Appendix On Forecast Stability

Appendix A.

Tables A.1, A.2 and A.3 respectively show the MASE, RMSSE, and sMAPE based accuracy and stability results of vertical stability experiments across the four experimental datasets.

		MASE					M	ASC		MASCJ				
		M4	М3	Favorita	M5	M4	М3	Favorita	M5	M4	М3	Favorita	M5	
N-BEATS	Base	0.6385	0.6431	_	_	0.3073	0.2603	_	_	0.4561	0.3921	_	_	
N-BEATS	Stable	0.6485	0.6391	-	-	0.2532	0.1931	-	-	0.4155	0.3314	-	-	
N-BEATS	PI_0.2	0.6346	0.6423	-	-	0.2762	0.2113	-	-	0.4358	0.3589	-	-	
N-BEATS	PI_0.4	0.6382	0.6450	-	-	0.2239	0.1769	-	-	0.3983	0.3296	-	-	
N-BEATS	PI_0.5	0.6425	0.6478	-	-	0.2099	0.1676	-	-	0.3820	0.3166	-	-	
N-BEATS N-BEATS	PI_0.6 PI_0.8	0.6485 0.6650	0.6515 0.6615	-	-	0.2056 0.2201	0.1639 0.1715	-	-	0.3676 0.3445	0.3048 0.2852	-	-	
N-BEATS N-BEATS	PI_0.8 PI_1	0.6871	0.66748	-	-	0.2201 0.2545	0.1715 0.1924	-	-	0.3445 0.3298	0.2852 0.2710	-	-	
N-BEATS	FI_0.2	0.6343	0.6419			0.2754	0.2098			0.4299	0.3538			
N-BEATS	FI_0.4	0.6374	0.6439	-	-	0.2098	0.1632	_	_	0.3691	0.3050	_	_	
N-BEATS	FI0.5	0.6424	0.6466	-	-	0.1785	0.1403	-	-	0.3317	0.2744	-	-	
N-BEATS	FI_0.6	0.6505	0.6512	-	-	0.1473	0.1169	-	-	0.2875	0.2381	-	-	
N-BEATS	FI_0.8	0.6826	0.6700	-	-	0.0815	0.0659	-	-	0.1713	0.1420	-	-	
N-BEATS	FI_1	0.7532	0.7164	-	-	0.0000	0.0000	-	-	0.0000	0.0000	-	-	
PR	Base	0.7911	0.7552	0.7737	1.3569	0.2186	0.1901	0.1666	0.4012	0.3721	0.2875	0.1966	0.6465	
PR	PI_0.2	0.7983	0.7593	0.7715	1.3493	0.1969	0.1574	0.1313	0.3123	0.3546	0.2597	0.1740	0.6063	
PR	PI_0.4	0.8075	0.7650	0.7705	1.3465	0.1695	0.1319	0.1022	0.2512	0.3231	0.2344	0.1540	0.5735	
PR	PI_0.5	0.8128	0.7684	0.7704	1.3469	0.1604	0.1236	0.0932	0.2371	0.3084	0.2230	0.1452	0.5604	
PR PR	PI_0.6 PI_0.8	0.8186 0.8316	0.7721 0.7807	0.7707 0.7723	1.3485 1.3555	0.1546 0.1520	0.1188 0.1188	0.0881 0.0883	0.2355 0.2653	0.2946 0.2699	0.2123 0.1940	0.1373 0.1250	0.5496 0.5357	
PR	PI_1	0.8465	0.7908	0.7723 0.7752	1.3674	0.1520 0.1596	0.1186	0.1010	0.2055 0.3261	0.2699 0.2497	0.1940	0.1250 0.1187	0.5325	
PR	FI_0.2	0.3403	0.7598	0.7713	1.3485	0.1948	0.1260	0.1010	0.3122	0.2497	0.1504	0.1717	0.6010	
PR	FI_0.4	0.8108	0.7676	0.7699	1.3426	0.1569	0.1233	0.0983	0.2352	0.2990	0.2168	0.1432	0.5455	
PR	FI_0.5	0.8189	0.7731	0.7696	1.3404	0.1368	0.1065	0.0824	0.1997	0.2676	0.1931	0.1267	0.5099	
PR	FI_0.6	0.8291	0.7800	0.7699	1.3387	0.1153	0.0889	0.0669	0.1652	0.2309	0.1657	0.1081	0.4650	
PR	FI_0.8	0.8589	0.7999	0.7723	1.3398	0.0657	0.0497	0.0354	0.0945	0.1358	0.0964	0.0624	0.3217	
PR	FI_1	0.9111	0.8332	0.7796	1.3875	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LightGBM	Base	0.8540	0.7664	0.9142	1.3416	0.2815	0.2395	0.1520	0.2728	0.4452	0.3504	0.2274	0.5206	
LightGBM	PI_0.2	0.8580	0.7692	0.9180	1.3399	0.2608	0.1941	0.1251	0.2203	0.4255	0.3180	0.2049	0.4936	
LightGBM	PI_0.4	0.8664	0.7745	0.9226	1.3408	0.2154	0.1603	0.1035	0.1842	0.3869	0.2894	0.1842	0.4711	
LightGBM	PI_0.5	0.8723	0.7782	0.9251	1.3420	0.2016	0.1502	0.0961	0.1752	0.3696	0.2766	0.1747	0.4613	
LightGBM LightGBM	PI_0.6 PI_0.8	0.8792 0.8960	0.7825 0.7930	0.9277 0.9334	1.3436 1.3485	0.1957 0.2022	0.1459 0.1514	0.0917 0.0901	0.1759 0.1931	0.3539 0.3272	0.2649 0.2452	0.1658 0.1499	0.4525 0.4383	
LightGBM	PI_1	0.9165	0.7950	0.9397	1.3561	0.2022	0.1698	0.0965	0.1951 0.2267	0.3084	0.2432 0.2313	0.1433 0.1372	0.4303 0.4304	
LightGBM	FI_0.2	0.8585	0.7696	0.9184	1.3395	0.2594	0.1931	0.1243	0.2186	0.4196	0.3136	0.2022	0.4890	
