



Research article

Financial forecasting using stochastic models: reference from multi-commodity exchange of India

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Supplementary

Appendix

This paper comes with a supplementary material containing historical market data of the Natural Gas Futures (Symbol: NATURALGAS, Exchange: MCX) from 1-January-2014 to 30-April-2021. The material is provided in the form of a CSV containing: Open, High, Low, Close, Volume and Total Value of Traded Contracts (in Lacs).

Table 1. Actual and forecasted prices of Natural Gas Futures (Symbol: NATURALGAS, Exchange: MCX) from 1 January 2020 to 30 April 2021 for the selected optimal model i.e., ARMA (1,15).

Month/Date/Year	Actual Close Price	Forecasted Close Price
1/1/2020	155.1	161.3818145
1/2/2020	152.4	155.5493452
1/3/2020	153.5	153.2370289
1/6/2020	153.7	154.0624761
1/7/2020	156.5	154.2683247
1/8/2020	152.7	156.8011608
1/9/2020	153.2	153.3132385
1/10/2020	158.3	153.4343322
1/13/2020	153.9	158.5477676

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Month/Date/Year	Actual Close Price	Forecasted Close Price
1/14/2020	158.8	154.5765927
1/15/2020	151.3	158.7633876
1/16/2020	152.3	152.1837669
1/17/2020	142.8	152.4008323
1/20/2020	137.8	143.8390868
1/21/2020	134.5	138.2881016
1/22/2020	135.9	135.2723669
1/23/2020	138.4	136.4642832
1/24/2020	134.4	138.988622
1/27/2020	137.5	135.1490025
1/28/2020	138.2	137.7334647
1/29/2020	134.6	138.8226258
1/30/2020	131.3	135.2233825
1/31/2020	132.4	131.8578591
2/1/2020	134	132.8796993
2/3/2020	131.1	134.5793449
2/4/2020	133.7	131.7942042
2/5/2020	133	134.0201898
2/6/2020	135.6	133.6659292
2/7/2020	134.2	135.9379721
2/10/2020	126.5	134.8408722
2/11/2020	127.1	127.259456
2/12/2020	131	127.4658197
2/13/2020	132	131.5727454
2/14/2020	132.3	132.6081922
2/17/2020	139.1	132.7601649
2/18/2020	141.5	139.2746062
2/19/2020	140.5	141.9939151
2/20/2020	141.1	140.8934596
2/21/2020	137.4	141.416448
2/24/2020	132.8	138.0127657
2/25/2020	132.5	133.3744737
2/26/2020	134.2	133.0020468
2/27/2020	124.8	134.7566805
2/28/2020	124.3	125.8102741
3/2/2020	127.7	124.653968
3/3/2020	133.7	128.2992175
3/4/2020	134.1	134.105475
3/5/2020	132.5	134.6909986
3/6/2020	129.4	132.9210549
3/9/2020	131.1	129.9367404
3/10/2020	142	131.4817811

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Month/Date/Year	Actual Close Price	Forecasted Close Price
3/11/2020	146	142.1516621
3/12/2020	138.8	146.4822799
3/13/2020	139.8	139.3349572
3/16/2020	136.4	139.9211847
3/17/2020	131	137.1361963
3/18/2020	119.1	131.6354317
3/19/2020	123.6	120.1105421
3/20/2020	122.5	123.8957246
3/23/2020	123.7	123.5288513
3/24/2020	125.4	124.1654517
3/25/2020	126.3	125.9926816
3/26/2020	122.1	126.783454
3/27/2020	129.1	122.7740297
3/30/2020	125.3	129.2305425
3/31/2020	131.4	126.2001233
4/1/2020	127.5	131.4165887
4/3/2020	121.4	128.3927545
4/7/2020	136.7	121.9162079
4/8/2020	144.2	136.4911626
4/9/2020	136.9	144.7599392
4/13/2020	136.3	137.4577562
4/15/2020	125.7	136.4606811
4/16/2020	124.4	126.6636764
4/17/2020	130.9	124.8214041
4/20/2020	134.1	131.4140263
4/21/2020	147.6	134.6972535
4/22/2020	138.6	147.4563346
4/23/2020	139.1	139.4787086
4/24/2020	135.2	138.946219
4/27/2020	135.3	135.881972
4/28/2020	149.6	135.7268026
4/29/2020	143.3	149.5023772
4/30/2020	144.2	144.2608244
5/1/2020	143.6	144.085508
5/4/2020	150.6	143.9966538
5/5/2020	160.2	150.7293871
5/6/2020	149.7	160.2109781
5/7/2020	145.6	150.4660357
5/8/2020	138.9	145.6559056
5/11/2020	137.9	139.7410197
5/12/2020	133.2	138.6015288
5/13/2020	123.1	134.0666454

