

Appendix_B_TDCC Results

180000622

2023-08-12

```
lagged_correlations <- read_rds('TDL_Correlations.rds')
long_left_IMFs <- read_rds('long_series_IMFs.rds')

IMF_names <- colnames(long_left_IMFs$ADM$IMF_data[[1]]$IMFs[[1]])[1:8]
tickers <- names(long_left_IMFs)
```

```
# Function to get the announcement g values
announcement_g_values <- function(ticker, merged_forecast_num) {
  # returns the matching index number of generation dates for the forecast of the announcement
  # s. This index is equivalent to g
  announcement_g <- match(as_date(long_left_IMFs[[ticker]]$announcements), as_date(long_left_IMFs[[ticker]]$IMF_data[[merged_forecast_num]]$generation_dates)) %>% na.omit()

  announcement_g_df <- data.frame(g = announcement_g)
  return(announcement_g_df)
}
```

```
# Function to plot the Lagged correlations
lagged_ccf_plot <- function(lagged_ccf, ticker, merged_forecast_num) {

  # get g values of announcement dates
  announce_df <- announcement_g_values(ticker, merged_forecast_num)

  # make the plot
  lagged_plot <- lagged_ccf %>%
    ggplot(aes(x = as.numeric(g), y = lag, fill = coef)) +
    geom_tile() +
    scale_fill_gradient2(low = '#f4a317', mid = 'white', high = '#138ade') +
    labs(x = NULL,
         y = expression(lambda),
         fill = NULL) +
    scale_x_continuous(limits = c(0, NA)) +
    theme_minimal(base_size = 6) +
    theme(legend.position = 'none')

  # add announcements
  lagged_plot <- lagged_plot + geom_vline(data = announce_df, aes(xintercept = g), color = 'black', alpha = 0.5, linetype = 'dashed')
  return(lagged_plot)
}
```

```

# Loop over each ticker and generate plots for each of the merged
# forecasts available for that ticker
foreach(ticker = tickers) %do% {
  # Loop over multiple forecasts
  for (i in 1:length(lagged_correlations[[ticker]])) {
    # generate price plots for each IMF
    list_of_plots_price <- foreach(j = seq(1,8)) %do% {
      lagged_ccf_plot(lagged_correlations[[ticker]][[i]][[j]]$price_cor, ticker = ticker, merge
d_forecast_num = i) + labs(x = IMF_names[j])
    }
    # generate change plots for each IMF
    list_of_plots_change <- foreach(j = seq(1,8)) %do% {
      lagged_ccf_plot(lagged_correlations[[ticker]][[i]][[j]]$change_cor, ticker = ticker, merg
ed_forecast_num = i) + labs(x = IMF_names[j])
    }

    # get the date range for the forecast

    date_range <- long_left_IMFs[[ticker]]$IMF_data[[i]]$generation_dates %>%
      as_date() %>%
      range() %>%
      format('%d %B %Y')

    # arrange the plots in a side by side grid
    grid.arrange(
      # arrange the price as the left plots
      arrangeGrob(list_of_plots_price[[1]],
                  list_of_plots_price[[2]],
                  list_of_plots_price[[3]],
                  list_of_plots_price[[4]],
                  list_of_plots_price[[5]],
                  list_of_plots_price[[6]],
                  list_of_plots_price[[7]],
                  list_of_plots_price[[8]],
      ncol = 2, nrow = 4,
      top = text_grob( paste('Price Correlations'))),
    )

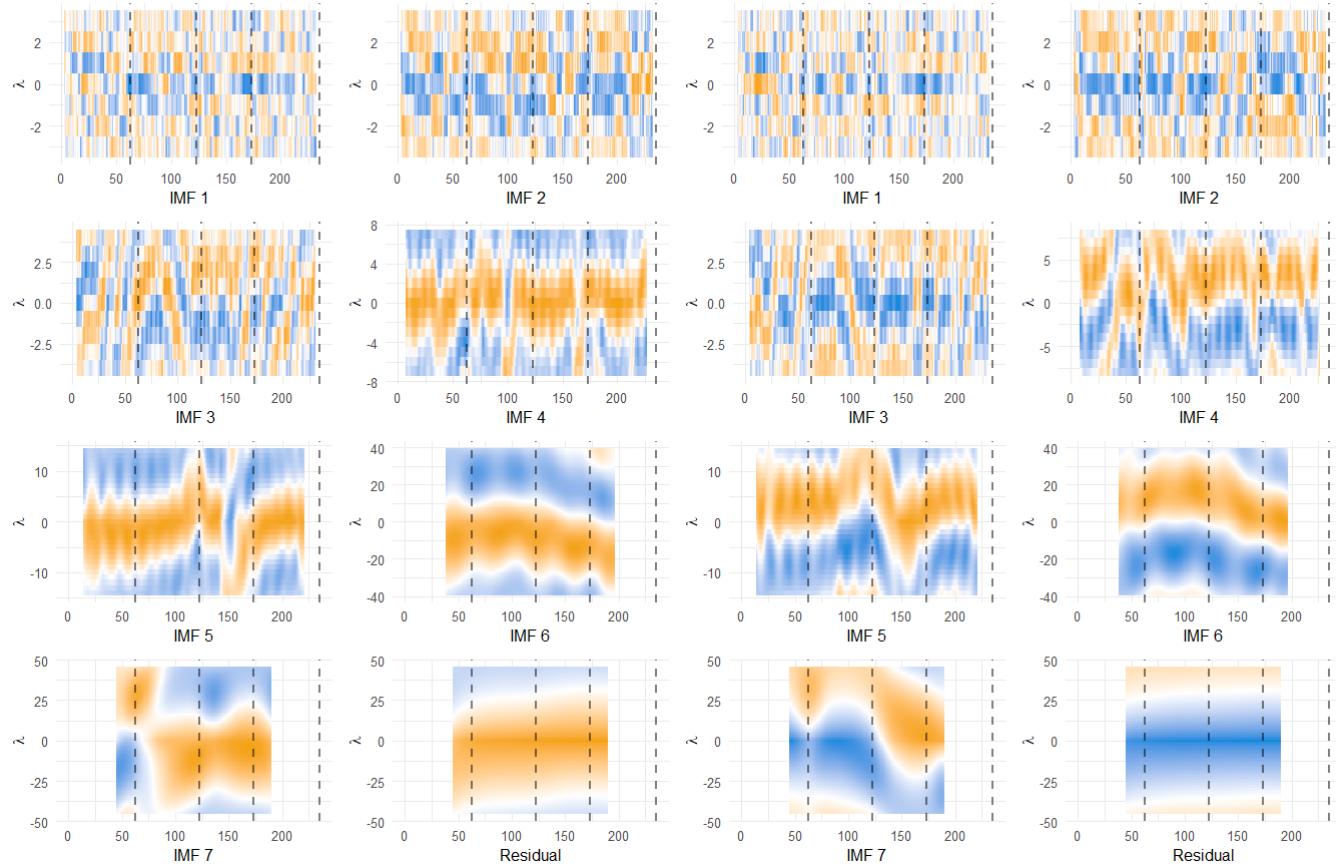
    # arrange change as right plots
    arrangeGrob(list_of_plots_change[[1]],
                list_of_plots_change[[2]],
                list_of_plots_change[[3]],
                list_of_plots_change[[4]],
                list_of_plots_change[[5]],
                list_of_plots_change[[6]],
                list_of_plots_change[[7]],
                list_of_plots_change[[8]],
    ncol = 2, nrow = 4,
    top = text_grob( paste('Change Correlations'))),
    # add the ticker and forecasts as a title
    top = text_grob(paste0(ticker, ' : ', date_range[1], ' - ', date_range[2])), ncol = 2
  }
}