LightGBM	FI_0.4	0.8693	0.7767	0.9249	1.3392	0.2023	0.1503	0.0977	0.1705	0.3585	0.2679	0.1713	0.4479	
LightGBM	FI0.5	0.8777	0.7823	0.9291	1.3396	0.1738	0.1291	0.0842	0.1473	0.3210	0.2399	0.1527	0.4202	
LightGBM	FI_0.6	0.8890	0.7897	0.9342	1.3406	0.1445	0.1074	0.0702	0.1240	0.2773	0.2071	0.1312	0.3843	
LightGBM LightGBM	FI_0.8 FI_1	0.9244 0.9904	0.8131 0.8574	0.9482 0.9698	1.3471 1.3903	0.0804 0.0000	0.0599 0.0000	0.0391 0.0000	0.0735 0.0000	0.1638 0.0000	0.1222 0.0000	0.0766 0.0000	0.2665 0.0000	
LightGDM	1.1-1	0.3304	0.0014	0.9090	1.5505	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
ETS	Base	0.6558	0.6169	0.7744	1.2669	0.2631	0.2091	0.0920	0.1731	0.4529	0.3371	0.1410	0.3349	
ETS	PI_0.2	0.6574	0.6175	0.7742	1.2668	0.2424	0.1711	0.0752	0.1424	0.4395	0.3106	0.1291	0.3172	
ETS	PI_0.4	0.6644 0.6698	0.6214	0.7745	1.2678	0.2072	0.1449	0.0634	0.1223	0.4048	0.2866	0.1184	0.3020	
ETS ETS	PI_0.5 PI_0.6	0.6764	0.6245 0.6283	0.7749 0.7754	1.2688 1.2701	0.1974 0.1933	0.1382 0.1365	0.0602 0.0587	0.1176 0.1167	0.3889 0.3742	0.2756 0.2654	0.1136 0.1091	0.2955 0.2898	
ETS	PI_0.8	0.6704	0.6382	0.7769	1.2736	0.1935 0.1987	0.1303 0.1428	0.0604	0.1167 0.1259	0.3486	0.2654 0.2476	0.1091	0.2898	
ETS	PI_1	0.7128	0.6505	0.7790	1.2783	0.2180	0.1582	0.0668	0.1462	0.3290	0.2337	0.0960	0.2757	
ETS	FI_0.2	0.6568	0.6173	0.7740	1.2666	0.2397	0.1697	0.0746	0.1410	0.4333	0.3061	0.1273	0.3140	
ETS	FI0.4	0.6634	0.6212	0.7740	1.2671	0.1895	0.1334	0.0582	0.1115	0.3748	0.2655	0.1096	0.2858	
ETS	FI_0.5	0.6697	0.6250	0.7741	1.2677	0.1643	0.1155	0.0501	0.0969	0.3377	0.2396	0.0986	0.2671	
ETS	FI_0.6	0.6792	0.6307	0.7744	1.2689	0.1381	0.0970	0.0419	0.0818	0.2934	0.2085	0.0855	0.2431	
ETS ETS	FI_0.8 FI_1	0.7145 0.7901	0.6520 0.6997	0.7760 0.7822	1.2746 1.3011	0.0791 0.0000	0.0556 0.0000	0.0237 0.0000	0.0483 0.0000	0.1753 0.0000	0.1250 0.0000	0.0509 0.0000	$0.1670 \\ 0.0000$	
110	1.1-1	0.7901	0.0551	0.1022	1.5011	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
ARIMA	Base	0.6358	0.6179	0.7847	1.2881	0.2761	0.2097	0.0997	0.1528	0.4377	0.3330	0.1261	0.3073	
ARIMA	PI_0.2	0.6371	0.6179	0.7835	1.2883	0.2265	0.1712	0.0793	0.1242	0.4011	0.3054	0.1124	0.2907	
ARIMA	PI_0.4	0.6437	0.6216	0.7832	1.2894	0.1919	0.1446	0.0638	0.1050	0.3680	0.2805	0.1003	0.2762	
ARIMA ARIMA	PI_0.5 PI_0.6	0.6489 0.6552	0.6247 0.6285	0.7833 0.7836	1.2903 1.2914	0.1818 0.1775	0.1373 0.1347	0.0587 0.0560	$0.1000 \\ 0.0984$	0.3529 0.3390	0.2692 0.2586	0.0949 0.0901	0.2699 0.2644	
ARIMA	PI_0.8	0.6552 0.6708	0.0285 0.6386	0.7848	1.2914	0.1775	0.1347 0.1394	0.0563	0.0984 0.1054	0.3390	0.2300	0.0901 0.0825	0.2544 0.2556	
ARIMA	PI_1	0.6902	0.6516	0.7868	1.2986	0.2014	0.1546	0.0637	0.1034	0.2968	0.2268	0.0782	0.2503	
ARIMA	FI_0.2	0.6369	0.6177	0.7834	1.2883	0.2245	0.1698	0.0791	0.1234	0.3954	0.3012	0.1109	0.2880	
ARIMA	FI0.4	0.6440	0.6215	0.7827	1.2894	0.1768	0.1335	0.0601	0.0972	0.3409	0.2601	0.0932	0.2627	
ARIMA	FI0.5	0.6507	0.6253	0.7826	1.2905	0.1529	0.1155	0.0509	0.0845	0.3067	0.2342	0.0828	0.2458	
ARIMA	FI_0.6	0.6605	0.6311	0.7827	1.2921	0.1283	0.0969	0.0417	0.0716	0.2660	0.2034	0.0709	0.2243	
ARIMA	FI_0.8	0.6949	0.6523	0.7840	1.2985	0.0730	0.0553	0.0224	0.0430	0.1584	0.1214	0.0413	0.1548	
ARIMA	FI_1	0.7652	0.6996	0.7886	1.3242	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Table A.2: RMSSE, RMSSC and RMSSC_I results of vertical stability experiments.