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Month/Date/Year	Actual Close Price	Forecasted Close Price
5/14/2020	128.6	124.0469101
5/15/2020	126	128.8437989
5/18/2020	139.5	127.0516508
5/19/2020	139.2	139.3097453
5/20/2020	134	139.841223
5/21/2020	128.8	134.3535817
5/22/2020	132.1	129.2163922
5/25/2020	130.5	132.5805061
5/26/2020	136.1	131.3393974
5/27/2020	145.9	136.2346083
5/28/2020	139.9	145.9632017
5/29/2020	135.9	140.6052131
6/1/2020	137.7	136.0270832
6/2/2020	134.7	138.0388742
6/3/2020	136.6	135.5597005
6/4/2020	138	136.9103114
6/5/2020	135.8	138.4375884
6/8/2020	135	136.366843
6/9/2020	133.8	135.3706381
6/10/2020	136.1	134.3379658
6/11/2020	138.4	136.4990014
6/12/2020	133.2	138.8063757
6/15/2020	128.2	133.8536028
6/16/2020	123.7	128.7058276
6/17/2020	123.3	124.4468449
6/18/2020	126.2	124.0165189
6/19/2020	128.1	126.7771897
6/22/2020	125.9	128.6210024
6/23/2020	124.6	126.4151106
6/24/2020	122.9	125.0125196
6/25/2020	112.5	123.5045599
6/26/2020	118	113.5362906
6/29/2020	130	118.2177586
6/30/2020	130.4	130.4004876
7/1/2020	127.9	131.0141499
7/2/2020	129.2	127.9667032
7/3/2020	132.1	129.374286
7/6/2020	133.9	132.569412
7/7/2020	142.3	134.2943777
7/8/2020	139.3	142.2423205
7/9/2020	135.5	139.8197699
7/10/2020	137.4	135.7682282

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Month/Date/Year	Actual Close Price	Forecasted Close Price
7/13/2020	132.9	137.6433123
7/14/2020	132.5	133.7428209
7/15/2020	133.7	132.9128635
7/16/2020	129.4	134.1620365
7/17/2020	128.5	130.156524
7/20/2020	123.2	128.915323
7/21/2020	124.3	123.9958927
7/22/2020	126.1	124.8020591
7/23/2020	134.6	126.6761686
7/24/2020	133.6	134.7771848
7/27/2020	130.5	134.0765106
7/28/2020	132.4	130.7667096
7/29/2020	144.1	132.6047205
7/30/2020	137.6	144.1795501
7/31/2020	135.6	138.3701368
8/3/2020	159.6	135.6272845
8/4/2020	164.1	158.8488969
8/5/2020	163.7	164.4862114
8/6/2020	163.5	163.3612493
8/7/2020	168.3	163.2800174
8/10/2020	160.7	168.3604071
8/11/2020	162.5	161.2833805
8/12/2020	158.6	162.497781
8/13/2020	162.3	159.1731
8/14/2020	176.6	162.4195063
8/17/2020	175.2	176.2728042
8/18/2020	180	175.4474497
8/19/2020	181.7	179.5059707
8/20/2020	178.2	181.602874
8/21/2020	180.6	178.3988395
8/24/2020	188.4	180.4751192
8/25/2020	185.3	188.2212119
8/26/2020	184	185.5432822
8/27/2020	199.1	183.8961439
8/28/2020	193.3	198.4222453
8/31/2020	190.7	193.7091167
9/1/2020	188.7	190.5223302
9/2/2020	182.7	188.7224962
9/3/2020	182	183.1900981
9/4/2020	187.5	182.1943975
9/7/2020	188.1	187.4925019
9/8/2020	180.5	188.277554

