# Now-casting.com

Objectives

- provide a brief summary of our exploratory analysis of the nowcasts provided by now-casting.com.
- point out the series that seem to work well, and the one for which the nowcasts may look less efficient.

Euro area, GDP growth

- we use simple visualizations and statistical measures to obtain preliminary assessments of the quality of the forecasts.
- a ground-truth or "actual" series is used for comparison with the nowcasts. It is real GDP growth (Q-to-Q) from OECD.
- first the actual value is plotted against the nowcasts at different timelines (6 months before release, 3 months before release, 1 month before release, at release, 1 month after release, 3 month after release).
- basic correlations are also calculated between the actual series and the different nowcasts.
- finally, the average root mean square forecast error (RMSFE) is estimated for the different nowcasts timelines (averaging is realised over the sample periods).

At first, compare the nowcasts at different timelines with the actual values.
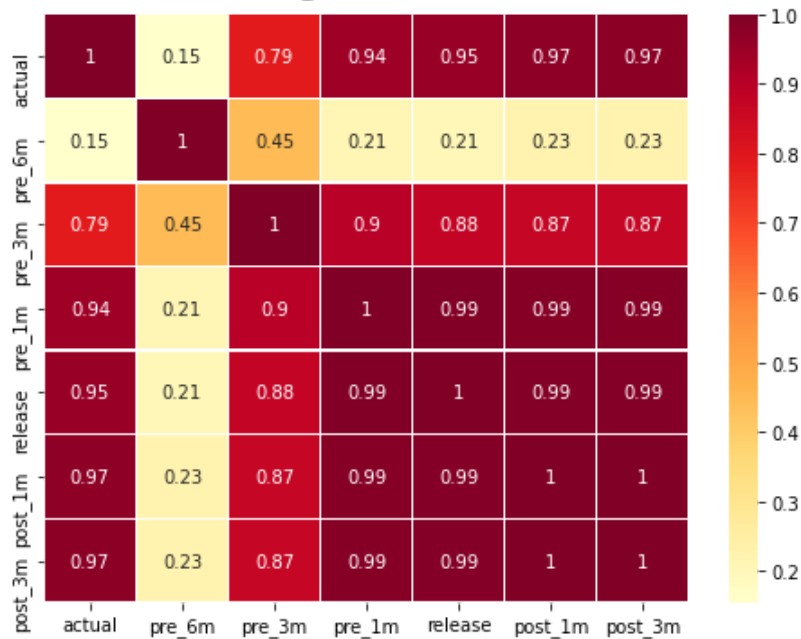
Euro Area real GDP growth: actual vs. nowcasts at different timelines
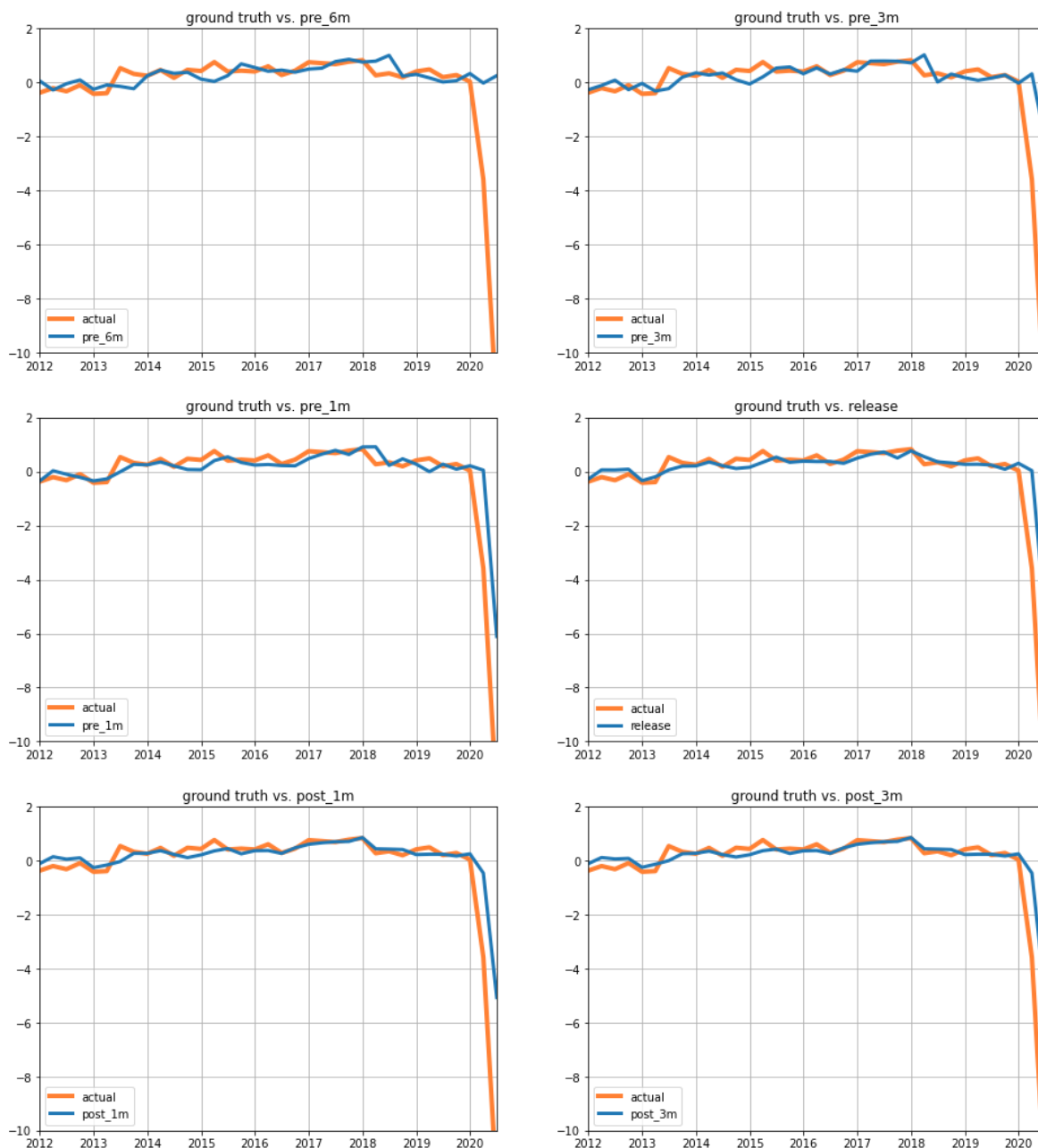
Overall, the nowcasts look quite good. The latest ones look really close to the actual values.

