Provinsi Kepulauan Bangka Belitung triwulan 1 2010 sampai triwulan 1 2025.

Tahun	Triwulan	Nilai PDRB (Miliah Rupiah)
2010	1	8.592,66
2010	2	8.808,35
2010	3	9.018,20
2010	4	9.142,70
2011	1	9.134,04
2011	2	9.478,24
2011	3	9.716,97
2011	4	9.684,74
2012	1	9.689,45
2012	2	9.962,56
2012	3	10.144,33
2012	4	10.308,56
2013	1	10.309,22
2013	2	10.508,92
2013	3	10.628,59
2013	4	10.744,12
2014	1	10.756,99
2014	2	11.017,03
2014	3	11.136,27
2014	4	11.249,15
2015	1	11.197,46
2015	2	11.455,28
2015	3	11.508,68
2015	4	11.728,88
2016	1	11.582,06
2016	2	11.894,48

2016	3	12.062,71
2016	4	12.309,13
2017	1	12.320,70
2017	2	12.505,44
2017	3	12.491,70
2017	4	12.667,30
2018	1	12.626,59
2018	2	13.070,43
2018	3	13.377,19
2018	4	13.134,83
2019	1	12.984,63
2019	2	13.518,86
2019	3	13.779,95
2019	4	13.658,46
2020	1	13.164,29
2020	2	12.850,94
2020	3	13.178,38
2020	4	13.512,33
2021	1	13.290,19
2021	2	13.731,92
2021	3	13.982,29
2021	4	14.365,25
2022	1	13.726,88
2022	2	14.245,04
2022	3	14.616,80
2022	4	15.004,50
2023	1	14.331,30
2023	2	15.198,11
2023	3	15.202,13
2023	4	15.604,97
2024	1	14.475,80

2024	2	15.353,58
2024	3	15.221,76
2024	4	15.751,49
2025	1	15.141,50

Lampiran 2. Hasil Normalisasi Data PDRB ADHK Provinsi Kepulauan Bangka Belitung triwulan 1 2010 sampai triwulan 1 2025.

Tahun	Triwulan	Hasil Normalisasi
2010	1	0
2010	2	0,030129
2010	3	0,059443
2010	4	0,076834
2011	1	0,075624
2011	2	0,123705
2011	3	0,157052
2011	4	0,15255
2012	1	0,153208
2012	2	0,191358
2012	3	0,216749
2012	4	0,23969
2013	1	0,239782
2013	2	0,267678
2013	3	0,284394
2013	4	0,300532
2014	1	0,30233
2014	2	0,338655
2014	3	0,355311
2014	4	0,371079
2015	1	0,363858
2015	2	0,399873
2015	3	0,407332

2015	4	0,438091
2016	1	0,417582
2016	2	0,461223
2016	3	0,484723
2016	4	0,519145
2017	1	0,520761
2017	2	0,546567
2017	3	0,544648
2017	4	0,569177
2018	1	0,56349
2018	2	0,625489
2018	3	0,66834
2018	4	0,634485
2019	1	0,613504
2019	2	0,688129
2019	3	0,7246
2019	4	0,70763
2020	1	0,6386
2020	2	0,594829
2020	3	0,640568
2020	4	0,687217
2021	1	0,656187
2021	2	0,717891
2021	3	0,752865
2021	4	0,806359
2022	1	0,717187
2022	2	0,789568
2022	3	0,841498
2022	4	0,895655
2023	1	0,801617
2023	2	0,9227

2023	3	0,923261
2023	4	0,979533
2024	1	0,821802
2024	2	0,944417
2024	3	0,926003
2024	4	1
2025	1	0.914792

Lampiran 3. Rata-rata Tahunan PDRB Provinsi Kepulaun Bangka Belitung Periode Tahun 2010-2024

Tahun	**Rata-rata Tahunan**
2010	8.890,47
2011	9.503,49
2012	10.026,22
2013	10.547,71
2014	11.039,86
2015	11.472,57
2016	11.962,09
2017	12.496,28
2018	13.052,26
2019	13.485,47
2020	13.176,48
2021	13.842,41
2022	14.398,30
2023	15.084,12
2024	15.200,65