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Month/Date/Year	Actual Close Price	Forecasted Close Price
9/9/2020	176.2	180.8328859
9/10/2020	173.3	176.4031678
9/11/2020	168.4	173.7312422
9/14/2020	170.7	169.00673
9/15/2020	174.5	170.9151415
9/16/2020	167	174.6793164
9/17/2020	150.7	167.5746259
9/18/2020	150.5	151.5267021
9/21/2020	134.8	150.9217812
9/22/2020	134.4	136.2577343
9/23/2020	154.2	135.0141558
9/24/2020	165.9	154.112631
9/25/2020	165	166.1815417
9/28/2020	205	164.996165
9/29/2020	188.3	203.0623728
9/30/2020	186.5	188.8847257
10/1/2020	182.6	185.8694291
10/5/2020	195.4	181.8078684
10/6/2020	188.1	194.3635595
10/7/2020	190.5	189.0250305
10/8/2020	193.5	190.256467
10/9/2020	201.8	193.3292718
10/12/2020	213.1	201.1696764
10/13/2020	210.2	212.6195621
10/14/2020	197.3	210.1120612
10/15/2020	203.9	197.3585498
10/16/2020	206.2	203.0992607
10/19/2020	201.2	206.0831324
10/20/2020	214.3	201.532646
10/21/2020	222.9	213.63713
10/22/2020	222.6	222.2808059
10/23/2020	219.6	222.2825489
10/26/2020	221.3	219.2898015
10/27/2020	226.8	220.5407109
10/28/2020	243.9	226.1530178
10/29/2020	246.6	242.8776864
10/30/2020	247.7	246.1623095
11/2/2020	241.9	246.8759894
11/3/2020	229.3	241.3070144
11/4/2020	227.3	228.9948785
11/5/2020	221.7	227.0122357
11/6/2020	214.7	221.9850061

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Month/Date/Year	Actual Close Price	Forecasted Close Price
11/9/2020	212.8	215.1614198
11/10/2020	219.9	213.0760275
11/11/2020	219.2	219.7183874
11/12/2020	225.7	219.429409
11/13/2020	226.5	225.3553666
11/14/2020	223.7	226.2305168
11/16/2020	205	223.3395283
11/17/2020	200	205.4390205
11/18/2020	202.5	199.8205751
11/19/2020	195.1	202.6869553
11/20/2020	196	195.9433206
11/23/2020	201.1	196.4771213
11/24/2020	205.1	201.1232865
11/25/2020	218.8	205.0208034
11/26/2020	216.7	218.3392924
11/27/2020	211.7	216.5717554
11/30/2020	216.7	211.2664758
12/1/2020	211	215.9102646
12/2/2020	209.5	210.8550662
12/3/2020	186.6	209.477384
12/4/2020	190.6	187.5478846
12/7/2020	179.4	190.2507021
12/8/2020	179.2	180.5662058
12/9/2020	182	179.6657556
12/10/2020	190.5	182.7914447
12/11/2020	191.4	190.4669138
12/14/2020	194.8	191.8486153
12/15/2020	195.3	194.5619585
12/16/2020	195.4	195.0640357
12/17/2020	193.9	195.0749185
12/18/2020	197.8	193.8517319
12/21/2020	199.7	197.5069067
12/22/2020	206.8	199.6480608
12/23/2020	191.9	206.438744
12/24/2020	187.5	192.4877885
12/28/2020	168.8	187.1905301
12/29/2020	181.1	169.6291806
12/30/2020	176.6	180.6189628
12/31/2020	182.1	178.2077224
1/1/2021	185.4	182.1980592
1/4/2021	189.5	185.9660743
1/5/2021	198.2	189.0349661