		RMSSE					RM	ISSC		RMSSCJ				
		M4	М3	Favorita	M5	M4	М3	Favorita	M5	M4	М3	Favorita	M5	
N-BEATS	Base	0.5607	0.5929	_	_	0.2341	0.2112	_	_	0.3781	0.3456	_	_	
N-BEATS	Stable	0.5664	0.5900	-	-	0.1814	0.1573	-	-	0.3469	0.2948	-	-	
N-BEATS	PI_0.2	0.5574	0.5921	-	-	0.2214	0.1723	-	-	0.3742	0.3202	-	-	
N-BEATS	PI_0.4	0.5600	0.5945	-	-	0.1813	0.1464	-	-	0.3467	0.2984	-	-	
N-BEATS	PI_0.5	0.5634	0.5968	-	-	0.1711	0.1399	-	-	0.3354	0.2892	-	-	
N-BEATS	PI_0.6	0.5682	0.5999	-	-	0.1688	0.1381	-	-	0.3261	0.2813	-	-	
N-BEATS	PI_0.8	0.5813	0.6083	-	-	0.1863	0.1481	-	-	0.3139	0.2698	-	-	
N-BEATS N-BEATS	PI_1 FI_0.2	0.5989 0.5571	0.6193	-	-	0.2266 0.2206	0.1739 0.1708	-	-	0.3115	0.2652 0.3157		-	
N-BEATS	FI_0.2 FI_0.4	0.5593	0.5918 0.5936	_	-	0.2200	0.1708	-	-	0.3095 0.3218	0.3137 0.2765	_	_	
N-BEATS	FI_0.4	0.5631	0.5960	_	_	0.1442	0.1161	_	_	0.3218	0.2703 0.2512	_	_	
N-BEATS	FI_0.6	0.5696	0.5999	_	-	0.1197	0.0976	_	_	0.2556	0.2203	_	-	
N-BEATS	FI_0.8	0.5959	0.6165	_	-	0.0674	0.0563	_	_	0.1561	0.1347	_	-	
N-BEATS	FI_1	0.6577	0.6584	-	-	0.0000	0.0000	-	-	0.0000	0.0000	-	-	
PR	Base	0.6896	0.6886	0.5863	1.0086	0.1683	0.1527	0.1062	0.2514	0.3297	0.2543	0.1333	0.4365	
PR	PI_0.2	0.6943	0.6914	0.5848	1.0035	0.1003	0.1327	0.1002	0.2314	0.3297	0.2328	0.1333	0.4303	
PR	PI_0.4	0.0943 0.7009	0.6914 0.6955	0.5843	1.0035	0.1490 0.1311	0.1273	0.0661	0.1973 0.1613	0.3004 0.2781	0.2328 0.2136	0.1192 0.1070	0.4110	
PR	PI_0.5	0.7047	0.6980	0.5844	1.0018	0.1311	0.1030	0.0606	0.1529	0.2680	0.2050	0.1017	0.3839	
PR	PI_0.6	0.7047	0.7009	0.5847	1.0018	0.1233 0.1220	0.1029	0.0576	0.1529 0.1518	0.2586	0.2030 0.1973	0.1017	0.3639 0.3778	
PR	PI_0.8	0.7030	0.7076	0.5861	1.0023	0.1231	0.1000	0.0570	0.1702	0.2428	0.1375	0.0905	0.3708	
PR	PI_1	0.7303	0.7157	0.5885	1.0151	0.1231	0.1027	0.0698	0.2105	0.2425 0.2315	0.1764	0.0884	0.3717	
PR	FI_0.2	0.6947	0.6917	0.5848	1.0029	0.1478	0.1262	0.0838	0.1970	0.2961	0.2295	0.1177	0.4082	
PR	FI_0.4	0.7028	0.6972	0.5841	0.9988	0.1206	0.1202	0.0631	0.1501	0.2576	0.1977	0.0995	0.3734	
PR	FI_0.5	0.7086	0.7012	0.5841	0.9972	0.1061	0.0878	0.0532	0.1282	0.2329	0.1778	0.0888	0.3508	
PR	FI_0.6	0.7159	0.7063	0.5845	0.9960	0.0904	0.0740	0.0435	0.1068	0.2031	0.1542	0.0765	0.3221	
PR	FI_0.8	0.7386	0.7218	0.5871	0.9962	0.0530	0.0424	0.0234	0.0620	0.1224	0.0919	0.0452	0.2270	
PR	FI_{-1}	0.7814	0.7497	0.5940	1.0267	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
LightCDM	Daga	0.7202	0.7002	0.6219	0.0071	0.2242	0.2020	0.0052	0.1706	0.2947	0.2155	0.1461	0.2550	
LightGBM	Base	0.7392	0.7003	0.6312	0.9871	0.2243	0.2028	0.0952	0.1796	0.3847	0.3155	0.1461	0.3550	
LightGBM	PI_0.2	0.7412	0.7018	0.6324	0.9853	0.2091	0.1641	0.0778	0.1444	0.3694	0.2895	0.1326	0.3372	
LightGBM LightGBM	PI_0.4 PI_0.5	0.7471 0.7515	0.7058 0.7087	0.6340 0.6351	0.9852 0.9858	0.1745 0.1645	0.1366 0.1289	0.0644 0.0600	0.1212 0.1158	0.3404 0.3281	0.2671 0.2575	0.1205 0.1151	0.3227 0.3168	
LightGBM	PI_0.6	0.7515 0.7567	0.7087	0.6362	0.9869	0.1645 0.1606	0.1269 0.1262	0.0576	0.1158 0.1157	0.3261 0.3173	0.2373 0.2492	0.1101	0.3118	
LightGBM	PI_0.8	0.7697	0.7121	0.6389	0.9903	0.1706	0.1202 0.1350	0.0570	0.1137	0.3013	0.2452 0.2367	0.1102	0.3050	
LightGBM	PI_1	0.7859	0.7314	0.6420	0.9955	0.2001	0.1589	0.0660	0.1536	0.2940	0.2310	0.1022	0.3031	
LightGBM	FI_0.2	0.7415	0.7020	0.6325	0.9850	0.2078	0.1632	0.0774	0.1434	0.3644	0.2856	0.1309	0.3342	
LightGBM	FI_0.4	0.7486	0.7070	0.6349	0.9838	0.1628	0.1275	0.0607	0.1117	0.3159	0.2477	0.1122	0.3075	
LightGBM	FI_0.5	0.7546	0.7112	0.6366	0.9835	0.1405	0.1099	0.0523	0.0966	0.2855	0.2238	0.1008	0.2895	
LightGBM	FI_0.6	0.7629	0.7169	0.6388	0.9836	0.1177	0.0920	0.0437	0.0815	0.2491	0.1953	0.0873	0.2662	
LightGBM	FI_0.8	0.7905	0.7359	0.6453	0.9864	0.0669	0.0523	0.0246	0.0487	0.1507	0.1181	0.0522	0.1879	
LightGBM	FI_1	0.8467	0.7745	0.6570	1.0139	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
ETS	Base	0.5713	0.5690	0.5670	0.9332	0.2025	0.1677	0.0526	0.1017	0.3931	0.2994	0.0900	0.2123	
ETS	PI_0.2	0.5724	0.5695	0.5670	0.9331	0.1845	0.1384	0.0435	0.0839	0.3713	0.2788	0.0835	0.2022	
ETS	PI_0.4	0.5778	0.5728	0.5673	0.9337	0.1607	0.1195	0.0374	0.0727	0.3471	0.2609	0.0778	0.1936	
ETS	PI_0.5	0.5820	0.5754	0.5676	0.9343	0.1544	0.1149	0.0359	0.0701	0.3366	0.2531	0.0754	0.1901	
ETS	PI_0.6	0.5871	0.5786	0.5679	0.9351	0.1523	0.1140	0.0353	0.0698	0.3272	0.2462	0.0732	0.1870	
ETS	PI_0.8	0.5996	0.5867	0.5690	0.9372	0.1603	0.1220	0.0372	0.0757	0.3126	0.2356	0.0699	0.1826	
ETS	PI_1	0.6150	0.5969	0.5704	0.9400	0.1834	0.1411	0.0428	0.0889	0.3050	0.2301	0.0682	0.1807	
ETS	FI_0.2	0.5721	0.5694	0.5669	0.9330	0.1822	0.1370	0.0430	0.0830	0.3662	0.2750	0.0824	0.2002	
ETS	FI_0.4	0.5775	0.5729	0.5671	0.9332	0.1460	0.1092	0.0341	0.0661	0.3220	0.2421	0.0722	0.1838	
ETS	FI_0.5	0.5827	0.5762	0.5673	0.9335	0.1277	0.0954	0.0297	0.0577	0.2931	0.2205	0.0655	0.1727	
ETS	FI_0.6	0.5903	0.5812	0.5677	0.9341	0.1085	0.0810	0.0251	0.0490	0.2575	0.1939	0.0575	0.1583	
ETS	FI_0.8	0.6190	0.6000	0.5694	0.9370	0.0638	0.0477	0.0146	0.0295	0.1579	0.1192	0.0351	0.1110	
ETS	FI_1	0.6837	0.6434	0.5741	0.9524	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
ARIMA	Base	0.5568	0.5690	0.5732	0.9510	0.2114	0.1717	0.0644	0.0958	0.3689	0.2993	0.0855	0.2025	
ARIMA	PI_0.2	0.5576	0.5690	0.5724	0.9509	0.1749	0.1413	0.0514	0.0782	0.3420	0.2775	0.0766	0.1924	
ARIMA	PI_0.4	0.5626	0.5721	0.5721	0.9514	0.1508	0.1215	0.0416	0.0666	0.3183	0.2584	0.0689	0.1837	
ARIMA	PI_0.5	0.5666	0.5748	0.5722	0.9519	0.1442	0.1162	0.0384	0.0635	0.3080	0.2500	0.0656	0.1800	
ARIMA	PI_0.6	0.5714	0.5780	0.5724	0.9526	0.1417	0.1144	0.0367	0.0626	0.2988	0.2426	0.0628	0.1769	
ARIMA	PI_0.8	0.5834	0.5864	0.5733	0.9544	0.1488	0.1209	0.0376	0.0670	0.2846	0.2310	0.0588	0.1722	
ARIMA	PI_1	0.5983	0.5971	0.5748	0.9569	0.1708	0.1394	0.0440	0.0790	0.2773	0.2252	0.0576	0.1699	
ARIMA	FI_0.2	0.5575	0.5689	0.5723	0.9509	0.1730	0.1399	0.0512	0.0776	0.3373	0.2738	0.0756	0.1907	
ARIMA	FI_0.4	0.5629	0.5722	0.5718	0.9513	0.1379	0.1114	0.0392	0.0614	0.2954	0.2400	0.0641	0.1751	
ARIMA	FI_0.5	0.5681	0.5756	0.5718	0.9518	0.1203	0.0971	0.0333	0.0535	0.2683	0.2181	0.0573	0.1647	
ARIMA	FI_0.6	0.5757	0.5807	0.5719	0.9525	0.1019	0.0823	0.0274	0.0455	0.2352	0.1913	0.0494	0.1512	
ARIMA	FI_0.8	0.6034	0.5999	0.5730	0.9556	0.0595	0.0481	0.0149	0.0276	0.1436	0.1170	0.0293	0.1064	
ARIMA	FI_1	0.6637	0.6436	0.5767	0.9699	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	

