Stock Price Prediction Through the Mixture of Gaussian Processes via the Precise Hard-cut EM Algorithm

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Abstract. [illegible]

Keywords: [illegible]

1 Introduction

[illegible] [1], [illegible] [2]. [illegible] [3]. [illegible] [4]), [illegible]

[illegible] [5] [illegible] [6]. [illegible] [7] [illegible]

[illegible] 2016, [illegible] 9773, [illegible] 282–293, 2016.
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[illegible]

2 The Precise Hard-cut EM Algorithm for MGPs

2.1 The MGP Model

[illegible]

2.2 The Precise Hard-cut EM Algorithm

[illegible]

3 Stock Price Prediction

3.1 The General Prediction Model

1, 2, 3, 4 τ 1, 2, 3, 4, fi 700 1 fi [illegible] $/\sigma$, σ, 700 600 100.

3.2 Prediction Results and Comparisons

[illegible] 16 [illegible] fi [illegible] $\hat{y}$ $\hat{y}\sigma$ [illegible]

(1) [illegible] [12] [illegible]

(2) [illegible] [13] [illegible]

(3) [illegible]

[illegible] fi

$$\sqrt{\frac{1}{L}\sum_{t=1}^{L} (\hat{y}_t - \ldots)^2}, \quad (10)$$

[illegible] $\hat{y}_t$ [illegible] 5 [illegible] 16.00 [illegible] 2014 [illegible]

[illegible] fi [illegible]

[illegible] 1. fi [illegible] fi [illegible]

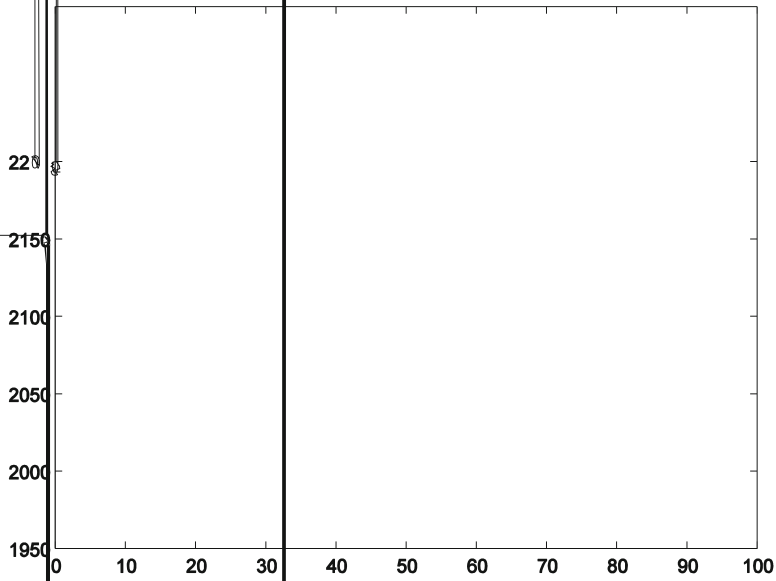
3, τ 1, … [14, 15] … 3, τ 1 … [1] …

Table 1.