```


ADM: 05 December 2019 - 09 November 2020

Price Correlations

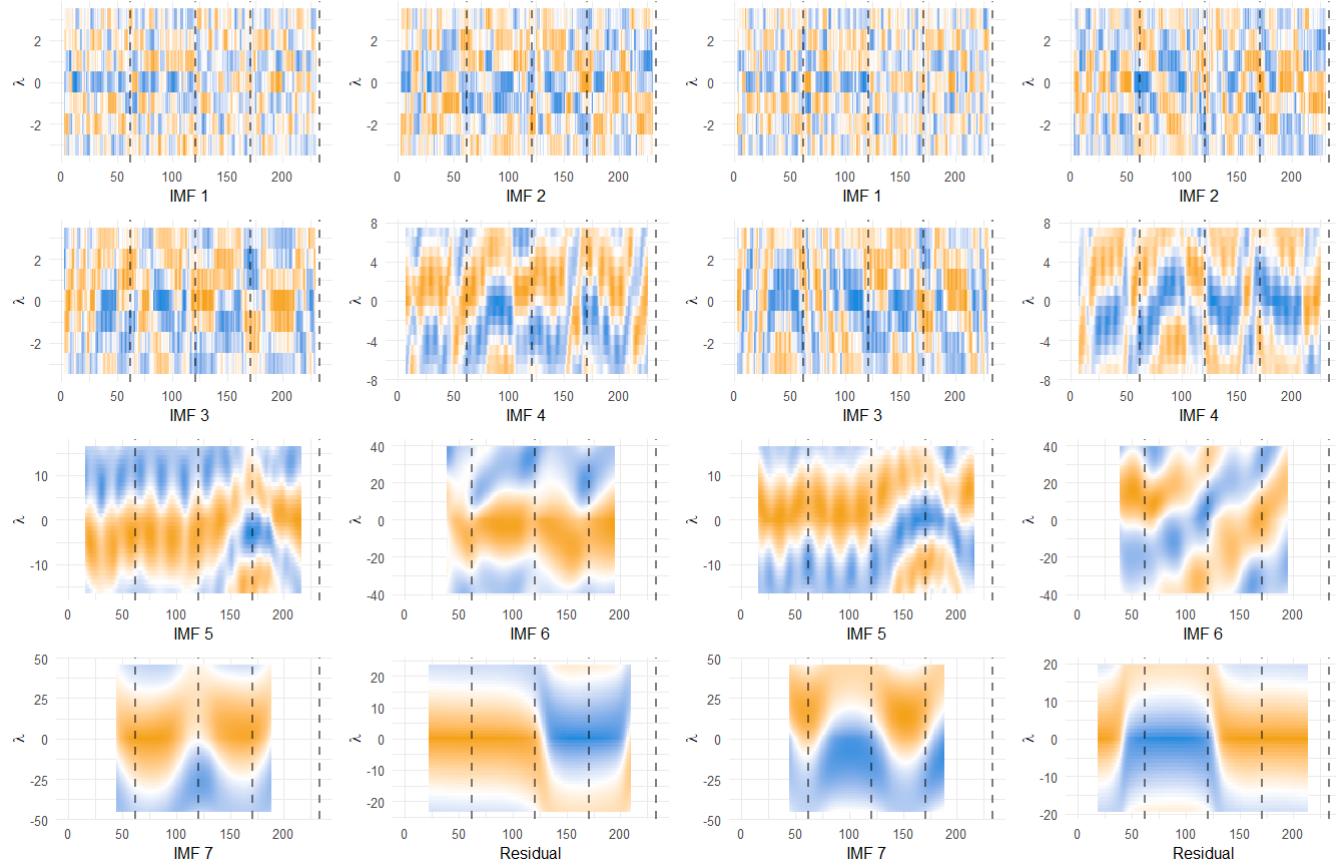
Change Correlations



ADM: 07 December 2020 - 08 November 2021