Then, basic correlations are computed between the nowcasts and the ground truth series.

Correlation matrix: ground-truth vs. now-casts

The correlations between the actual series and the nowcasts also look good. The correlation for the earliest nowcast is low (0.15 for 6 month before release) but then increases quickly to more than 0.95.

## Average RMSFE for Euro area
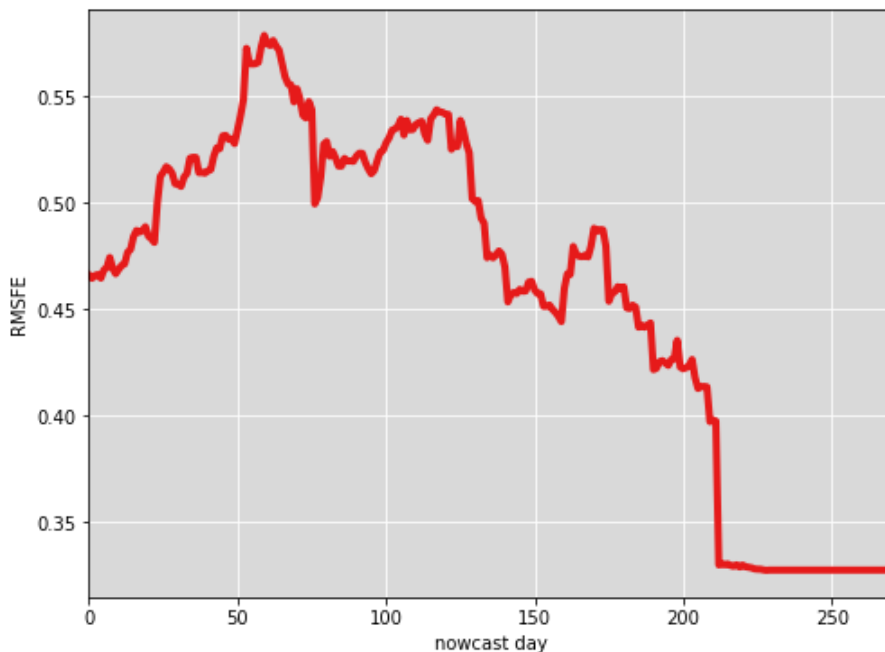
Finally, the RMSFE is plot (using the OECD GDP series as reference for computinfg the error). This plot replicates closely the one provided in the information materials presentation of Now-casting.com, slide 14. The initial rise in RMSFE observed here is due to the fact nowcasts are considered earlier (6 months before release against 3 month only in the presentation). Aside from this initial increase in RMSFE, the RMSFE steadily decreases, as expected when more information arrives.

Overall, the results for the Euro Area are quite convincing!

United States, GDP growth

The same exercise is conducted for the United States.

**US real GDP growth: actual vs. nowcasts at different timelines**
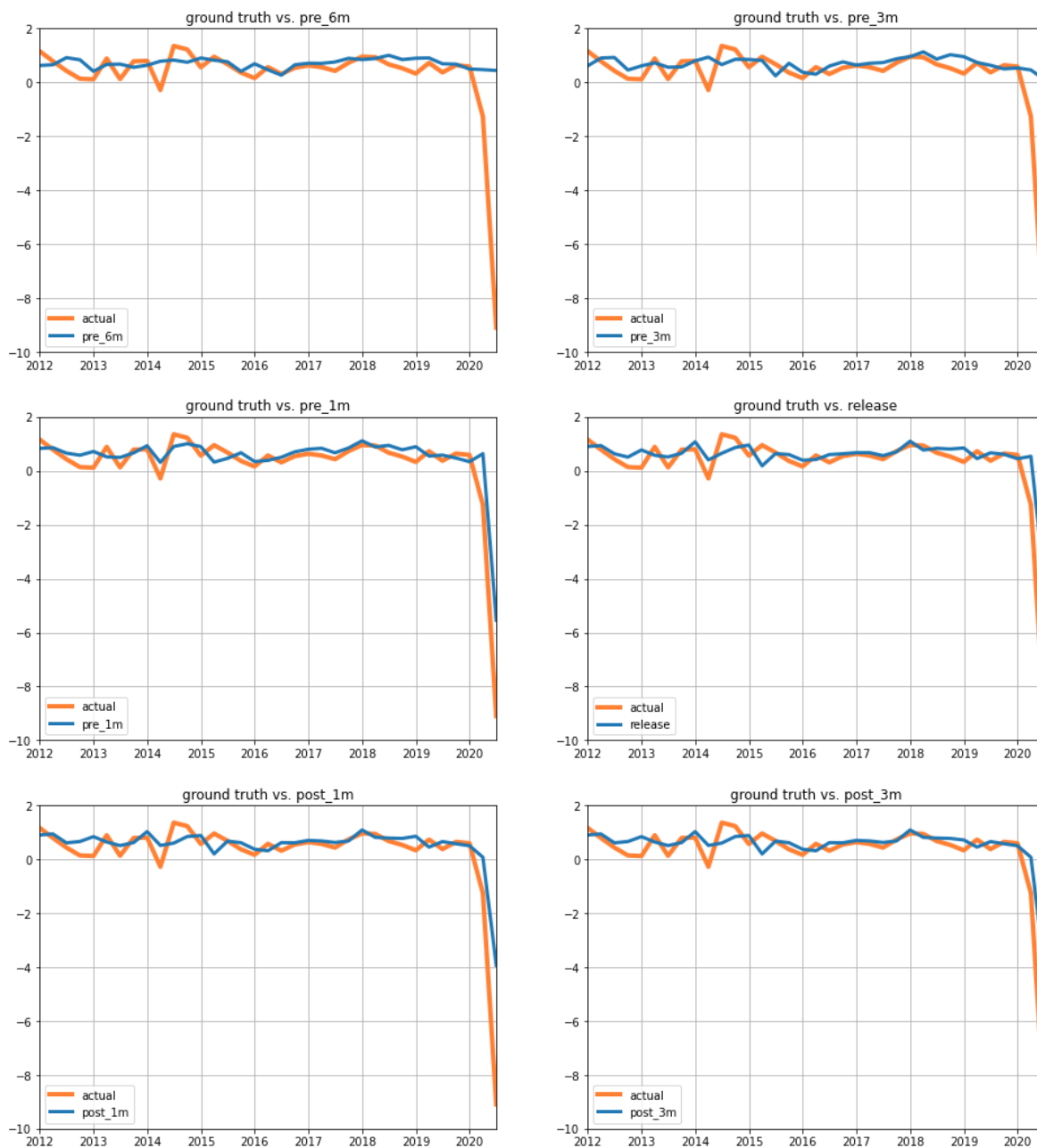
The nowcasts seem again to be fairly close to the actual values, though they look somewhat smoother. The earliest forecasts are the least convincing and apparently fail to adequately capture the COVID. It also noteworthy that the nowcasts one month before release capture the COVID better than the ones 3 months after release.