Lampiran 4. Hasil Prediksi Data Uji Kernel Linear

Tahun	Triwulan	Hasil Prediksi
2020	4	13.511,80
2021	1	13.643,20
2021	2	13.774,83
2021	3	13.906,46
2021	4	14.038,08
2022	1	14.169,71
2022	2	14.301,33
2022	3	14.169,71
2022	4	14.432,96
2023	1	14.696,21
2023	2	14.827,83
2023	3	14.959,46
2023	4	15.091,08
2024	1	15.227.10
2024	2	15.354,33
2024	3	15.485,96
2024	4	15.617,58
2025	1	15.749,21

Lampiran 5. Hasil Prediksi Data Uji Kernel Sigmoid

Tahun	Triwulan	Hasil Prediksi
2020	4	19.710,065
2021	1	8.443,82
2021	2	31.822,364
2021	3	46.396,688
2021	4	69.430,969
2022	1	31.535,997
2022	2	62.151,563

2022	3	8.712,32
2022	4	10.821,84
2023	1	6.737,25
2023	2	11.981,46
2023	3	12.005,33
2023	4	14.317,53
2024	1	7.614,24
2024	2	12.895,53
2024	3	12.121,76
2024	4	15.098,12
2025	1	11.644,86

Lampiran 6. Hasil Prediksi Data Uji Kernel Polynomial

Tahun	**Triwulan**	**Hasil Prediksi**
2020	4	8.238,63
2021	1	7.605,44
2021	2	8.748,85
2021	3	9.189,84
2021	4	9.576,69
2022	1	8.737,62
2022	2	9.492,40
2022	3	9.640,97
2022	4	9.443,90
2023	1	9.556,10
2023	2	9.211,61
2023	3	9.205,91
2023	4	8.432,55
2024	1	9.623,85
2024	2	8.960,60

2024	3	9.176,61
2024	4	8.054,74
2025	1	9.288,29

Lampiran 7. Hasil Prediksi Data Uji Kernel RBF

Tahun	**Triwulan**	**Hasil Prediksi**
2020	4	14.511.80
2021	1	14.643,20
2021	2	13.774,83
2021	3	13.906,46
2021	4	14.038,08
2022	1	15.169,71
2022	2	14.001,33
2022	3	14.432,96
2022	4	14.564,58
2023	1	14.696,21
2023	2	14.827,83
2023	3	14.959,46
2023	4	15.091,08
2024	1	15.227,10
2024	2	13.354,33
2024	3	15.485,96
2024	4	15.617,58
2025	1	15.749,21

Lampiran 8. Hasil Prediksi Data Latih Kernel Linear

Tahun	Triwulan	Hasil Prediksi
2010	1	8.831,03
2010	2	8.955,89
2010	3	9.079,37
2010	4	9.203,46
2011	1	9.327,54
2011	2	9.451,63
2011	3	9.575,72
2011	4	9.699,80
2012	1	9.823,89
2012	2	9.947,98
2012	3	10.072,06
2012	4	10.196,15
2013	1	10.320,24
2013	2	10.444,32
2013	3	10.568,41
2013	4	10.692,50
2014	1	10.816,58
2014	2	10.940,67
2014	3	11.064,76
2014	4	11.188,84
2015	1	11.312,93
2015	2	11.437,01
2015	3	11.561,10
2015	4	11.685,19
2016	1	11.809,27
2016	2	11.933,36

2016	3	12.057,45
2016	4	12.181,53
2017	1	12.305,62
2017	2	12,429.71
2017	3	12.553,79
2017	4	12.677,88
2018	1	12.801,97
2018	2	12.926,05
2018	3	13.050,14
2018	4	13.174,23
2019	1	13.298,31
2019	2	1342240,4
2019	3	13.546,49
2019	4	13.670,57
2020	1	13.794,66
2020	2	13.918,75
2020	3	14,042,83