Price Correlations

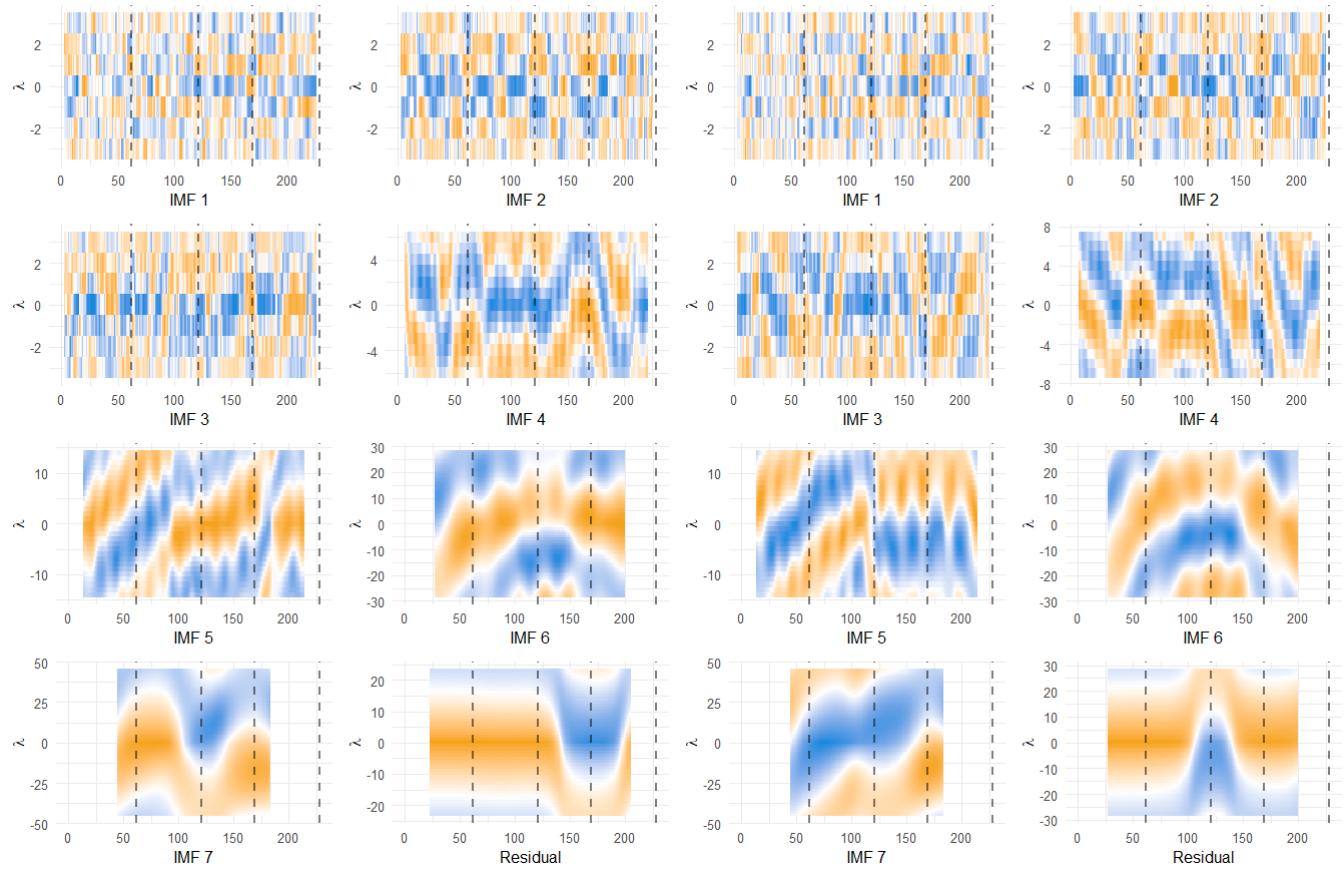
Change Correlations



ADM: 03 December 2021 - 07 November 2022

Price Correlations

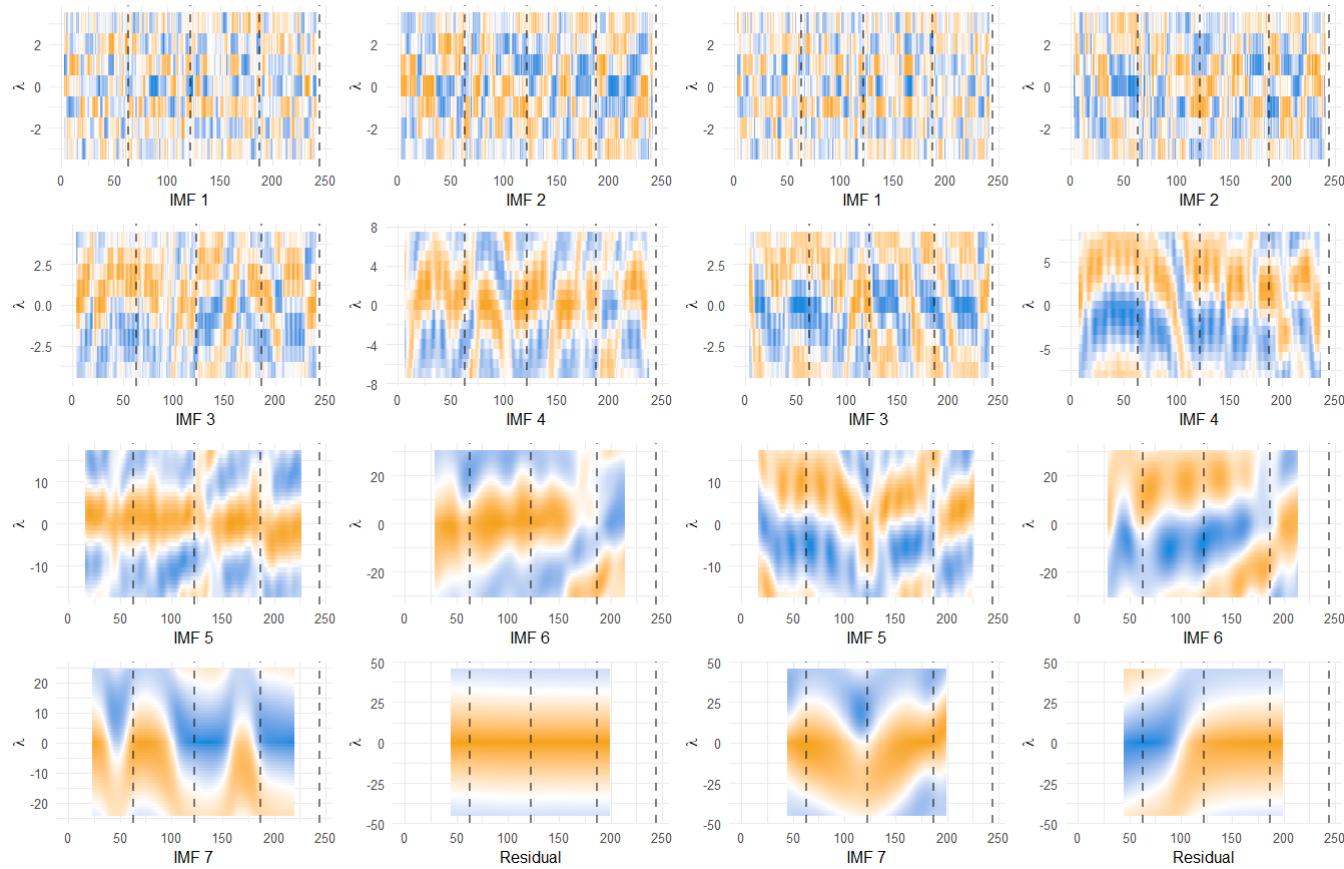