Correlation matrix: ground-truth vs. now-casts
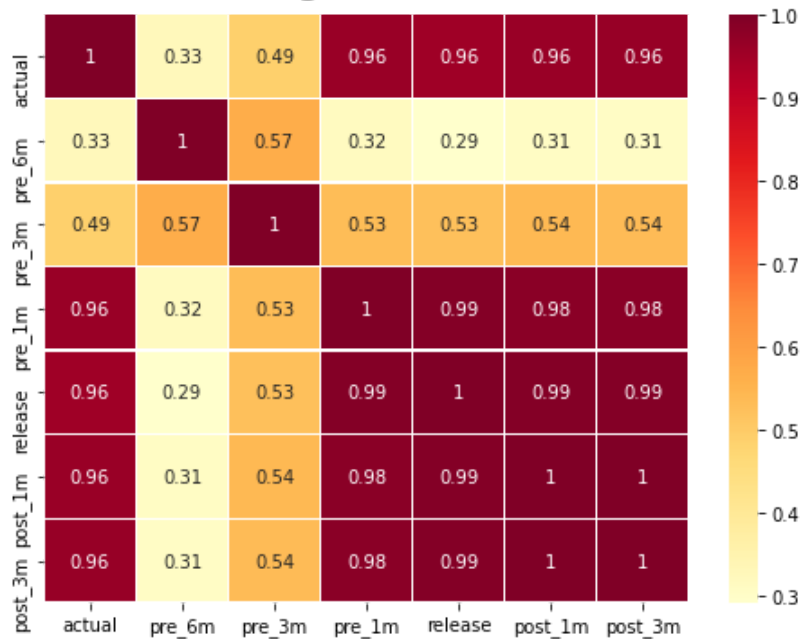
The pattern is similar to that of the Euro Area: earlier forecasts display low correlation, while later ones display really high correlations.

Average RMSFE for the United States
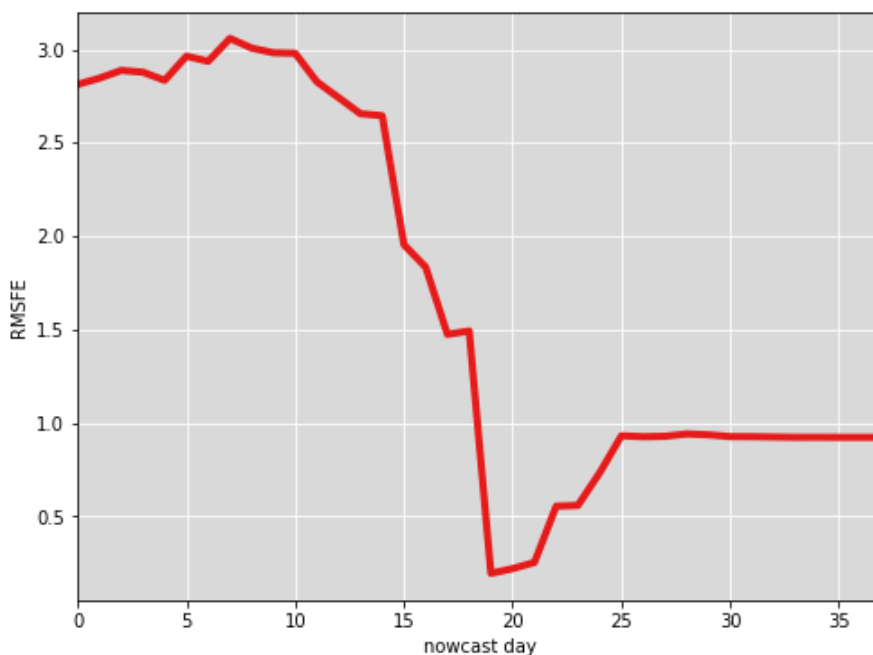
When looking at RMSFE, the pattern becomes unexpected. The nowcast RMSFE is first steadily declining, then getting back up roughly one month before release. This goes against the intuition that more information should produce more accurate forecasts.

After some more exploration, it seems that this surprising result might be - at least partially - due to the COVID. Indeed, by just excluding 2020q2 from the sample, the plot changes significantly:

Average RMSFE for the United States, no COVID
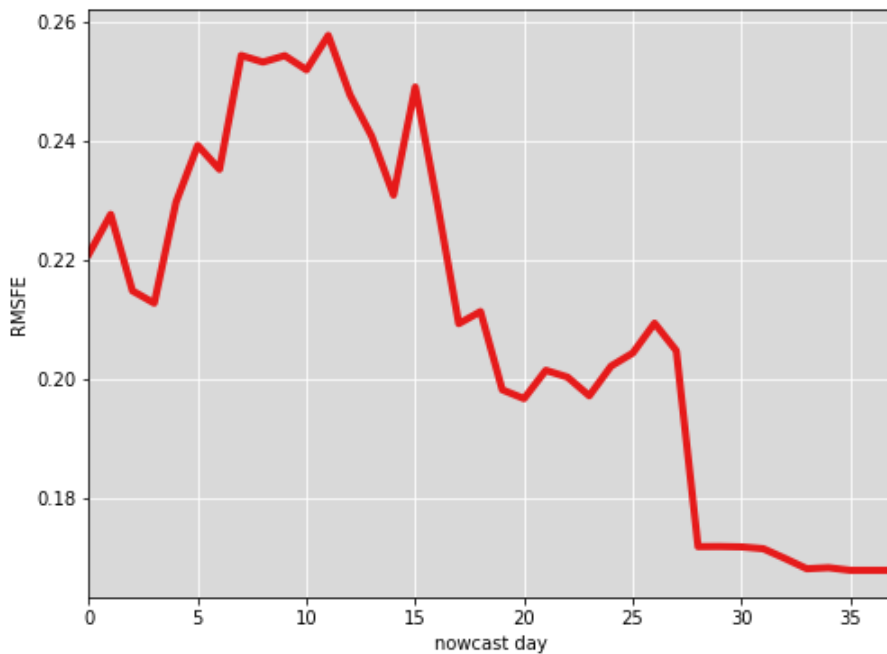
Now the RMSE steadily declines without rising again anymore at the end of the sample. It thus seems that the COVID represents a large outlier that it is sufficient to affect the average RMFSE.