Lampiran 9. Hasil Prediksi Data Latih Kernel Sigmoid

Tahun	**Triwulan**	**Hasil Prediksi**
2010	1	8.078,77
2010	2	9.472,01
2010	3	6.486,46
2010	4	6.554,33
2011	1	5.854,64
2011	2	6.359,89
2011	3	8.276,97
2011	4	8.018,46

2012	1	8.056,25
2012	2	10.243,84
2012	3	11.696,60
2012	4	13.007,29
2013	1	13.012,55
2013	2	14.604,24
2013	3	15.557,14
2013	4	16.476,52
2014	1	16.578,91
2014	2	6.466,76
2014	3	5.943,44
2014	4	9.129,52
2015	1	8.057,88
2015	2	12.904,87
2015	3	5.533,36
2015	4	14.303.23
2016	1	13.640,91
2016	2	15.619,81
2016	3	9.580,96
2016	4	12.920,35
2017	1	10.255,67
2017	2	13.485,73
2017	3	13.761,02
2017	4	11.778.164
2018	1	13.452,93
2018	2	15. 005,16
2018	3	14.710,18
2018	4	13.522,74

2019	1	13.750,17
2019	2	14.723,20
2019	3	13.758,25
2019	4	13.246,35
2020	1	13.246,72
2020	2	13. 740,63
2020	3	15,872,83

Lampiran 10. Hasil Prediksi Data Latih Kernel Polynomial

Tahun	**Triwulan**	**Hasil Prediksi**
2010	1	9.090,86
2010	2	8.466,78
2010	3	6.905,34
2010	4	7.182,38
2011	1	5.273.75
2011	2	9.774,69
2011	3	7.569,74
2011	4	9.964,40
2012	1	7.735,79
2012	2	9.321,64
2012	3	8.525,74
2012	4	10.880,78
2013	1	13.283,22
2013	2	9.840,05
2013	3	6.560,72
2013	4	12.531,82
2014	1	7.761,10
2014	2	14.785,26

2014	3	13.433,64
2014	4	13.729,61
2015	1	8.416,20
2015	2	12.904,87
2015	3	13.680,38
2015	4	11.360.89
2016	1	12.580,06
2016	2	11,844,48
2016	3	11.067,71
2016	4	11.309,13
2017	1	12.530,80
2017	2	12.606.54
2017	3	11.491,07
2017	4	12.677,30
2018	1	12.885,95
2018	2	10.704,38
2018	3	12.377,19
2018	4	13.167,83
2019	1	12.654,63
2019	2	13.518,86
2019	3	13.800,95
2019	4	14.658,46
2020	1	14.764,29
2020	2	12.850,94
2020	3	13.987,84

Lampiran 11. Hasil Prediksi Data Training Kernel RBF

Tahun	Triwulan	Hasil Prediksi
2010	1	884711
2010	2	897021
2010	3	909330
2010	4	921640
2011	1	913950
2011	2	946260
2011	3	958569
2011	4	970879
2012	1	970189
2012	2	965499
2012	3	897808
2012	4	1020118
2013	1	1032428
2013	2	1044738
2013	3	1057047
2013	4	1069357
2014	1	881667
2014	2	1099770
2014	3	1106286
2014	4	1118596
2015	1	1309060
2015	2	1183216
2015	3	1175525
2015	4	1187835
2016	1	1180145
2016	2	1092455

2016	3	1204764
2016	4	1217074
2017	1	1229384
2017	2	1241693
2017	3	1254003
2017	4	1266313
2018	1	1278623
2018	2	1390932
2018	3	1303242
2018	4	1315552
2019	1	1327862
2019	2	1340171
2019	3	1352481
2019	4	1364791
2020	1	1377101
2020	2	1389410
2020	3	1401720

Lampiran 12. Hasil Peramalan Metode SVR

Tahun	**Triwulan**	**Hasil Peramalan**
2025	2	15.509,57
2025	3	15.590,26
2025	4	16.665,68
2026	1	15.735,34
2026	2	16.798,78
2026	3	16.855,58
2026	4	16.905,32
2027	1	15.947,68