Change Correlations



AHT: 16 March 2020 - 02 March 2021

Price Correlations

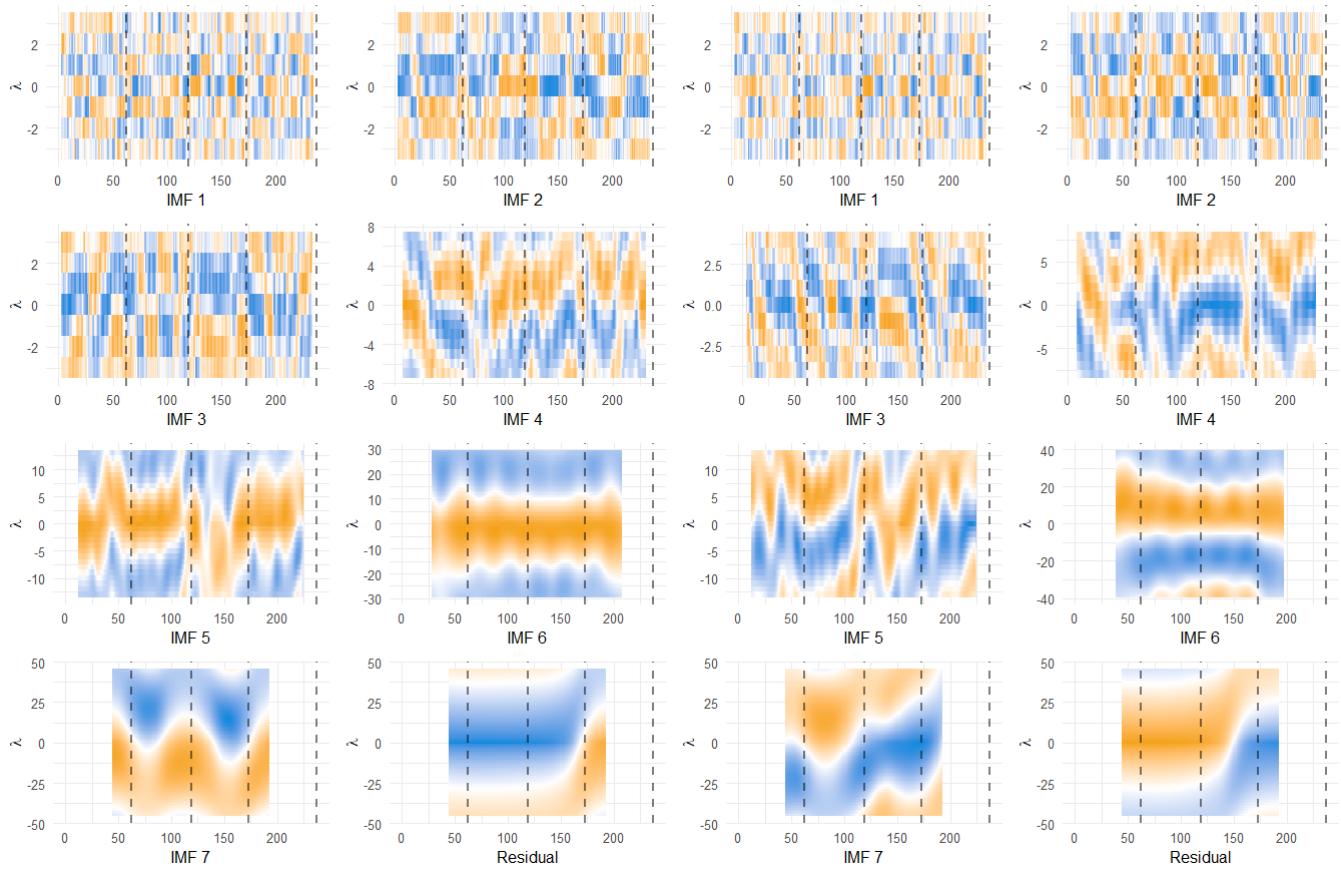
Change Correlations



AV: 04 December 2020 - 11 November 2021