This conclusion is in line with the visualisation of the COVID period on the now-casting.com website for the United States:
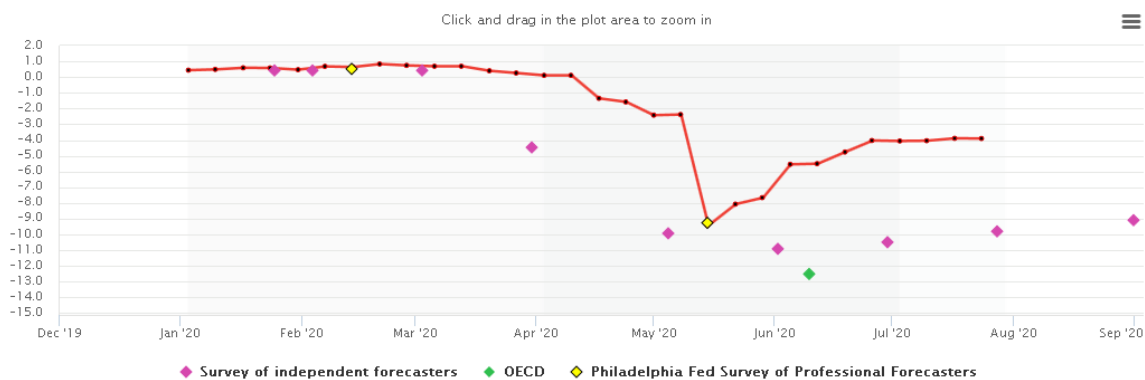
Overall, the value of -9% produced by the nowcasts in May seems closer to the ground truth than the value of -4% predicted by the updated nowcasts in July/August. Other surveys also seem to disagree with the nowcasts here, predicting rather a decline around -10%. This suggests that the model may struggle to account for the COVID effect.

Still, aside from the COVID, the US does exhibit some undesirable results. If instead of excluding just the COVID (2020q2) one excludes the whole year 2020 (hence 2020q1 and 2020q2), the results become poor again. The correlations become fairly low:

Correlation matrix: ground-truth vs. now-casts
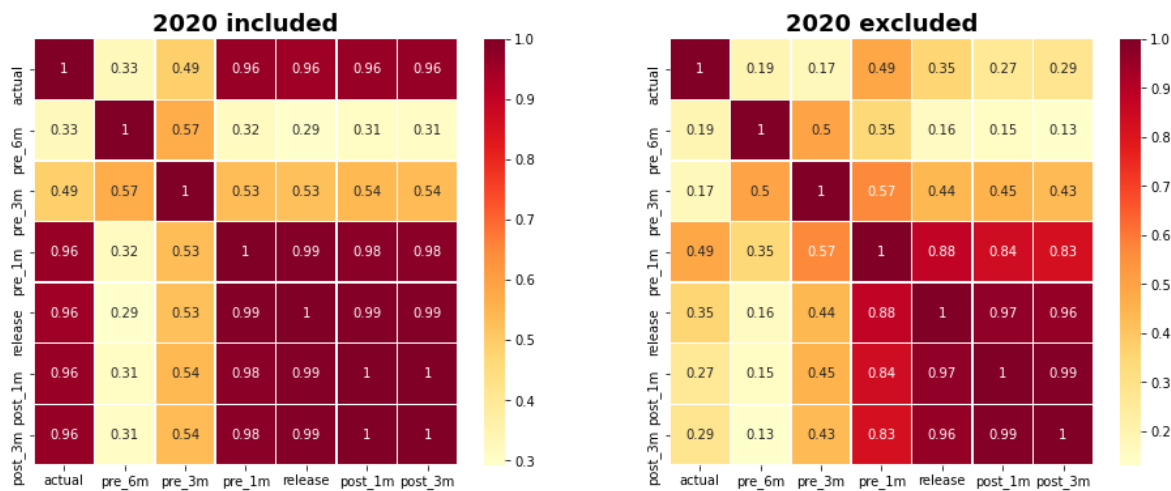
When excluding 2020 from the sample, the correlations between the actual data and the nowcasts become quite low. Also, the correlation actually declines for the most recent nowcasts. The best forecasts are the one obtained 1 month before the release of the data.

Average RMSFE for the United States, 2020 excluded
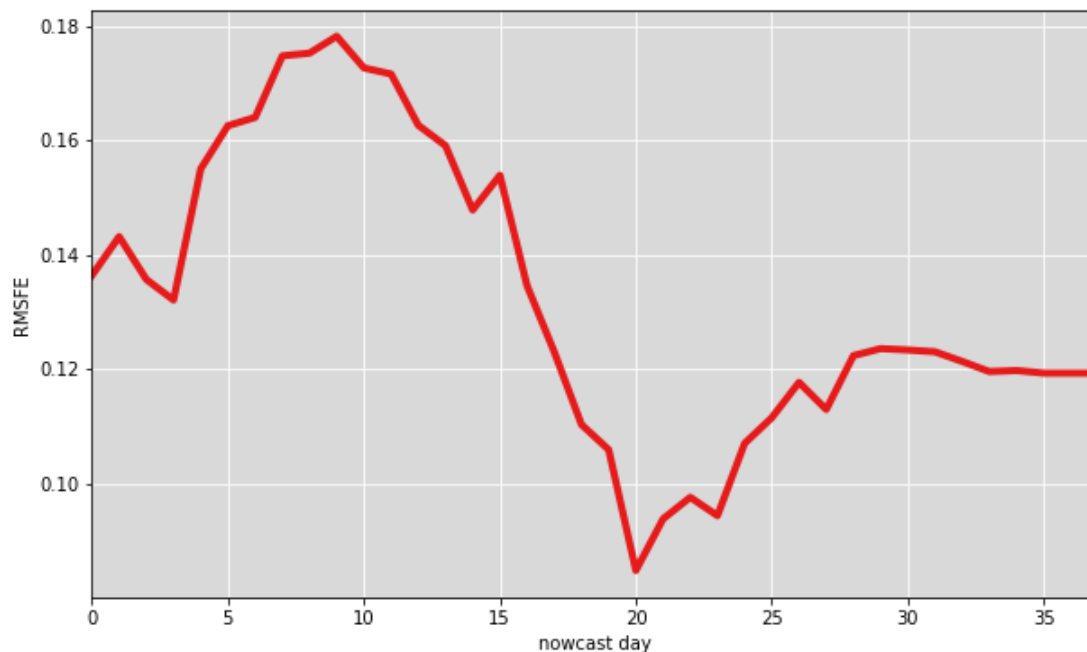
Eventually, one notices that the RMSE starts rising again at the end of the nowcast timeline. This should not happen if more information results in more accurate predictions.