Table A.3: sMAPE, sMAPC and sMAPC I results of vertical stability experiments.

		sMAPE				sl	MAPC	sMAPC_I					
		M4	М3	Favorita	M5	M4	М3	Favorita	M5	M4	М3	Favorita	M
N-BEATS	Base	9.296	11.485	_	_	4.717	3.932	-	_	6.468	5.786	-	
N-BEATS	Stable	9.279	11.390	-	-	3.336	2.820	-	-	5.270	4.705	-	
N-BEATS	PI_0.2	9.265	11.461	-	-	3.745	3.181	-	-	5.886	5.288	-	
N-BEATS	PI_0.4	9.324	11.484	-	-	3.050	2.649	-	-	5.386	4.850	-	
N-BEATS	PI_0.5	9.384	11.511	-	-	2.865	2.508	-	-	5.169	4.657	-	
N-BEATS N-BEATS	PI_0.6 PI_0.8	9.464 9.677	11.553 11.673	-	-	2.808 2.998	2.451 2.569	-	-	4.976 4.665	4.485 4.202	-	
N-BEATS	PI_1	9.077	11.831		_	3.450	2.889	-	_	4.462	4.202	_	
N-BEATS	FI_0.2	9.261	11.454			3.732	3.158			5.806	5.212		
N-BEATS	FI_0.4	9.318	11.458	_	_	2.851	2.444	_	_	4.991	4.483	_	
N-BEATS	FI_0.5	9.390	11.478	-	-	2.429	2.095	-	-	4.489	4.029	-	
N-BEATS	FI_0.6	9.502	11.518	-	-	2.008	1.743	-	-	3.897	3.492	-	
N-BEATS	FI_0.8	9.919	11.703	-	-	1.119	0.977	-	-	2.339	2.082	-	
N-BEATS	FI_1	10.806	12.219	-	-	0.000	0.000	-	-	0.000	0.000	-	
PR	Base	10.632	12.622	103.351	54.964	3.245	3.518	29.190	17.559	5.282	4.896	36.772	26.87
PR	PI_0.2	10.713	12.638	103.255	54.579	2.743	2.880	24.303	13.857	4.817	4.407	33.580	25.22
PR	PI_0.4	10.822	12.680	103.173	54.392	2.350	2.385	20.319	11.260	4.390	3.971	30.665	23.89
PR	PI_0.5	10.886	12.712	103.196	54.374	2.221	2.222	19.011	10.650	4.192	3.777	29.261	23.36
PR PR	PI_0.6 PI_0.8	10.956 11.116	$12.751 \\ 12.851$	103.269 103.566	54.406 54.629	2.142 2.118	2.132 2.154	18.160 17.694	10.565 11.810	4.007 3.679	$3.604 \\ 3.317$	27.930 25.568	22.93 22.39
PR PR	PI_0.8 PI_1	11.110	12.831	103.300	55.087	2.118	2.134	18.739	14.375	3.418	3.128	23.677	22.39 22.27
PR	FI_0.2	10.720	12.638	103.627	54.532	2.715	2.858	24.670	13.856	4.748	4.341	33.216	24.99
PR	FI_0.4	10.860	12.685	103.530	54.162	2.177	2.217	19.386	10.504	4.064	3.661	28.954	22.72
PR	FI_0.5	10.957	12.726	103.563	53.987	1.893	1.894	16.809	8.925	3.640	3.253	26.342	21.26
PR	FI_0.6	11.080	12.783	103.673	53.812	1.594	1.565	13.911	7.361	3.144	2.786	23.174	19.44
PR	FI_0.8	11.448	12.972	104.248	53.556	0.909	0.856	8.077	4.213	1.860	1.618	14.923	13.66
PR	FI_1	12.103	13.333	105.775	54.936	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
LightGBM	Base	11.125	12.653	101.341	52.207	3.566	3.478	13.216	9.992	5.450	4.887	18.787	17.96
LightGBM	PI_0.2	11.211	12.680	101.229	52.100	2.950	2.812	10.796	8.108	4.939	4.412	16.703	16.99
LightGBM	PI_0.4	11.332	12.738	101.171	52.081	2.466	2.304	8.846	6.792	4.479	3.996	14.821	16.20
LightGBM	PI_0.5	11.405	12.779	101.155	52.092	2.307 2.223	2.146	8.146	6.445	4.270	3.813	13.963 13.163	15.86 15.55
LightGBM LightGBM	PI_0.6 PI_0.8	11.487 11.673	$12.827 \\ 12.944$	101.149 101.164	52.116 52.209	2.223	2.072 2.146	7.686 7.359	6.466 7.063	4.077 3.744	3.648 3.375	13.163	15.05
LightGBM	PI_1	11.889	13.089	101.104	52.398	2.440	2.417	7.697	8.259	3.496	3.190	10.659	14.79
LightGBM	FI_0.2	11.221	12.683	101.214	52.079	2.929	2.798	10.701	8.029	4.868	4.349	16.457	16.82
LightGBM	FI_0.4	11.386	12.757	101.120	51.988	2.310	2.165	8.257	6.264	4.144	3.693	13.698	15.36
LightGBM	FI_0.5	11.503	12.815	101.086	51.946	1.993	1.852	7.025	5.398	3.701	3.297	12.087	14.39
LightGBM					51.907		1.533	5.768	4.523			10.274	13.13
LightGBM	FI_0.8	12.087	13.136	101.107	51.888	0.929	0.845	3.095	2.636	1.868	1.665	5.861	9.06
LightGBM	FI_1	12.827	13.610	101.323	52.690	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00
ETS	Base	9.984	11.344	104.820	50.866	3.916	3.210	14.192	6.450	6.995	5.011	20.956	11.68
ETS	PI_0.2	10.007	11.332	104.752	50.823	3.652	2.623	12.224	5.375	6.632	4.615	19.505	11.08
ETS	PI_0.4	10.114	11.369	104.742	50.821	3.153	2.213	10.764	4.682	6.130	4.265	18.117	10.56
ETS ETS	PI_0.5 PI_0.6	10.195 10.291	11.404 11.449	104.762 104.799	50.834 50.858	3.015 2.960	2.101 2.077	$10.332 \\ 10.072$	4.520 4.488	5.900 5.686	4.106 3.958	$17.454 \\ 16.817$	10.33 10.13
ETS	PI_0.8	10.530	11.572	104.733	50.937	3.038	2.186	10.072	4.778	5.306	3.702	15.616	9.82
ETS	PI_1	10.823	11.735	105.120	51.059	3.292	2.432	10.328	5.460	4.996	3.500	14.373	9.6
ETS	FI_0.2	9.995	11.328	104.732	50.811	3.601	2.600	12.106	5.313	6.538	4.552	19.279	10.90
ETS	FI_0.4	10.086	11.356	104.653	50.768	2.862	2.042	9.982	4.248	5.682	3.958	17.022	10.00
ETS	FI0.5	10.175	11.392	104.621	50.751	2.488	1.764	8.833	3.707	5.137	3.581	15.560	9.35
ETS	FI_0.6	10.312	11.451	104.600	50.737	2.101	1.480	7.612	3.131	4.485	3.128	13.820	8.55
ETS	FI_0.8	10.831	11.695	104.630	50.750	1.229	0.854	4.620	1.848	2.733	1.909	8.957	5.89
ETS	FI_1	11.949	12.303	105.123	51.212	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.0
ARIMA	Base	9.536	11.432	103.635	51.050	3.975	3.136	12.386	5.457	6.295	4.891	15.665	10.4
ARIMA	PI_0.2	9.552	11.422	103.460	51.018	3.266	2.564	10.135	4.489	5.774	4.471	14.095	9.8
ARIMA	PI_0.4	9.644	11.461	103.366	51.017	2.780	2.163	8.294	3.832	5.305	4.097	12.704	9.38
ARIMA	PI_0.5	9.716	11.496	103.352	51.029	2.642	2.046	7.667	3.657	5.091	3.929	12.072	9.10
ARIMA	PI_0.6	9.803	11.541	103.362	51.048	2.583	1.998	7.354	3.606	4.893	3.773	11.485	8.9
ARIMA	PI_0.8 PI_1	10.019 10.286	11.662 11.821	103.441 103.624	51.111 51.206	2.651 2.914	2.058 2.275	7.347 7.906	3.837 4.428	4.549 4.288	3.506 3.311	10.495 9.690	8.6
ARIMA ARIMA	FI_0.2	9.548	11.821	103.624	51.206	3.232	2.275	10.055	4.428	5.691	4.409	13.923	8.50 9.78
ARIMA ARIMA	FI_0.2 FI_0.4	9.548	11.418	103.443	50.990	3.232 2.547	$\frac{2.539}{1.993}$	7.805	3.535	4.912	3.798	13.923	8.9
ARIMA	FI_0.4	9.733	11.488	103.248	50.986	2.205	1.722	6.715	3.084	4.422	3.417	10.689	8.34
ARIMA	FI_0.6	9.865	11.547	103.214	50.987	1.852	1.442	5.590	2.623	3.840	2.965	9.323	7.6
ARIMA	FI_0.8	10.329	11.780	103.245	51.038	1.059	0.820	3.203	1.593	2.301	1.771	5.865	5.28
ΔΡΙΜΔ	FI 1	11 278	19 3/10	103 636	51 487	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.00

ARIMA

 $FI_1 \quad 11.278 \quad 12.340 \quad 103.636 \quad 51.487 \quad 0.000 \quad 0.000$

0.000

 $0.000 \quad 0.000 \quad 0.000$

0.000

0.000

Tables A.4, A.5 and A.6 respectively show the MASE, RMSSE, and sMAPE based accuracy and stability results of horizontal stability experiments across the four experimental datasets.