Price Correlations

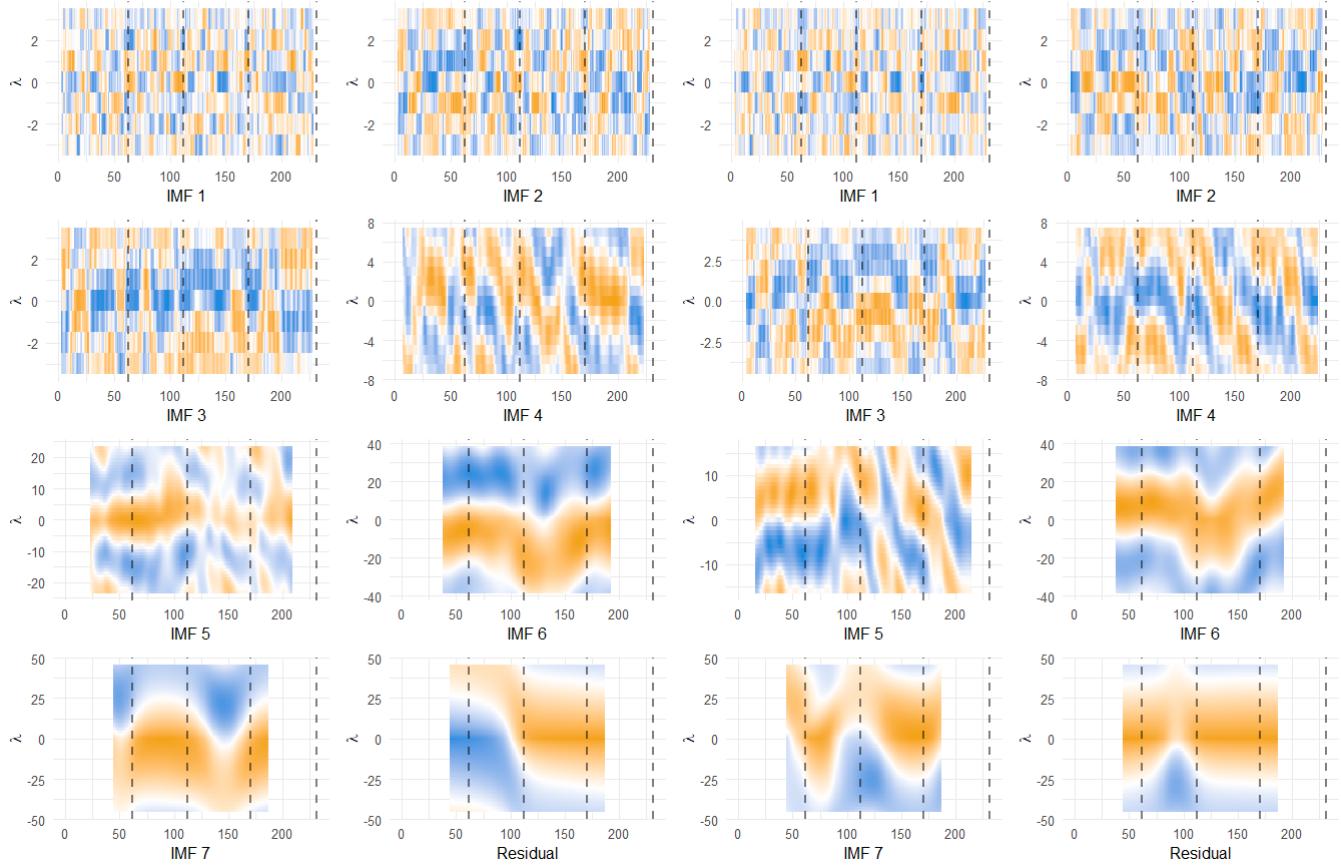
Change Correlations



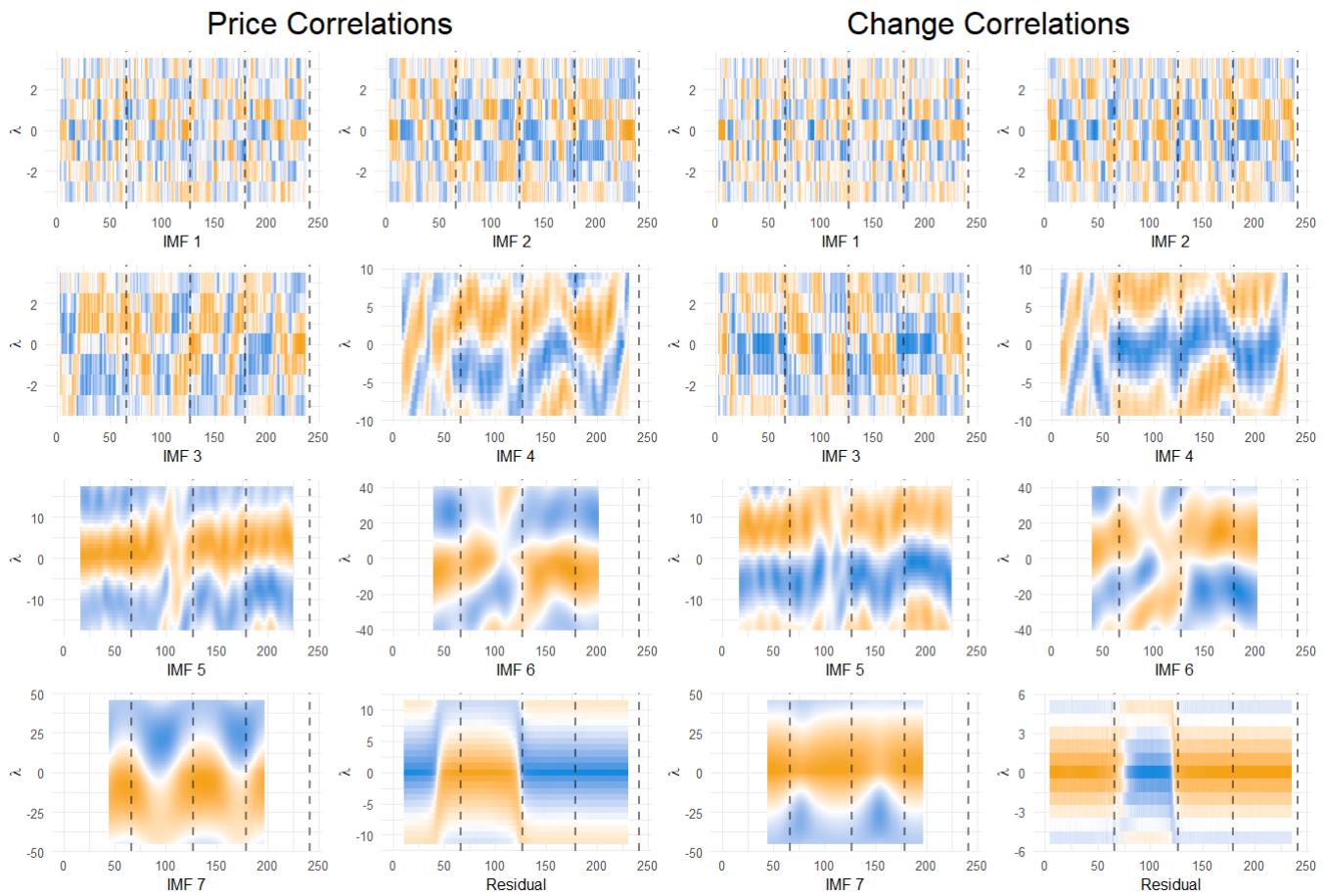
AV: 02 December 2021 - 09 November 2022

Price Correlations