Other European Union countries, GDP growth

Overall, we found that most other developed economies (Japan, France, Germany, Spain and the United Kingdom) behave in a way that is fairly similar to the Euro Area: the nowcast series look close to the actual series, they display a fairly high correlation (at least for the later nowcasts), and the calculated RMSFE steadily decline as more information obtains. Italy, however, looks less convincing.

A focus on Italy, GDP growth

**Italy real GDP growth: actual vs. nowcasts at different timelines**
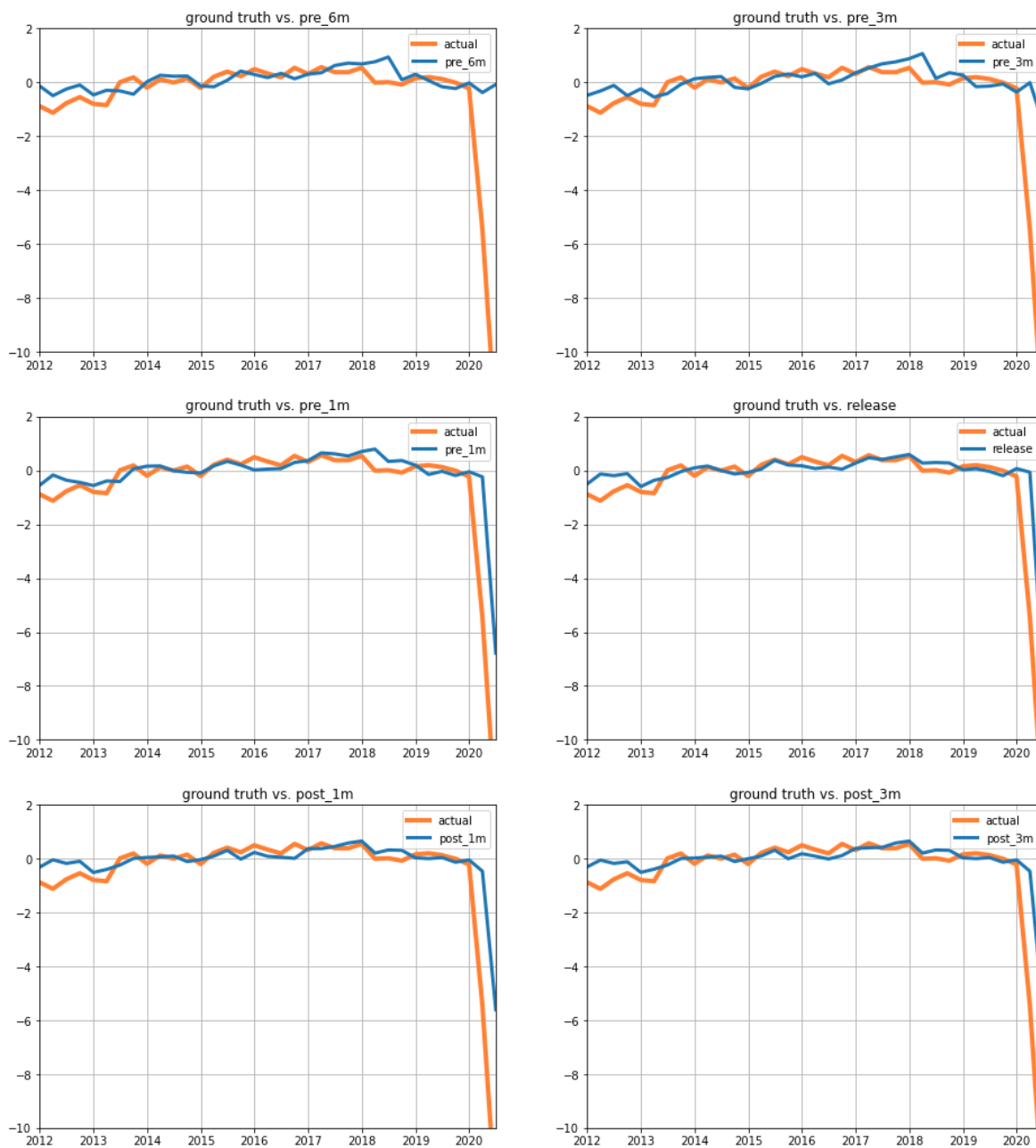
While the plots still reasonably approach the actual values, the model seems to do less well close to te COVID period: not only do the nowcasts seem to be lagging behind the actual values, but also the latest forecasts seem less accurate than those produced one month before release and at release.

Correlation matrix: ground-truth vs. now-casts
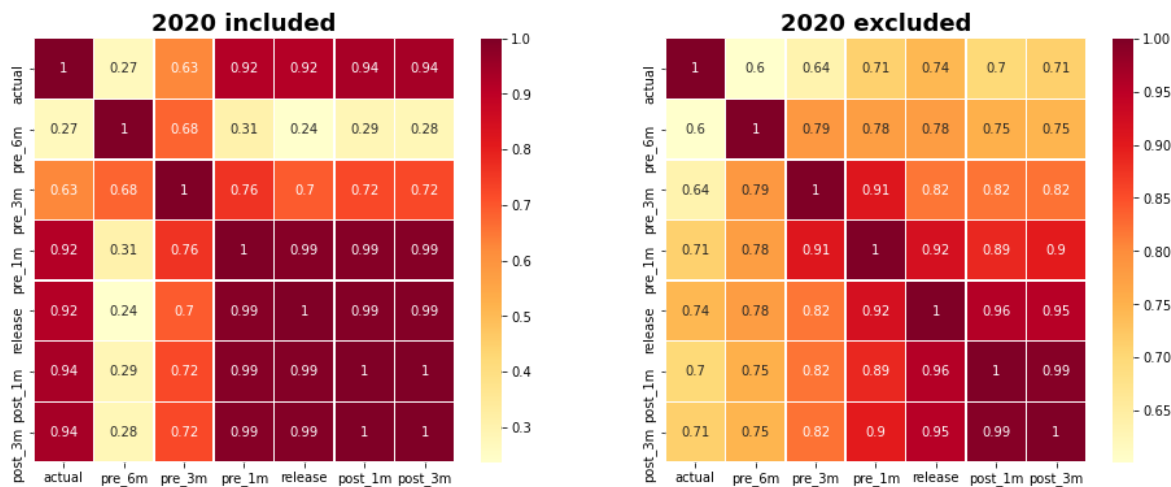
When 2020 is excluded, the correlation does not seem to improve much as later nowcasts are produced. It also remains capped at 0.7, way beow the 0.95 level of the full sample.