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Month/Date/Year	Actual Close Price	Forecasted Close Price
1/6/2021	201.2	197.8900995
1/7/2021	201.1	200.9401712
1/8/2021	197.7	200.6984841
1/11/2021	196.9	197.3955639
1/12/2021	207.2	196.4434736
1/13/2021	200.3	206.6667395
1/14/2021	197.6	200.8053767
1/15/2021	199.6	197.4052961
1/18/2021	191.6	199.3916124
1/19/2021	187.5	191.8261292
1/20/2021	181	187.8007171
1/21/2021	180.7	181.5344301
1/22/2021	179.7	180.8926811
1/25/2021	186.2	180.3750663
1/27/2021	199.8	186.3451348
1/28/2021	193.7	199.7068817
1/29/2021	191.5	194.1279203
2/1/2021	208.3	191.0704867
2/2/2021	212.5	207.1469092
2/3/2021	204.4	212.1934352
2/4/2021	208.2	204.583695
2/5/2021	215.9	207.4997073
2/8/2021	210.6	214.9278238
2/9/2021	205.1	210.6240759
2/10/2021	211.3	205.2401477
2/11/2021	209.2	210.6899681
2/12/2021	215.3	209.0839915
2/15/2021	218.9	215.0270688
2/16/2021	222.6	218.810196
2/17/2021	235.7	221.9728851
2/18/2021	225.1	234.8348477
2/19/2021	222	225.0853991
2/22/2021	210.5	221.3012798
2/23/2021	209.6	210.55161
2/24/2021	205	209.0658904
2/25/2021	203.7	205.7396964
2/26/2021	205.9	203.9807109
3/1/2021	203.3	206.2465573
3/2/2021	208.9	203.5381524
3/3/2021	207	208.7028426
3/4/2021	200.7	207.1780308
3/5/2021	197.2	200.7473097

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Month/Date/Year	Actual Close Price	Forecasted Close Price
3/8/2021	194.5	197.2638476
3/9/2021	193.7	194.5101978
3/10/2021	195.5	193.9601977
3/11/2021	193.8	195.8088164
3/12/2021	190.5	194.1228561
3/15/2021	181.5	190.7307846
3/16/2021	184.8	181.9294683
3/17/2021	184.4	184.6746992
3/18/2021	181.4	184.8854769
3/19/2021	183.8	181.8827047
3/22/2021	186	184.0679561
3/23/2021	183.2	186.0034122
3/24/2021	183.1	183.4706707
3/25/2021	186.6	183.2251675
3/26/2021	185.8	186.4875114
3/29/2021	192.9	185.9439953
3/30/2021	192.6	192.6990893
3/31/2021	191.1	192.7130331
4/1/2021	194.2	190.9372682
4/5/2021	183.6	193.9606042
4/6/2021	182.8	183.9110538
4/7/2021	189	182.7365015
4/8/2021	186.6	188.9921316
4/9/2021	189.1	186.9724352
4/12/2021	192	189.3302964
4/13/2021	197.6	191.917778
4/14/2021	196.3	197.1819153
4/15/2021	199.5	196.4210739
4/16/2021	200.2	199.0960435
4/19/2021	204.9	199.9735087
4/20/2021	205.5	204.4016831
4/21/2021	202.9	205.4185472
4/22/2021	206.9	202.7246508
4/23/2021	216.4	206.4524158
4/26/2021	207	215.7750157
4/27/2021	213.3	207.3383534
4/28/2021	220.9	212.622617
4/29/2021	214.4	220.2693146
4/30/2021	218	214.3072242



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