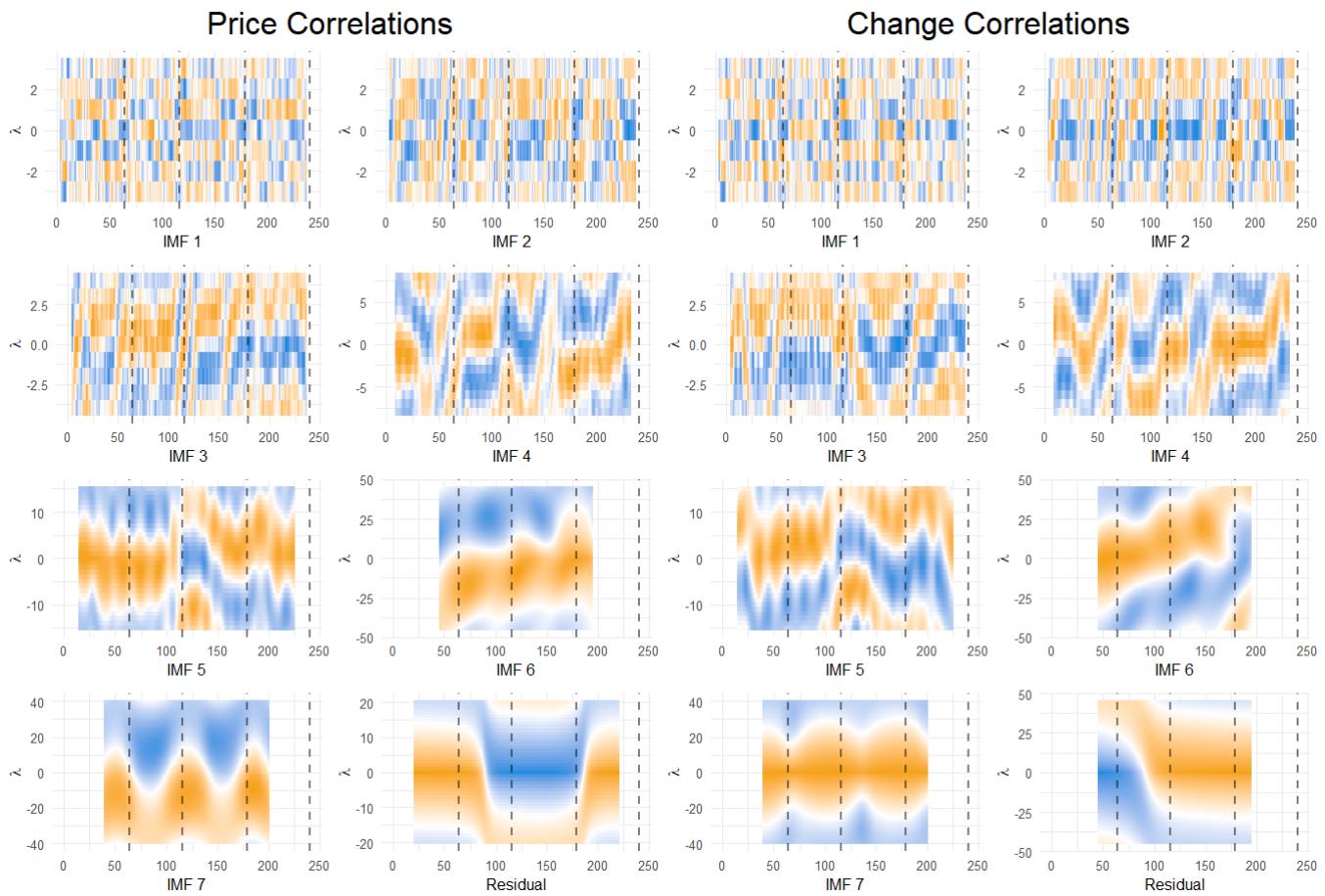
Change Correlations



AZN: 12 August 2021 - 29 July 2022



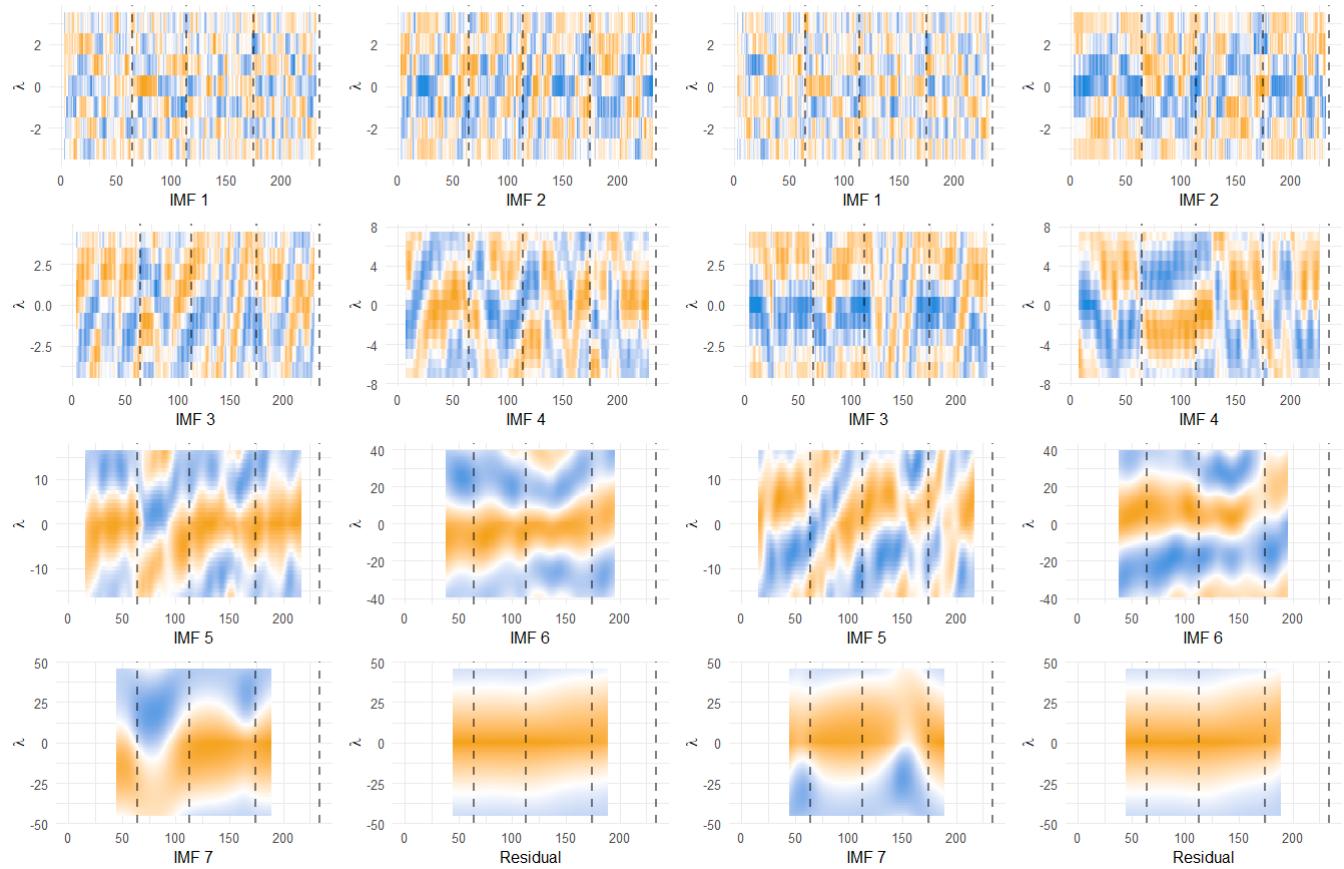
BARC: 13 November 2019 - 23 October 2020