	τ								
1	1	21.1933	0.2224	**21.2151**	0.2218	21.2106	**0.2194**	**21.5791**	**0.2204**
1	2	31.8931	0.3174	32.5150	0.3258	31.5769	0.3134	33.4016	0.3188
1	3	38.8945	0.3713	40.4267	0.3864	39.1431	0.3654	41.3143	0.3784
1	4	43.9104	0.4144	45.9821	0.4207	43.8947	0.4030	47.9299	0.4159
2	1	21.2464	0.2192	21.4326	0.2209	21.2879	0.2195	21.8939	0.2216
2	2	32.0199	0.3133	32.8077	0.3428	31.8553	0.3146	33.5479	0.3232
2	3	39.3107	0.3737	41.6617	0.3918	38.0136	0.3556	47.1278	0.3621
2	4	43.7612	0.3940	45.8229	0.4418	43.7895	0.4016	53.1479	0.3975
3	1	**21.0782**	**0.2183**	21.4797	**0.2203**	**21.0879**	0.2206	22.9824	0.2272
3	2	32.0317	0.3192	33.1330	0.3547	31.5318	0.3159	36.3263	0.3126
3	3	39.1218	0.3448	42.0259	0.4089	38.5492	0.3545	43.5631	0.3579
3	4	44.9140	0.3901	52.6917	0.4585	43.7351	0.3726	57.8089	0.4096
4	1	21.1804	0.2225	21.8933	0.2212	21.1461	0.2219	22.9345	0.2341
4	2	33.3603	0.3125	33.3099	0.4030	32.1945	0.3104	38.2823	0.3131
4	3	39.5789	0.3695	43.0564	0.4681	39.1205	0.3586	54.2466	0.3705
4	4	45.9405	0.4067	58.1039	0.5645	45.3620	0.3960	72.0162	0.4536

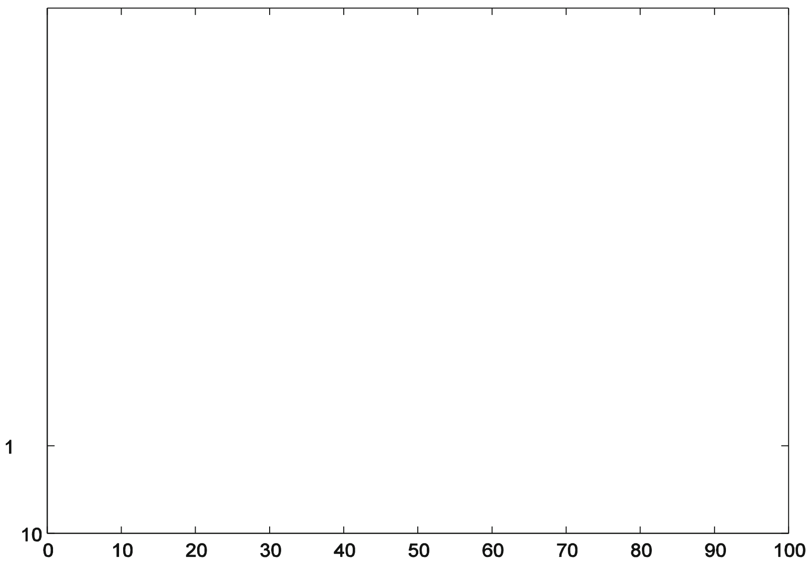
… 600 …

… [2] … [3] … 3 … τ 1, … 100 … 21.0782 … 0.2183 … [1] … ±0.2 … ±0.4 … 2 … 3. … 2. … 6 …



(a)

(b)



(a)

(b)

Table 2. [illegible]

	τ	[illegible]		[illegible]		[illegible]		[illegible]	
		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1	1	59.5766	120.2869	77.7581	103.5980	84.8291	72.0887	6.6121	0.8491
1	2	77.6747	110.2947	66.0087	86.9751	60.2808	86.6801	1.9530	0.5538
1	3	89.4715	105.6588	56.4041	90.7678	71.2045	59.5331	1.3176	1.2327
1	4	110.5455	101.7635	54.8922	87.8987	82.5639	65.4218	0.3662	0.7490
2	1	72.1279	224.2375	88.2539	104.4790	97.8030	105.5201	0.7642	0.5208
2	2	93.3649	140.5822	65.2119	78.5423	122.9084	114.4137	0.7450	0.5049
2	3	112.4934	126.7071	54.1397	89.6782	101.0682	147.6291	1.2788	0.4943
2	4	152.2296	131.7796	55.6939	75.1938	101.6412	134.8176	0.3793	0.5290
3	1	176.9017	211.0905	70.8960	101.1628	129.4165	120.8225	0.7593	0.7829
3	2	115.6750	198.6486	59.2711	76.5386	127.8695	130.1543	1.2261	0.8615
3	3	115.2516	198.8352	64.5232	79.8847	126.0775	130.8770	0.7630	0.6358
3	4	130.5847	180.8102	53.0291	73.4977	117.0582	138.7150	0.3607	0.7125
4	1	247.9665	266.5358	75.6300	86.7739	153.3917	160.6503	1.2926	1.0299
4	2	146.0758	215.2569	57.9361	78.0230	155.2156	169.2637	0.7964	0.7965
4	3	81.0702	255.1925	53.7123	74.4203	155.8308	180.2085	1.2557	0.7503
4	4	129.1127	225.2805	51.6860	76.9758	149.6366	159.0454	1.8375	0.7804