N.				M	IASE			N	IASC		MASC_I				
N. NEATS P. P. P. 1.			——————————————————————————————————————			M5	——————————————————————————————————————			M5				M5	
N. NEATS P. P. P. 1.	N_BEATS	Raca	0.7264	0.6754		_	0.3540	0.4835			0.6014	0.6800		_	
NeBext Piol															
Nemator Nema					-	-			-	-			-	-	
NBBATN PLO 0.712	N-BEATS	PI0.5	0.7307	0.6762	-	-	0.3536	0.4769	-	-	0.5990	0.6883	-	-	
NBEANS PLI 2					-	-			-	-			-	-	
NBBATN FILE 0.7599 0.6755 - - 0.3597 0.4892 - - 0.5999 0.6882 - - - 0.88241 FILE 0.7599 0.6882 - - - 0.3592 0.4781 - 0.5968 0.6879 - - - 0.8828 - - - 0.5988 0.6879 - - - 0.5988 0.6879 - - 0.5988 0.6879 - - 0.5988 0.6879 - - 0.5988 0.6879 - - 0.5988 0.6879 - - 0.5988 0.6879 - - 0.5988 0.6879 - - 0.5988 0.6879 - - 0.5988 0.6879 - - 0.5988 0.6879 - - 0.5988 0.6879 - - 0.5988 0.6879 - - 0.5988 0.6879 - - 0.5988 0.6879 - - 0.5988 0.6879 0.6878 - 0.5988 0.6879 0.6878 - 0.5988 0.6879 0.6878 - 0.5988 0.6879 0.6888 0.6889					-	-			-	-			-		
Nematical Nema													-	-	
N-BBATN FILO Corporal Cor										-			-	-	
NBBATN FIL 0.7542 0.7678 0.3522 0.4764 0.5979 0.6879 NBBATN FIL 0.7542 0.6769 0.3532 0.4763 0.5037 0.6979 0.6950 NBBATN FIL 0.7542 0.6769 0.3533 0.4773 0.4763 0.2835 0.2835 0.2879 0.6950 0.6790 0.3311 0.6825 NB PR PL 0.8922 0.7180 1.0116 1.7814 0.3409 0.4050 0.2533 0.2835 0.2875 0.6709 0.3311 0.6322 NB PR PL 0.8912 0.7178 1.0128 1.7826 0.3394 0.4690 0.2154 0.2775 0.6950 0.6714 0.3057 0.6222 NB PR PL 0.8912 0.7178 1.0128 1.7826 0.3394 0.4690 0.2168 0.2704 0.8950 0.6714 0.3057 0.6222 NB PR PL 0.8905 0.7178 1.0163 1.7836 0.3396 0.4629 0.1886 0.2704 0.8950 0.6714 0.3057 0.6229 NB PR PL 0.8905 0.7181 1.0163 1.7856 0.330 0.4062 0.2182 0.2735 0.8918 0.6717 0.3031 0.6223 NB PR PL 0.8905 0.7181 1.0165 1.7836 0.3386 0.4629 0.1885 0.2784 0.8959 0.6710 0.3333 0.6233 NB PR PL 0.8905 0.7181 1.0152 1.7833 0.3389 0.4662 0.2182 0.2575 0.8959 0.6710 0.3333 0.6315 NB PR PL 0.8905 0.7181 1.0165 1.7836 0.3386 0.4624 0.1859 0.2885 0.6739 0.3333 0.6315 NB PR PL 0.8905 0.7185 1.0165 1.7836 0.3385 0.4624 0.1859 0.2885 0.6739 0.6728 NB PR PL 0.8905 0.7181 1.0165 1.7836 0.3385 0.4624 0.1859 0.2885 0.6739 0.6728 NB PR PR PL 0.8905 0.7181 1.0167 1.7896 0.3383 0.4624 0.1859 0.2885 0.6739 0.6728 NB PR PR 0.8905 0.7897 0.0048 1.7789 0.3385 0.4624 0.1859 0.2885 0.6895 0.6895 0.6895 NB PR PR 0.8905 0.7897 0.0048 0.1878 0.3895 0.6895						-			-	-			-		
PR					_	-			_	-			_	-	
PR	N-BEATS	FI_0.8	0.7402	0.6768	-	-	0.3522	0.4764	-	-	0.5942	0.6890	-	-	
PR	N-BEATS	FI ₋ 1	0.7542	0.6779	=	-	0.3533	0.4773	=	-	0.5979	0.6950	=	-	
PR PLO4 S08104 C7178 1.0128 1.7858 0.3390 0.46299 1.0880 0.2710 0.5859 0.6744 0.3007 0.6290 PR PLO.6 0.8009 C7178 1.0163 1.7881 0.3390 0.4625 1.0180 0.2705 0.5848 0.6743 0.3011 0.6270 PR PLO.6 0.8009 C7187 1.0280 1.7850 0.3490 0.4620 0.2222 0.2737 0.5848 0.6747 0.3303 0.6228 PR FLO.4 0.8010 0.7181 1.0116 1.7891 0.3330 0.6220 0.7219 0.0221 0.7890 0.6890 0.6228 0.6790 0.6228 0.6790 0.6790 0.7181 1.1181 1.7890 0.3333 0.6228 0.0690 0.5897 0.6228 0.6790 0.6895 0.7181 1.0817 1.7890 0.3333 0.6328 0.6742 0.6750 0.6228 0.6790 0.6870 0.2329 0.6228 0.6790 0.6875	PR	Base	0.8029	0.7184	1.0116	1.7814	0.3409	0.4695	0.2533	0.2835	0.5874	0.6759	0.3311	0.6362	
PR PLO,5 0.8002 0.7178 1.0143 1.7836 0.3290 0.6229 0.1880 0.2704 0.5556 0.6743 0.3001 0.6270 PR PLO,6 80005 0.7182 1.0216 1.7856 0.3311 0.6270 PR PLO 1.08005 0.7187 1.0288 1.7856 0.3130 0.6462 0.2122 0.2237 0.5856 0.6736 0.3333 0.6321 PR FLO,6 0.8000 0.7181 1.0152 1.7839 0.3335 0.4642 0.2142 0.2750 0.5859 0.6742 0.2399 0.6228 PR FLO,6 0.8000 0.7181 1.0188 1.7881 0.3836 0.4641 1.1290 0.5859 0.6742 0.2399 0.6229 PR FLO,6 0.8000 0.7181 1.0188 1.7881 1.7897 0.3333 0.4622 0.1532 0.5859 0.6734 0.2375 0.6734 Eght GBB PL 0.78750 0.7877 <									0.2154				0.3158		