BARC: 18 November 2020 - 21 October 2021

Price Correlations

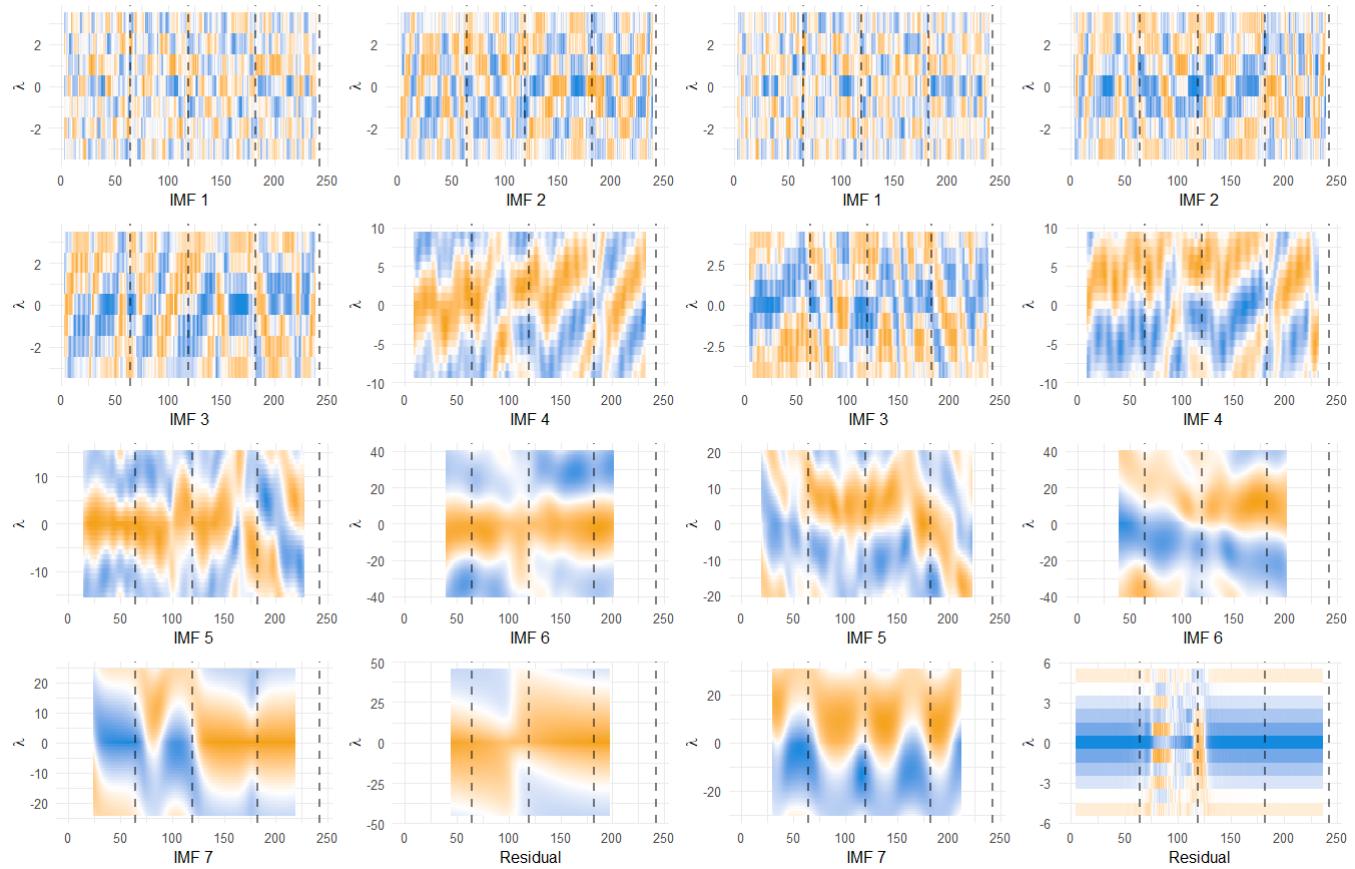