Correlation matrix: ground-truth vs. now-casts
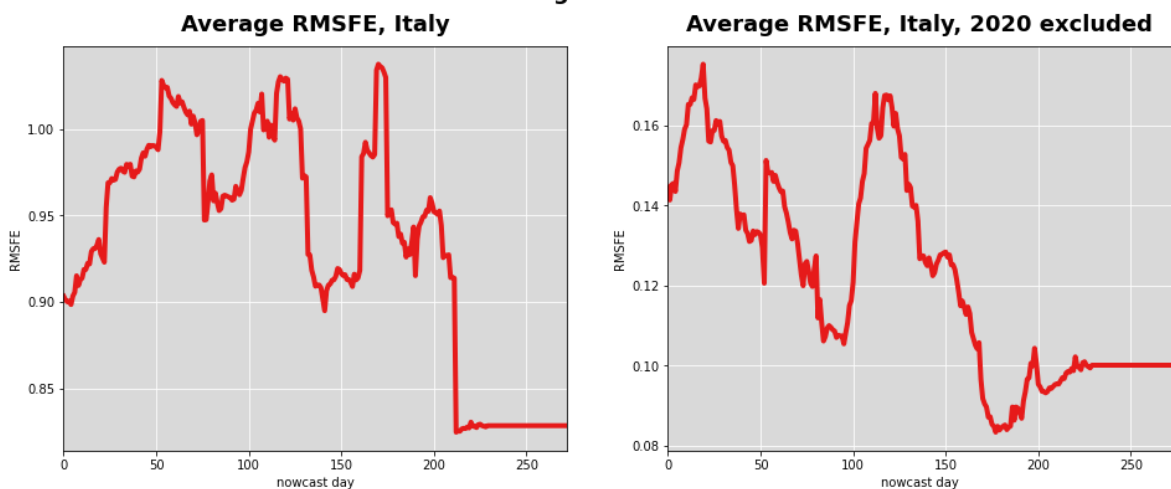
For the full sample (left plot), the RMSFE behave strangely. It is overall declining, but reverts to higher values quite a few times, unlike what would be expected as more information becomes available. It starts dropping for good only after the first release.

When 2020 is excluded from the sample, the RMSFE looks even worse. It starts increasing again at the date of release, before it reaches a plateau roughly two months after release. The increase following the release is clearly at odd with the expected improvement as more information gets available.

Analysis on other series

Now-casting.com also provided a number of non GDP series for the Euro Area. To obtain a broader overview of the dataset, some of these series were explored, with a similar methodology. Some yielded good results overall, while some produced unexpected results. A selection of these results are developed below.
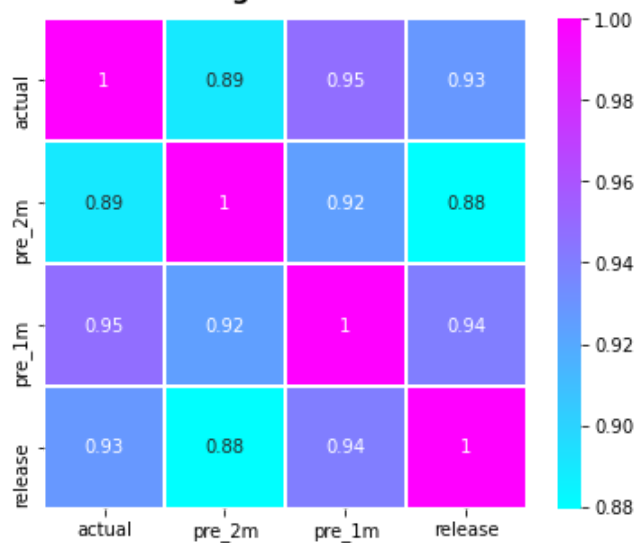
business climate indicator

This is an example of a series for which the model works well.

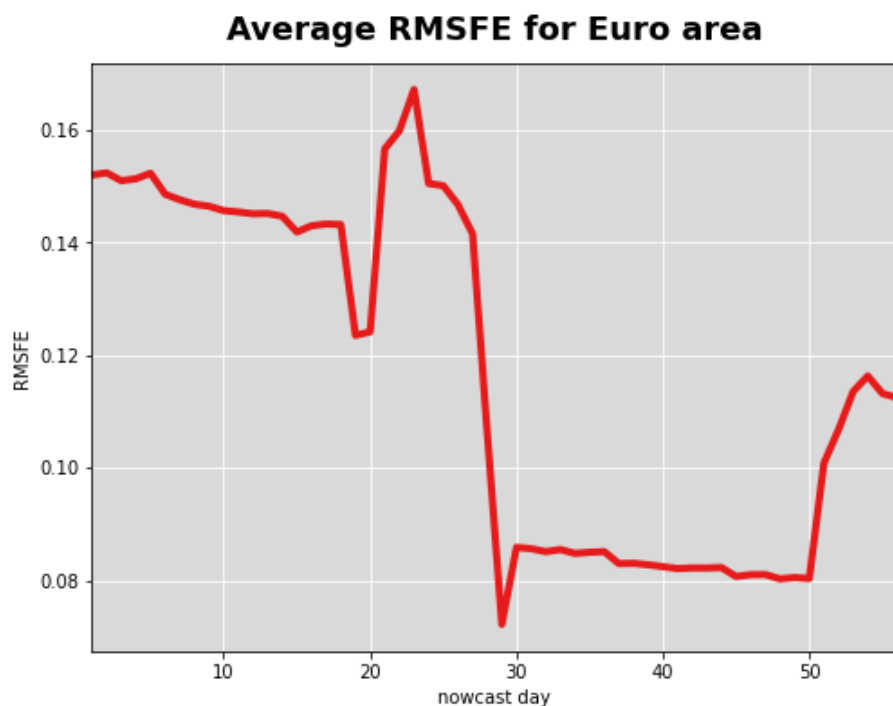## ground-truth vs. now-casts: business climate indicator

The nowcasts follow the actual series quite closely.