PR PL.06 0.8009 0.7178 1.0163 1.7856 0.3399 0.4625 0.1292 0.2273 0.3481 0.6743 0.3013 0.6203 PR PL.10 0.8002 0.7181 1.0216 1.7856 0.3303 0.4640 0.2485 0.2805 0.8811 0.6750 0.3133 0.6231 PR FL.04 0.8010 0.7181 1.0116 1.7819 0.337 0.4662 0.2142 0.2250 0.8830 0.6749 0.3333 0.6229 PR FL.05 0.8003 0.7189 1.0181 1.7846 0.3380 0.6343 0.1170 0.2280 0.6739 0.2830 0.6229 PR FL.05 0.8003 0.7231 1.0878 1.8817 0.4471 0.1607 0.2823 0.6750 0.0310 0.2837 0.6673 0.2451 0.6931 Light GBM Base 0.7900 0.7057 1.0049 1.7784 0.3471 0.4771 0.1607 0.2852 0.6059 0.6870 </td <td></td>															
PR PLOS 0.8005 0.7182 1.0250 0.3410 0.4627 0.2137 0.2185 0.2333 0.6293 PR PLO 0.8020 0.7181 1.016 1.7880 0.3397 0.4662 0.2142 0.2750 0.5850 0.6749 0.3133 0.6331 PR PLO.5 0.8000 0.7184 1.0152 1.7833 0.3380 0.6461 0.1292 0.2628 0.0230 0.0238 PR PLO.6 0.8000 0.7197 1.0241 1.7899 0.3385 0.4628 0.1997 0.2628 0.5873 0.0238 PR PLO.8 0.9079 0.7391 1.0878 1.8807 0.3393 0.4633 0.1462 0.2883 0.6807 0.2499 0.6228 PR PLO.8 0.7907 0.7087 1.0044 1.7788 0.3471 0.4711 0.1667 0.5829 0.6806 0.6887 0.2499 0.6895 LightGBM PLO.2 0.7850 0.7076 1.0044 <															
PR ILI 0.8002 0.7185 1.0289 1.7866 0.3490 0.4640 0.2485 0.2505 0.5551 0.6756 0.3136 0.6272 PR FL0.4 8.010 0.7184 1.0152 1.7833 0.3399 0.4662 0.2142 0.2275 0.8839 0.6739 0.2300 0.6235 PR FL0.6 0.8000 0.7190 1.0188 1.7869 0.3383 0.4624 0.1152 0.2830 0.6239 0.2300 0.6230 0.6239 0.6230 <td></td>															
PR															
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ETS FI_0.5 0.7538 0.6990 0.9905 1.7746 0.3536 0.4646 0.1821 0.3050 0.6108 0.6835 0.2982 0.7273 ETS FI_0.6 0.7560 0.6993 0.9950 1.7747 0.3507 0.4643 0.1713 0.2944 0.6070 0.6831 0.2857 0.7218 ETS FI_0.8 0.7632 0.6998 1.0100 1.7749 0.3447 0.4637 0.1545 0.2742 0.5968 0.6822 0.2578 0.7063 ETS FI_1 0.7772 0.7009 1.0437 1.7763 0.3393 0.4633 0.1426 0.2601 0.5839 0.6810 0.2483 0.6673 ARIMA Base 1.3088 0.7762 1.1864 33.2300 0.7159 0.4963 0.2139 26.6648 1.0746 0.7159 0.3436 34.1113 ARIMA PI_0.4 1.1732 0.7761 1.1864 31.5609 0.6506 0.4866 0.1953 17.4547 0.9913 <															
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ARIMA PL.0.4 1.1732 0.7761 1.1864 31.5609 0.6506 0.4866 0.1953 17.4547 0.9913 0.7135 0.3378 32.3239 ARIMA PL.0.5 1.1396 0.7762 1.1868 30.7275 0.6196 0.4829 0.1893 15.5694 0.9499 0.7126 0.3355 31.4321 ARIMA PL.0.6 1.1059 0.7764 1.1873 29.8949 0.5927 0.4840 0.1917 16.7844 0.9087 0.7119 0.3335 30.5415 ARIMA PL.0.8 1.0388 0.7771 1.1887 28.2317 0.5409 0.4886 0.2018 19.5073 0.8269 0.7110 0.3305 28.7658 ARIMA PL.1 0.9721 0.7781 1.1911 26.5722 0.4918 0.4966 0.2192 22.3173 0.7469 0.7112 0.3309 26.9994 ARIMA FL.0.2 1.2366 0.7761 1.1860 32.4353 0.7117 0.4963 0.2140 27.2426 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>															
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ARIMA FL0.4 1.1558 0.7754 1.1850 28.2671 0.6324 0.4859 0.1936 18.8747 0.9686 0.7109 0.3304 28.8047 ARIMA FL0.5 1.1119 0.7750 1.1847 25.4729 0.5896 0.4810 0.1841 15.3196 0.9137 0.7081 0.3226 25.8168 ARIMA FL0.6 1.0656 0.7745 1.1845 22.1510 0.5444 0.4765 0.1750 11.9738 0.8553 0.7047 0.3129 22.2637 ARIMA FL0.8 0.9653 0.7727 1.1851 13.6758 0.4467 0.4685 0.1577 6.0316 0.7272 0.6948 0.2849 13.1873															
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		FI_1													