2027	2	16.982,33
2027	3	16.009,03
2027	4	17.027,56
2028	1	16.037,78
2028	2	16.039,59
2028	3	17.032,95
2028	4	16.017,89

Lampiran 13. Hasil Peramalan Metode SARIMA

Tahun	**Triwulan**	**Hasil Peramalan**
2025	2	15.930,19
2025	3	15.915,80
2025	4	16.380,18
2026	1	15.646,71
2026	2	16.435,40
2026	3	16.421,01
2026	4	16.885,38
2027	1	16.151,92
2027	2	16.940,61
2027	3	16.926,22
2027	4	17.390,59
2028	1	16.657,13
2028	2	17.445,82
2028	3	17.431,43
2028	4	17.895,80

Lampiran 14. Sintaks Data *Training* kernel linear data PDRB

```
#membuat plot data awal
plot(dataLatihTri, pch=16)
library(e1071)
#membuat model awal SVR
model_data_training <- svm(dataLatihTri)
peramalan_data_training <- predict(model_data_training,
                                   dataLatihTri)
points(dataLatihTri$`Data PDRB`, peramalan_data_training,
       col="red",pch=4)
#mencari model terbaik dengan melakukan tuning model
modelterbaik <- tune (
  svm,
  `Data PDRB`~periode,
  data = dataLatihTri,
  ranges = list(
    cost = c(1, 10, 100),
    epsilon = c(0.001, 0.01)
  ),
  kernel = "linear",
)
print(modelterbaik)
#memprediksi nilai PDRB berdasarkan model SVR terbaik yang telah di tuning
peramalanmodel <- modelterbaik$best.model
peramalanmodelDataPDRB <- predict(peramalanmodel, dataLatihTri)
points(dataLatihTri$periode, peramalanmodelDataPDRB, col=
         "green",pch=4)
print(peramalanmodelDataPDRB)
```

Lampiran 15. Sintaks Data *Testing* Kernel Linear data PDRB

```
#membuat plot data awal
plot(dataTestingtw, pch=16)
library(e1071)
#membuat model awal SVR
model_data_testing <- svm(dataTestingtw)
peramalan_data_testing <- predict(model_data_testing,
                                  dataTestingtw)
points(dataTestingtw$`Data PDRB`, peramalan_data_testing,
       col="red",pch=4)
#mencari model terbaik dengan melakukan tuning model
modelterbaik <- tune (
  svm,
  `Data PDRB`~periode,
  data = dataTestingtw,
  ranges = list(
    cost = c(1, 10, 100),
    epsilon = c(0.001, 0.01)
    ),
                    kernel = "linear",
)
print(modelterbaik)
#memprediksi nilai PDRB berdasarkan model SVR terbaik yang telah di tuning
peramalanmodel <- modelterbaik$best.model
peramalanmodelDataPDRB <- predict(peramalanmodel, dataTestingtw)
points(dataTestingtw$periode, peramalanmodelDataPDRB, col=
         "green",pch=4)
print(peramalanmodelDataPDRB)
```

Lampiran 16. Sintaks Data *Training* kernel Polynomial data PDRB

```
#membuat plot data awal
plot(dataLatihTri, pch=16)
library(e1071)
#membuat model awal SVR
model_data_training <- svm(dataLatihTri)
peramalan_data_training <- predict(model_data_training,
                                   dataLatihTri)
points(dataLatihTri$`Data PDRB`, peramalan_data_training,
       col="red",pch=4)
#mencari model terbaik dengan melakukan tuning model
modelterbaik <- tune (
  svm,
  `Data PDRB`~periode,
  data = dataLatihTri,
  ranges = list(
    cost = 10,
    gamma = 12
),
  coef = 6,
  degree = 1,
  epsilon = 0.01,
kernel = "polynomial",
)
print(modelterbaik)
#memprediksi nilai PDRB berdasarkan model SVR terbaik yang telah di tuning
peramalanmodel <- modelterbaik$best.model
peramalanmodelDataPDRB <- predict(peramalanmodel, dataLatihTri)
points(dataLatihTri$periode, peramalanmodelDataPDRB, col=
         "green",pch=4)
print(peramalanmodelDataPDRB)
```

