|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| M4 Yearly (N=23,000): OWA | | | | | | |
| **Method** | **Micro** | **Industry** | **Macro** | **Finance** | **Demographic** | **Other** |
| **RNN Methods** | | | | | | |
| DeepAR\* | 0.788 | 0.881 | 0.850 | 0.803 | 0.878 | 0.944 |
| DeepState |  |  | 0.932 | 0.958 | 0.965 | 0.908 |
| Smyl | 0.744\*\* | 0.833 | 0.796\*\* | 0.756\*\* | 0.811\*\* | 0.819\*\* |
| **Benchmark Methods** | | | | | | |
| Naïve2 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Comb | 0.809 | 0.934 | 0.922 | 0.848 | 0.867 | 0.894 |
| ARIMA | 0.876 | 0.971 | 0.906 | 0.849 | 0.894 | 0.906 |
| ETS | 0.891 | 0.961 | 0.898 | 0.882 | 0.884 | 0.930 |
| ETSARIMA | 0.859 | 0.941 | 0.879 | 0.842 | 0.862 | 0.897 |
| L&K | 0.713 | 0.866 | 0.810 | 0.781 | 0.835 | 0.852 |
| \* indicates best median of three settings, each using ten trials.  \*\* Fitted on the entire data for the frequency and results are subsetted subsequently. | | | | | | |

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| --- | --- | --- | --- | --- | --- | --- |
| M4 Quarterly | | | | | | |
| Method | Micro | Industry | Macro | Finance | Demographic | Other |
|  |  |  |  |  |  |  |
| DeepAR | 0.912 | 0.970 | 0.917 | 0.926 | 0.951 | 0.919 |
| DeepState |  |  | 1.203 |  | 1.106 | 0.966 |
| Smyl | 0.820\*\* | 0.879\*\* | 0.819\*\* | 0.764\*\* | 0.885\*\* | 0.813\*\* |
|  |  |  |  |  |  |  |
| Naïve2 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Comb | 0.866 | 0.909 | 0.897 | 0.891 | 0.910 | 0.920 |
| ARIMA | 0.866 | 0.923 | 0.894 | 0.908 | 0.924 | 0.915 |
| ETS | 0.862 | 0.916 | 0.893 | 0.892 | 0.916 | 0.892 |
| ETSARIMA | 0.843 | 0.895 | 0.869 | 0.872 | 0.901 | 0.874 |
| L&K | 0.882 | 0.907 | 0.907 | 0.897 | 0.901 | 0.923 |
|  |  |  |  |  |  |  |

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| --- | --- | --- | --- | --- | --- | --- |
| M4 Monthly | | | | | | |
| Method | Micro | Industry | Macro | Finance | Demographic | Other |
|  |  |  |  |  |  |  |
| DeepAR | 0.960 | 0.995 | 0.935 | 1.041 | 0.921 | 0.975 |
| DeepState | 0.945 | 1.057 | 1.027 | 1.122 | 0.938 | 1.020 |
| Smyl | 0.809\*\* | 0.880\*\* | 0.796\*\* | 0.891\*\* | 0.836\*\* | 0.813\*\* |
|  |  |  |  |  |  |  |
| Naïve2 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| Comb | 0.965 | 0.920 | 0.900 | 0.893 | 0.884 | 0.907 |
| ARIMA | 0.923 |  |  | 0.916 | 0.891 | 0.885 |
| ETS | 0.948 |  |  | 0.936 | 0.860 | 0.861 |
| ETSARIMA | 0.898 |  |  | 0.900 | 0.910 | 0.844 |
| L&K | 0.896 |  |  | 0.941 | 0.884 | 0.897 |
|  |  |  |  |  |  |  |