[illegible]

[illegible] 4. [illegible]

[illegible] 2, 3 [illegible] 4 [illegible] $\tau, \ldots, - 2\tau, - \tau$.

[illegible] 1, 2, 3, 4, 5 [illegible] τ [illegible] 1, 2, 3, 4 [illegible] 5. [illegible] 5 [illegible] τ. [illegible] ≥ 3, [illegible] τ [illegible]

(a)

(

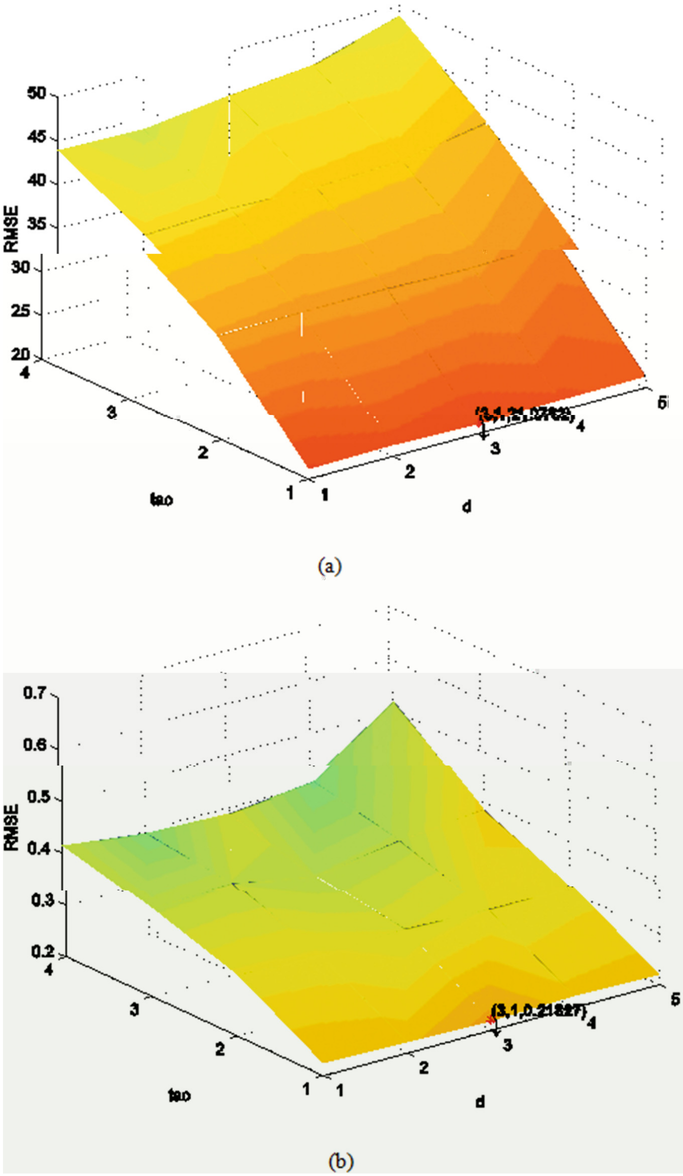


Fig. 5. ( ). [illegible] 100 [illegible] f [illegible] τ. ( ). [illegible] f [illegible] 100 [illegible] f [illegible] τ.

4 Conclusion

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