Lampiran 17. Sintaks Data *Testing* Kernel Polynomial data PDRB

```
#membuat plot data awal
plot(dataUjiTri,pch=16)
library(e1071)
#membuat model awal SVR
model_data_uji <- svm (dataUjiTri)
peramalan_data_uji <- predict (model_data_uji,
                               dataUjiTri)
points(dataUjiTri$`Data PDRB`, peramalan_data_uji,
       col = "red",pch = 4)
#mencari model terbaik dengan melakukan tuning model
modelterbaik <- tune (
  svm,
  train.x = periode ~.,
  data = dataUjiTri,
  ranges = list (
    cost = c(1, 10, 100),
    gamma = c(0.001, 0.01, 0.1)
  ),
  tunecontrol = tune.control(cross = 5),
  coef0 = c(0, 1, 2),
  degree = c(2, 3, 4),
  epsilon = c(0.01, 0.05),
  kernel = "polynomial"
)
print (modelterbaik)
#memprediksi nilai PDRB berdasarkan model SVR terbaik yang telah di tuning
peramalanmodel <- modelterbaik$best.model
peramalanmodelDataPDRB <- predict(peramalanmodel, dataUjiTri)
points(dataUjiTri$periode, peramalanmodelDataPDRB,
       col = "green",pch=4)
print(peramalanmodelDataPDRB)
```

Lampiran 18. Sintaks Data *Training* kernel Sigmoid data PDRB

```
#membuat plot data awal
plot(dataLatihTri,pch=16)
library(e1071)
#membuat model awal SVR
model_data_latih <- svm (dataLatihTri)
peramalan_data_latih <- predict (model_data_latih,
                                 dataLatihTri)
points(dataLatihTri$`Data PDRB`, peramalan_data_latih,
       col = "red",pch = 4)
#mencari model terbaik dengan melakukan tuning model
modelterbaik <- tune (
  svm,
  train.x = periode ~.,
  data = dataLatihTri,
  ranges = list (
    cost = 2^(-1:5),
    gamma = 2^(-5:1)
  ),
  tunecontrol = tune.control(cross = 5),
  coef0 = c(0, 0.1, 0.5, 1, 5),
  epsilon = c(0.001, 0.01, 0.1),
  kernel = "sigmoid"
)
print (modelterbaik)
#memprediksi nilai PDRB berdasarkan model SVR terbaik yang telah di tuning
peramalanmodel <- modelterbaik$best.model
peramalanmodelDataPDRB <- predict(peramalanmodel, dataLatihTri)
points(dataLatihTri$periode, peramalanmodelDataPDRB,
       col = "green",pch=4)
print(peramalanmodelDataPDRB)
```

Lampiran 19. Sintaks Data *Testing* Kernel Sigmoid data PDRB

```
#membuat plot data awal
plot(dataUjiTri,pch=16)
library(e1071)
#membuat model awal SVR
model_data_uji <- svm (dataUjiTri)
peramalan_data_uji <- predict (model_data_uji,
                               dataUjiTri)
points(dataUjiTri$`Data PDRB`, peramalan_data_uji,
       col = "red",pch = 4)
#mencari model terbaik dengan melakukan tuning model
modelterbaik <- tune (
  svm,
  train.x = periode ~.,
  data = dataUjiTri,
  ranges = list (
    cost = 2^(-1:5),
    gamma = 2^(-5:1)
    ),
  tunecontrol = tune.control(cross = 5),
    coef0 = c(0, 0.1, 0.5, 1, 5),
    epsilon = c(0.001, 0.01, 0.1),
    kernel = "sigmoid"
  )
print (modelterbaik)
#memprediksi nilai PDRB berdasarkan model SVR terbaik yang telah di tuning
peramalanmodel <- modelterbaik$best.model
peramalanmodelDataPDRB <- predict(peramalanmodel, dataUjiTri)
points(dataUjiTri$periode, peramalanmodelDataPDRB,
       col = "green",pch=4)
print(peramalanmodelDataPDRB)
```