Correlation matrix: ground-truth vs. now-casts

The correlations are extremely high, showing a good fit of the nowcasts to the data.

Average RMSFE for Euro area

The RMSFE is overall declining except over the final periods.

Overall, the model seems good at predicting this series. Other series like construction output or manufacturing turnover also display the same kind of nice behaviour.

Certain series however produce less satisfactory results. Hereafter, two examples are developed: industrial production and car registrations.
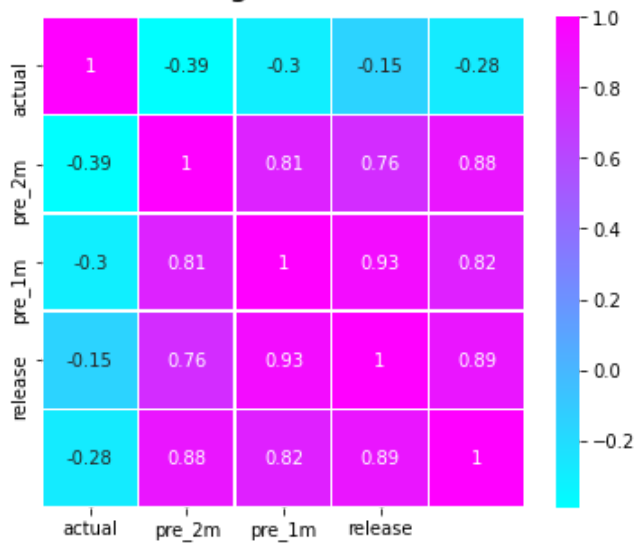
Industrial production

This is an example of a series where the model seems not to do too well.

ground-truth vs. now-casts: industrial production
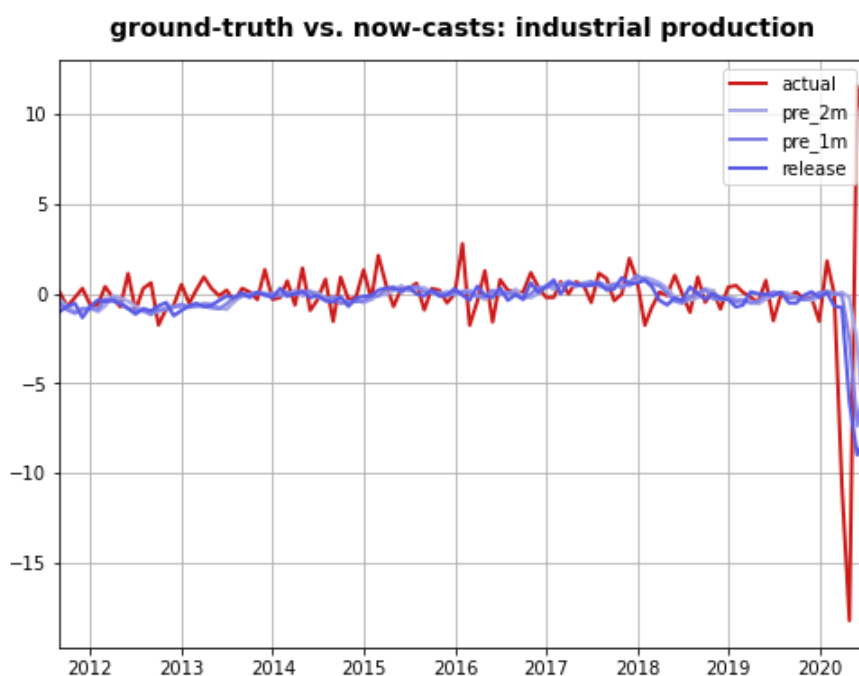
The fit seems overall correct, but much smoother than the actual variations. Also, the nowcasts for the COVID period seem to be really lagging behind.

Correlation matrix: ground-truth vs. now-casts

	actual	pre_2m	pre_1m	release	
actual	1	-0.39	-0.3	-0.15	-0.28
pre_2m	-0.39	1	0.81	0.76	0.88
pre_1m	-0.3	0.81	1	0.93	0.82
release	-0.15	0.76	0.93	1	0.89
	-0.28	0.88	0.82	0.89	1

The correlations look really poor. At any timeline, the correlations between the actual series and the nowcasts are negative. This does not seem to improve as more information is obtained.
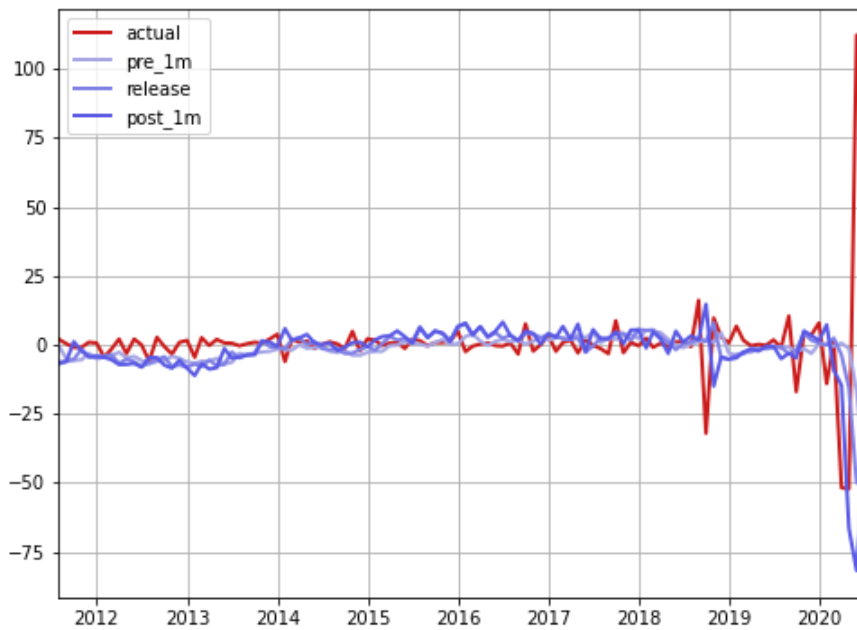