			R.I	MSSE			R.	MSSC		RMSSC_I				
		——————————————————————————————————————	M3	Favorita	M5	——————————————————————————————————————	M3	Favorita			M3	Favorita	M5	
N DE AEG	D													
N-BEATS N-BEATS	Base PL0.2	0.6192	0.6122 0.6125			0.3284 0.3275	0.4469	-	-	0.5202 0.5195	0.6115	-	-	
N-BEATS	PI_0.4	0.6224	0.6120	-	_	0.3273 0.3272	0.4419	_	_	0.5195 0.5191	0.6099	_	_	
N-BEATS	PI_0.5	0.6241	0.6133	_	-	0.3274	0.4413	_	-	0.5190	0.6098	_	_	
N-BEATS	PI_0.6	0.6260	0.6136	=	=	0.3276	0.4410	=	-	0.5190	0.6098	=	-	
N-BEATS	PI_0.8	0.6305	0.6143	-	-	0.3287	0.4412	-	-	0.5192	0.6102	-	-	
N-BEATS	PI_1	0.6355	0.6150	-	-	0.3304	0.4424	-	-	0.5197	0.6110	-	-	
N-BEATS	FI_0.2	0.6200	0.6124	-	-	0.3274	0.4440	-	-	0.5192	0.6105	-	-	
N-BEATS N-BEATS	FI_0.4 FI_0.5	0.6223 0.6241	0.6128 0.6130	-	-	0.3267 0.3264	0.4421 0.4415	-	-	0.5180 0.5173	0.6097 0.6095	-	-	
N-BEATS	FI_0.6	0.6241 0.6264	0.6130	_	_	0.3264 0.3262	0.4410	_	-	0.5175 0.5165	0.6094	_	_	
N-BEATS	FI_0.8	0.6330	0.6140	_	-	0.3260	0.4406	_	_	0.5155	0.6103	_	_	
N-BEATS	FI_{-1}	0.6453	0.6151	-	-	0.3269	0.4413	-	-	0.5185	0.6153	-	-	
PR	Base	0.6849	0.6510	0.7235	1.2528	0.3144	0.4329	0.1798	0.2251	0.5062	0.5975	0.2228	0.4433	
PR	PI_0.2	0.6842	0.6504	0.7230	1.2529	0.3135	0.4329	0.1730	0.2191	0.5055	0.5965	0.2103	0.4407	
PR	PI_0.4	0.6837	0.6500	0.7241	1.2532	0.3132	0.4279	0.1346	0.2157	0.5051	0.5959	0.2028	0.4389	
PR	PI_0.5	0.6834	0.6499	0.7252	1.2534	0.3134	0.4273	0.1317	0.2151	0.5050	0.5958	0.2013	0.4383	
PR	PI_0.6	0.6832	0.6499	0.7267	1.2537	0.3136	0.4270	0.1334	0.2152	0.5050	0.5958	0.2015	0.4379	
PR	PI_0.8	0.6829	0.6500	0.7309	1.2546	0.3147	0.4272	0.1492	0.2176	0.5052	0.5962	0.2065	0.4379	
PR	PI_1	0.6827	0.6504	0.7365	1.2556	0.3164	0.4284	0.1767	0.2227	0.5057	0.5970	0.2171	0.4388	
PR	FI_0.2	0.6842	0.6505	0.7233	1.2529	0.3134	0.4300	0.1515	0.2187	0.5052	0.5965	0.2085	0.4401	
PR PR	FI_0.4 FI_0.5	0.6834 0.6830	0.6505 0.6508	0.7254 0.7278	1.2534 1.2540	0.3127 0.3124	0.4281 0.4275	0.1289 0.1198	0.2135 0.2113	0.5040 0.5033	0.5957 0.5955	0.1939 0.1859	0.4363 0.4342	
PR	FI_0.6	0.6826	0.6513	0.7312	1.2551	0.3124 0.3122	0.4270	0.1122	0.2095	0.5035	0.5954	0.1770	0.4342 0.4317	
PR	FI_0.8	0.6824	0.6538	0.7435	1.2621	0.3120	0.4266	0.1017	0.2071	0.5015	0.5963	0.1582	0.4275	
PR	FI_{-1}	0.6848	0.6604	0.7709	1.3106	0.3129	0.4273	0.0998	0.2082	0.5045	0.6013	0.1633	0.4603	
LightGBM	Base	0.6761	0.6433	0.7201	1.2517	0.3199	0.4345	0.1139	0.2240	0.5232	0.6078	0.1685	0.4758	
LightGBM	PI_0.2	0.6752	0.6426	0.7197	1.2514	0.3183	0.4315	0.1166	0.2205	0.5232	0.6063	0.1652	0.4741	
LightGBM	PI_0.4	0.6745	0.6422	0.7197	1.2513	0.3174	0.4302	0.1026	0.2185	0.5201	0.6055	0.1632	0.4730	
LightGBM	PI_0.5	0.6741	0.6422	0.7198	1.2513	0.3173	0.4301	0.1022	0.2182	0.5196	0.6053	0.1628	0.4727	
LightGBM	PI_0.6	0.6739	0.6422	0.7199	1.2513	0.3174	0.4305	0.1028	0.2183	0.5191	0.6052	0.1628	0.4725	
LightGBM	PI_0.8	0.6734	0.6425	0.7205	1.2516	0.3182	0.4324	0.1072	0.2197	0.5185	0.6056	0.1639	0.4726	
LightGBM LightGBM	PI_1 FI_0.2	0.6732 0.6750	0.6432	0.7214	1.2520	0.3197 0.3181	0.4358	0.1150	0.2227	0.5182 0.5210	0.6067	0.1665	0.4734	
LightGBM	FI_0.2 FI_0.4	0.6734	0.6425 0.6418	0.7198 0.7201	1.2513 1.2509	0.3166	0.4314 0.4293	0.1067 0.1018	0.2199 0.2159	0.5210 0.5180	0.6061 0.6043	0.1648 0.1614	0.4736 0.4706	
LightGBM	FI_0.5	0.6724	0.6416	0.7207	1.2507	0.3159	0.4286	0.1010	0.2139	0.5160	0.6034	0.1514	0.4688	
LightGBM	FI_0.6	0.6712	0.6414	0.7217	1.2507	0.3152	0.4280	0.0991	0.2120	0.5136	0.6024	0.1584	0.4668	
LightGBM	FI_0.8	0.6686	0.6420	0.7256	1.2513	0.3138	0.4272	0.0984	0.2091	0.5081	0.6006	0.1565	0.4618	
LightGBM	FI_1	0.6676	0.6457	0.7345	1.2608	0.3129	0.4273	0.0998	0.2082	0.5045	0.6013	0.1633	0.4603	
ETS	Base	0.6422	0.6352	0.7003	1.2495	0.3406	0.4313	0.1979	0.2681	0.5391	0.6053	0.2435	0.5132	
ETS	PI_0.2	0.6430	0.6355	0.7009	1.2487	0.3345	0.4302	0.1660	0.2556	0.5359	0.6048	0.2296	0.5084	
ETS	PI0.4	0.6454	0.6360	0.7046	1.2485	0.3298	0.4293	0.1464	0.2464	0.5333	0.6043	0.2224	0.5050	
ETS	PI_0.5	0.6471	0.6363	0.7075	1.2487	0.3281	0.4289	0.1437	0.2433	0.5322	0.6042	0.2217	0.5039	
ETS	PI_0.6	0.6490	0.6366	0.7111	1.2491	0.3268	0.4285	0.1465	0.2416	0.5314	0.6040	0.2230	0.5031	
ETS ETS	PI_0.8 PI_1	0.6535 0.6585	0.6373 0.6380	0.7203 0.7318	1.2504 1.2524	0.3257 0.3268	0.4280 0.4278	0.1672 0.2005	0.2420 0.2474	0.5303 0.5300	0.6038 0.6037	0.2314 0.2460	0.5028 0.5040	
ETS	FI_0.2	0.6430	0.6354	0.7008	1.2486	0.3203	0.4278	0.2003	0.2547	0.5353	0.6047	0.2276	0.5074	
ETS	FI_0.4	0.6453	0.6358	0.7039	1.2482	0.3286	0.4293	0.1413	0.2415	0.5306	0.6041	0.2120	0.5006	
ETS	$FI_0.5$	0.6471	0.6360	0.7065	1.2483	0.3258	0.4289	0.1311	0.2349	0.5277	0.6038	0.2035	0.4967	
ETS	FI_0.6	0.6494	0.6363	0.7101	1.2484	0.3230	0.4285	0.1223	0.2284	0.5243	0.6034	0.1942	0.4924	
ETS	FI_0.8	0.6560	0.6370	0.7211	1.2488	0.3176	0.4278	0.1084	0.2164	0.5155	0.6025	0.1733	0.4817	
ETS	FI_1	0.6683	0.6381	0.7434	1.2496	0.3129	0.4273	0.0998	0.2082	0.5045	0.6013	0.1633	0.4603	
ARIMA	Base	1.4264	0.7078	0.8050	46.0151	0.8967	0.4765	0.1371	46.6255	1.2955	0.6440	0.2015	46.6605	
ARIMA	PI_0.2	1.3235	0.7033	0.8028	41.2261	0.8141	0.4619	0.1266	34.2297	1.1813	0.6373	0.1968	41.7089	
ARIMA	PI_0.4	1.2221	0.7008	0.8017	38.0755	0.7347	0.4515	0.1192	24.0289	1.0690	0.6327	0.1936	38.4506	
ARIMA	PI_0.5	1.1722	0.7005	0.8015	37.2463	0.6973	0.4490	0.1174	20.8793	1.0138	0.6316	0.1928	37.5930	
ARIMA ARIMA	PI_0.6 PI_0.8	1.1228 1.0257	0.7008 0.7033	0.8017 0.8028	36.9551 37.9662	0.6621 0.5974	0.4489 0.4550	0.1173 0.1223	20.0628 25.6570	0.9593 0.8527	0.6313 0.6329	0.1925 0.1935	37.2918 38.3375	
ARIMA	PI_1	0.9312	0.7033	0.8051	40.8746	0.5374 0.5382	0.4665	0.1223	36.2849	0.8327 0.7491	0.6329 0.6371	0.1955 0.1964	41.3445	
ARIMA	FI_0.2	1.3162	0.7073	0.8027	40.4879	0.8075	0.4623	0.1310	34.8273	1.1732	0.6368	0.1964	40.9461	
ARIMA	FI_0.4	1.1917	0.6991	0.8007	34.1779	0.7060	0.4507	0.1183	24.9892	1.0348	0.6300	0.1910	34.4229	
ARIMA	FI0.5	1.1236	0.6972	0.7999	30.4485	0.6501	0.4456	0.1146	20.6337	0.9590	0.6264	0.1879	30.5675	
ARIMA	FI_0.6	1.0515	0.6954	0.7990	26.1920	0.5906	0.4411	0.1112	16.5367	0.8784	0.6225	0.1843	26.1669	
ARIMA	FI_0.8	0.8942	0.6917	0.7977	15.6377	0.4599	0.4332	0.1050	8.6580	0.7021	0.6131	0.1749	15.2507	
ARIMA	FI_1	0.7192	0.6887	0.7980	1.3881	0.3129	0.4273	0.0998	0.2082	0.5045	0.6013	0.1633	0.4603	