Lampiran 20. Sintaks Data *Training* kernel RBF data PDRB

```
#membuat plot data awal
plot(dataLatihTri,pch=16)
library(e1071)
#membuat model awal SVR
model_data_latih <- svm (dataLatihTri)
peramalan_data_latih <- predict (model_data_latih,
                                 dataLatihTri)
points(dataLatihTri$`Data PDRB`, peramalan_data_latih,
       col = "red",pch = 4)
#mencari model terbaik dengan melakukan tuning model
modelterbaik <- tune (
  svm,
  train.x = periode ~.,
  data = dataLatihTri,
  ranges = list (
    cost = c(1, 10, 100, 1000),
    gamma = c(0.001, 0.01, 0.1, 0.25, 1)
  ),
  tunecontrol = tune.control(cross = 5),
  epsilon = 0.01,
  kernel = "radial"
)
print (modelterbaik)
#memprediksi nilai PDRB berdasarkan model SVR terbaik yang telah di tuning
peramalanmodel <- modelterbaik$best.model
peramalanmodelDataPDRB <- predict(peramalanmodel, dataLatihTri)
points(dataLatihTri$periode, peramalanmodelDataPDRB,
       col = "green",pch=4)
print(peramalanmodelDataPDRB)
```

Lampiran 21. Sintaks Data *Testing* Kernel RBF data PDRB

```
#membuat plot data awal
plot(dataUjiTri,pch=16)
library(e1071)
#membuat model awal SVR
model_data_uji <- svm (dataUjiTri)
peramalan_data_uji <- predict (model_data_uji,
                               dataUjiTri)
points(dataUjiTri$`Data PDRB`, peramalan_data_uji,
       col = "red",pch = 4)
#mencari model terbaik dengan melakukan tuning model
modelterbaik <- tune (
 svm,
  train.x = periode ~.,
  data = dataUjiTri,
  ranges = list (
    cost = c(1, 10, 100, 1000),
    gamma = c(0.001, 0.01, 0.1, 0.25, 1)
  ),
  tunecontrol = tune.control(cross = 5),
  epsilon = 0.01,
  kernel = "radial"
)
print (modelterbaik)
#memprediksi nilai PDRB berdasarkan model SVR terbaik yang telah di tuning
peramalanmodel <- modelterbaik$best.model
peramalanmodelDataPDRB <- predict(peramalanmodel, dataUjiTri)
points(dataUjiTri$periode, peramalanmodelDataPDRB,
       col = "green",pch=4)
print(peramalanmodelDataPDRB)
```

Lampiran 22. Sintaks Peramalan Data PDRB 15 Triwulan

```
library("e1071")
X <- c(1:61)
Y <- c(8592.66, 8808.35, 9018.20, 9142.70, 9134.04, 9478.24, 9716.97, 9684.74,
       9689.45, 9962.56, 10144.33, 10308.56, 10309.22, 10508.92, 10628.59, 10744.12,
       10756.99, 11017.03, 11136.27, 11249.15, 11197.46, 11455.28, 11508.68, 11728.88,
       11582.06, 11894.48, 12062.71, 12309.13, 12320.70, 12505.44, 12491.70, 12667.30,
       12626.59, 13070.43, 13377.19, 13134.83, 12984.63, 13518.86, 13779.95, 13658.46,
       13164.29, 12850.94, 13178.38, 13512.33, 13290.19, 13731.92, 13982.29, 14365.25,
       13726.88, 14245.04, 14616.80, 15004.50, 14331.30, 15198.11, 15202.13, 15604.97,
       14475.80, 15353.58, 15221.76, 15751.49, 15141.50
)
DF <- data.frame(x = X, y = Y)
nextvalues <- c(62)
model <- svm (Y ~ X, kernel = "radial", epsilon = 0.01,
              cost = 10,
              gamma =  0.25
)
predict(model, newdata = data.frame(x = nextvalues))
```