Average RMSFE for Euro area
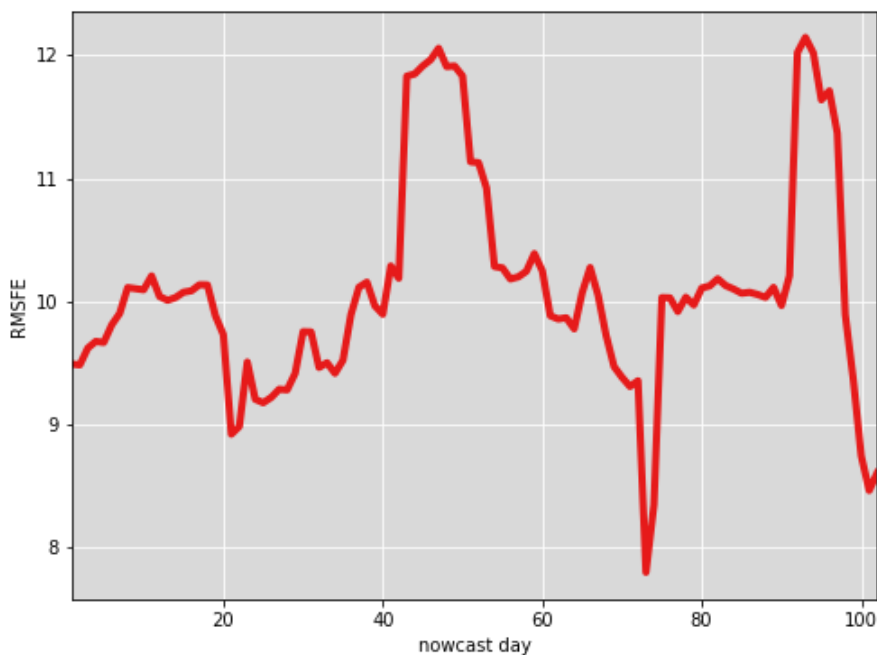
The RMSFE looks strange. It does overall decline slightly between the beginning and the end of the samples, but the reversion are so many and so large that it does not seem normal.

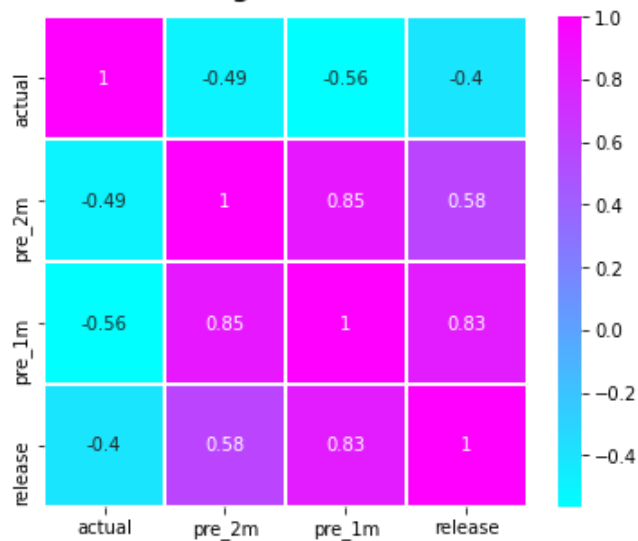## New passenger car registrations

This is a final example of a series where things seem to go wrong.

ground-truth vs. now-casts: new passenger car registrations

The fit does not look extremely bad, but there seems to be some lag in the response of the nowcasts, which is especially obvious for the COVID period.

Correlation matrix: ground-truth vs. now-casts

The correlations look poor. They remain significantly negative, even one month after the release.

Average RMSFE for Euro area
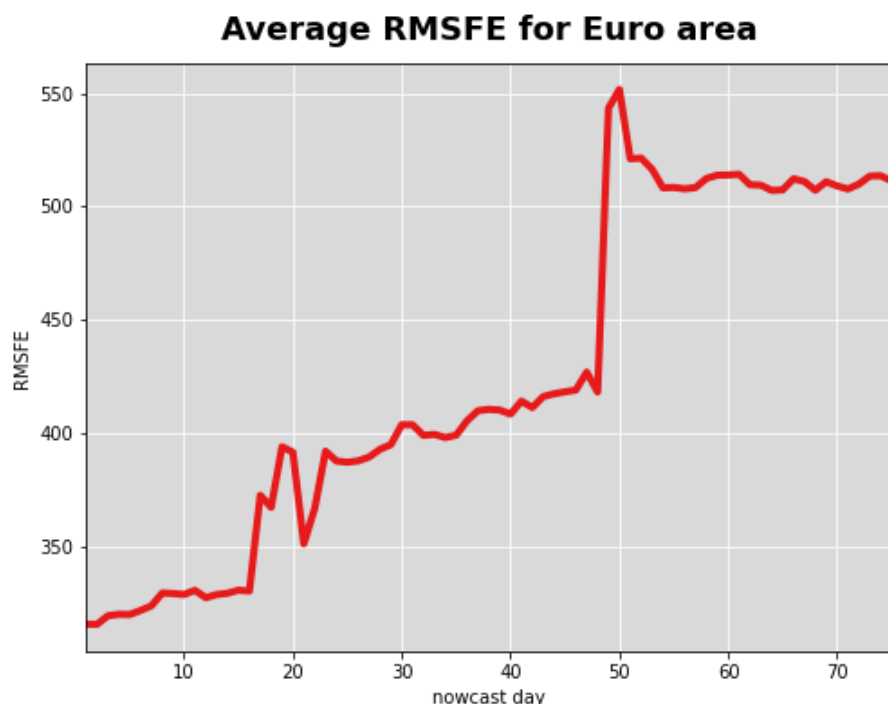
The RMSFE is probably the most surprising result of the analysis. It is monotincally increasing, meaning that the prediction error increases with more information.

Conclusions

The nowcast models seems to work well for certain series. Except for the United States, the GDP forecasts look good for a wide range of countries.

Adding or excluding 2020 seems to affect the results for certain countries, especially those for which the model performance seems lower in general like the United States or Italy.

For a number of other variables, the performance seems mixed. Some variables achieve really good results, others display average performance, and some series present very unexpected behaviours.

We would be very interested in getting your feedback on these results. In particular, it would be nice if some intuitions could be provided about why certain series behave in an unexpected way.

Possibly, the COVID may represent a major factor of inefficiency. In this case, it would be informative as well to understand why other forecasts methods still manage to achieve fair prediction performances, while the nowcast models struggle a bit more with this event.