Table A.6: sMAPE, sMAPC and sMAPC I results of horizontal stability experiments.

			sM	APE			sMAPC				sMAPC_I				
		M4	M3	Favorita	M5	M4	М3	Favorita	M5	M4	M3	Favorita	M5		
N-BEATS	Base	12.072	14.335	_	_	5.273	10.101	_	_	8.382	12.953	_			
N-BEATS	PI_0.2	12.076	14.336			5.247	10.003			8.359	12.925				
N-BEATS	PI_0.4	12.088	14.339	-	-	5.234	9.934	-	-	8.342	12.904	-	-		
N-BEATS	PI0.5	12.095	14.340	-	-	5.233	9.912	-	-	8.337	12.899	-	-		
N-BEATS	PI_0.6	12.103	14.341	-	-	5.236	9.897	-	-	8.333	12.896	-	-		
N-BEATS	PI_0.8	12.123	14.344	-	-	5.253	9.891	-	-	8.332	12.900	-	-		
N-BEATS	PI_1	12.145	14.346	-	-	5.283	9.915	-	-	8.338	12.914	-			
N-BEATS	FI_0.2	12.076	14.336	-	-	5.246 5.228	10.011	-	-	8.353	12.926	-	-		
N-BEATS N-BEATS	FI_0.4 FI_0.5	12.088 12.097	14.338 14.339	-	-	5.228	9.958 9.945	-	-	8.320 8.301	12.909 12.911	-	-		
N-BEATS	FI_0.6	12.110	14.340	_	_	5.218	9.938	_	_	8.282	12.911	_	_		
N-BEATS	FI_0.8	12.152	14.343	_	_	5.220	9.956	_	_	8.262	12.959	_	_		
N-BEATS	FI_{-1}	12.233	14.347	-	-	5.252	10.043	-	-	8.336	13.131	-	-		
PR	Base	12.823	14.716	123.639	70.398	5.259	10.087	49.890	18.040	8.368	12.939	60.632	32.735		
PR	PI_0.2	12.811	14.712	123.638	70.414	5.233	9.989	46.347	17.676	8.345	12.911	59.306	32.574		
PR	PI_0.4	12.803	14.714	123.737	70.443	5.220	9.920	44.413	17.487	8.328	12.890	58.488	32.461		
PR	PI_0.5	12.799	14.717	123.821	70.461	5.219	9.898	44.147	17.458	8.323	12.885	58.211	32.420		
PR	PI_0.6	12.796	14.722	123.924	70.482	5.222	9.883	44.679	17.481	8.319	12.882	58.009	32.393		
PR	PI_0.8	12.791	14.737	124.185	70.531	5.239	9.877	47.514	17.682	8.318	12.886	58.190	32.390		
PR	PI_1	12.789	14.759	124.524	70.592	5.269	9.901	51.674	18.079	8.324	12.900	59.212	32.467		
PR	FI_0.2	12.810	14.718	123.669	70.417	5.232	9.997	46.207	17.649	8.339	12.912	59.121	32.550		
PR	FI_0.4	12.798	14.741	123.903	70.469	5.214	9.944	43.121	17.346	8.306	12.895	57.359	32.353		
PR PR	FI_0.5 FI_0.6	12.791 12.787	14.763 14.795	$124.125 \\ 124.444$	70.518 70.599	5.207 5.204	9.931 9.924	41.827 40.671	17.224 17.122	8.287 8.268	12.897 12.901	56.261 54.895	32.247 32.145		
PR	FI_0.8	12.788	14.793	125.578	70.599	5.204	9.924 9.942	39.025	17.122	8.248	12.901 12.945	51.998	32.140 32.100		
PR	FI_1	12.733	15.148	127.890	73.509	5.238	10.029	38.206	17.709	8.322	13.117	52.855	34.882		
110	1 1-1	12.000	10.110	121.000	10.000	0.200	10.020	00.200	11.100	0.022	10.111	02.000	01.002		
LightGBM	Base	12.658	14.569	124.022	70.406	5.327	10.095	40.282	18.199	8.645	13.109	52.567	34.424		
LightGBM	PI_0.2	12.634	14.551	124.009	70.394	5.300	9.977	39.447	17.955	8.603	13.053	52.246	34.316		
LightGBM LightGBM	PI_0.4	12.613 12.603	14.543 14.543	$124.017 \\ 124.032$	70.390 70.392	5.289 5.289	9.923 9.919	39.073 39.099	17.822 17.805	8.567 8.552	13.017 13.009	52.064 52.017	34.234 34.210		
LightGBM	PI_0.6	12.594	14.546	124.052	70.392	5.294	9.919	39.301	17.819	8.540	13.009	52.017	34.210		
0	PI_0.8	12.578	14.558	124.116	70.411	5.314	9.984	40.095	17.939	8.520	13.004	52.157	34.190		
LightGBM	PI_1	12.564	14.580	124.194	70.435	5.348	10.091	41.358	18.179	8.510	13.024	52.548	34.239		
LightGBM	FI_0.2	12.630	14.548	124.016	70.390	5.296	9.976	39.484	17.900	8.593	13.048	52.216	34.290		
LightGBM	$FI_0.4$	12.591	14.534	124.067	70.380	5.272	9.901	39.000	17.600	8.523	12.993	51.919	34.135		
LightGBM	FI0.5	12.567	14.529	124.128	70.381	5.259	9.876	38.896	17.461	8.479	12.966	51.831	34.051		
LightGBM	FI_0.6	12.539	14.527	124.223	70.391	5.245	9.849	38.882	17.335	8.428	12.939	51.798	33.962		
LightGBM		12.478	14.555	124.585	70.485	5.215	9.823	39.125	17.194	8.316	12.901	52.210	33.785		
LightGBM	F1_1	12.442	14.689	125.388	71.169	5.191	9.879	39.377	17.436	8.259	12.964	54.209	34.201		
ETS	Base	12.095	14.358	122.399	70.365	5.267	9.795	51.053	19.144	8.373	12.855	60.463	34.951		
ETS	PI_0.2	12.099	14.359	122.279	70.331	5.242	9.790	47.310	18.734	8.355	12.853	59.149	34.816		
ETS	$PI_0.4$	12.111	14.362	122.432	70.316	5.226	9.787	45.412	18.476	8.342	12.853	58.667	34.734		
ETS	PI_0.5	12.118	14.363	122.592	70.314	5.220	9.786	45.561	18.408	8.337	12.853	58.717	34.714		
ETS	PI_0.6	12.126	14.364	122.810	70.318	5.217	9.785	46.386	18.383	8.332	12.852	58.896	34.703		
ETS ETS	PI_0.8	12.146 12.168	14.367 14.369	123.341	70.339	5.219	9.783	49.168	18.467	8.325	12.852	59.552	34.712		
ETS	PI_1 FI_0.2	12.108	14.359	124.040 122.263	70.381	5.230	9.782	52.998 47.280	18.716 18.699	8.322 8.352	12.852 12.853	61.007 58.884	34.758 34.790		
ETS	FI_0.2 FI_0.4	12.099	14.361	122.203	70.320 70.295	5.240	9.786	44.532	18.286	8.327	12.851	57.384	34.620		
ETS	FI_0.4	12.111	14.362	122.444	70.282	5.205	9.785	43.457	18.072	8.312	12.849	56.416	34.530		
ETS	FI_0.6	12.133	14.363	122.652	70.271	5.194	9.783	42.580	17.844	8.295	12.848	55.290	34.424		
ETS	FI_0.8	12.175	14.366	123.476	70.257	5.171	9.781	40.360	17.384	8.254	12.843	52.834	34.124		
ETS	FI_{-1}	12.256	14.370	125.483	70.313	5.157	9.779	37.854	17.020	8.216	12.838	52.640	33.513		
4 DD (4	F.	10 505	1.055	115 505	00.000	4.015	0.00	20.000	15 001		11 500	10 1 11	0 = F 00		
ARIMA	Base	12.737	14.655	115.525	66.626	4.817	8.767	29.390	15.261	7.744	11.598	40.141	27.523		
ARIMA ARIMA	PI_0.2 PI_0.4	12.732 12.730	14.650 14.646	115.497 115.493	66.562 66.533	4.749 4.704	8.638 8.548	29.051 28.766	14.548 14.041	7.711 7.688	11.544 11.509	39.906 39.776	27.313 27.193		
ARIMA	PI_0.4 PI_0.5	12.730 12.729	14.646	115.495	66.531	4.704	8.522	28.700	13.917	7.679	11.498	39.770	27.193		
ARIMA	PI_0.6	12.729	14.648	115.498	66.536	4.692	8.516	28.750	13.969	7.672	11.490	39.697	27.135		
ARIMA	PI_0.8	12.730	14.654	115.507	66.567	4.719	8.543	29.005	14.397	7.662	11.485	39.640	27.153		
ARIMA	PI_1	12.731	14.662	115.526	66.635	4.771	8.622	29.501	15.077	7.661	11.493	39.591	27.267		
ARIMA	FI_0.2	12.731	14.653	115.489	66.553	4.748	8.640	29.018	14.543	7.706	11.536	39.886	27.290		
ARIMA	FI_0.4	12.725	14.654	115.469	66.493	4.689	8.531	28.591	13.910	7.661	11.473	39.622	27.070		
ARIMA	FI_0.5	12.721	14.655	115.460	66.465	4.662	8.484	28.399	13.608	7.633	11.437	39.455	26.948		
ARIMA	FI_0.6	12.717	14.656	115.455	66.437	4.636	8.443	28.223	13.317	7.600	11.396	39.243	26.802		
ARIMA	FI_0.8	12.707	14.661	115.450	66.376	4.587	8.375	27.886	12.769	7.512	11.285	38.629	26.324		
ARIMA	FI_{-1}	12.701	14.669	115.505	66.396	4.552	8.340	27.726	12.393	7.413	11.161	37.874	25.094		