Change Correlations



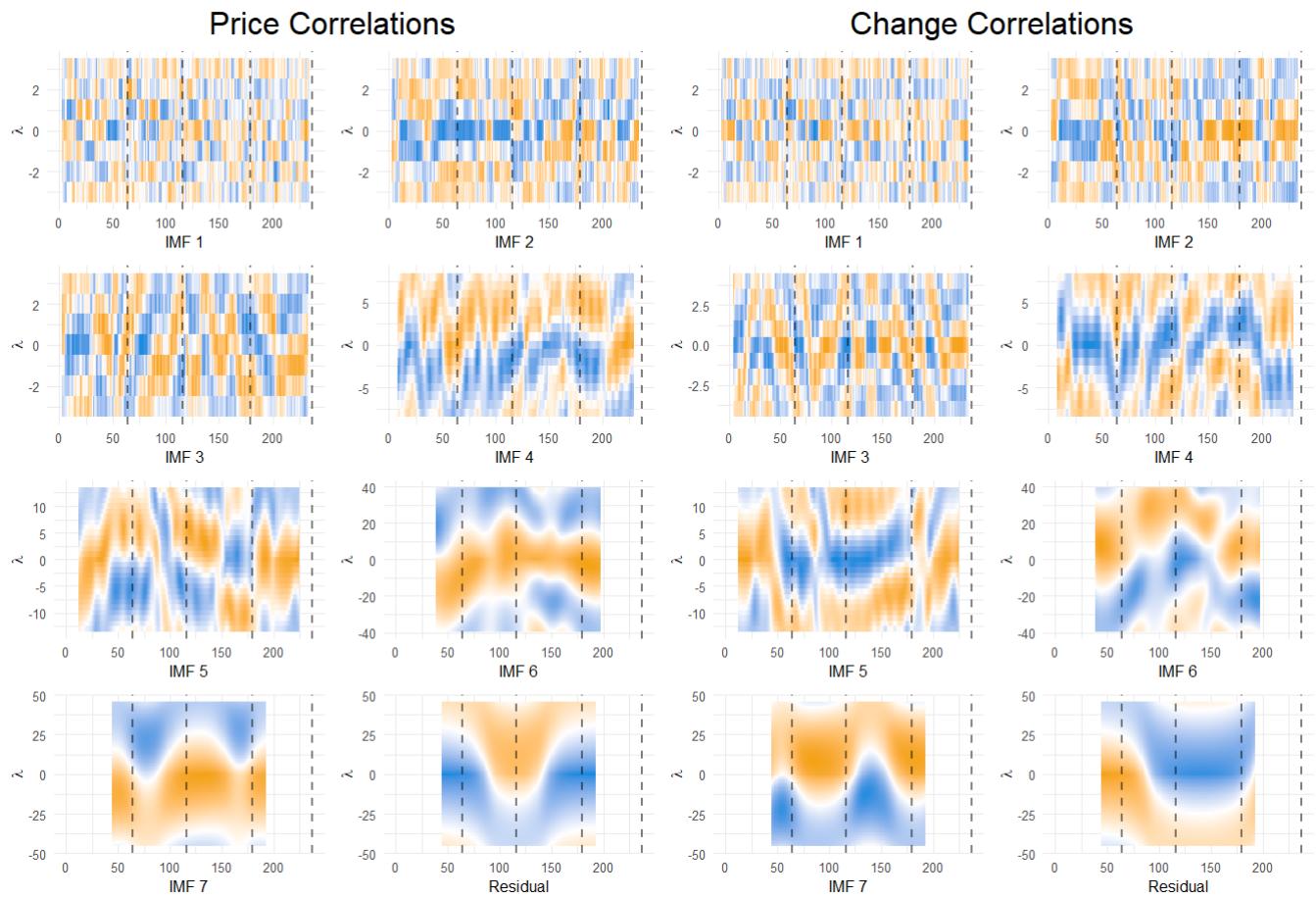
BP: 08 November 2021 - 01 November 2022

Price Correlations

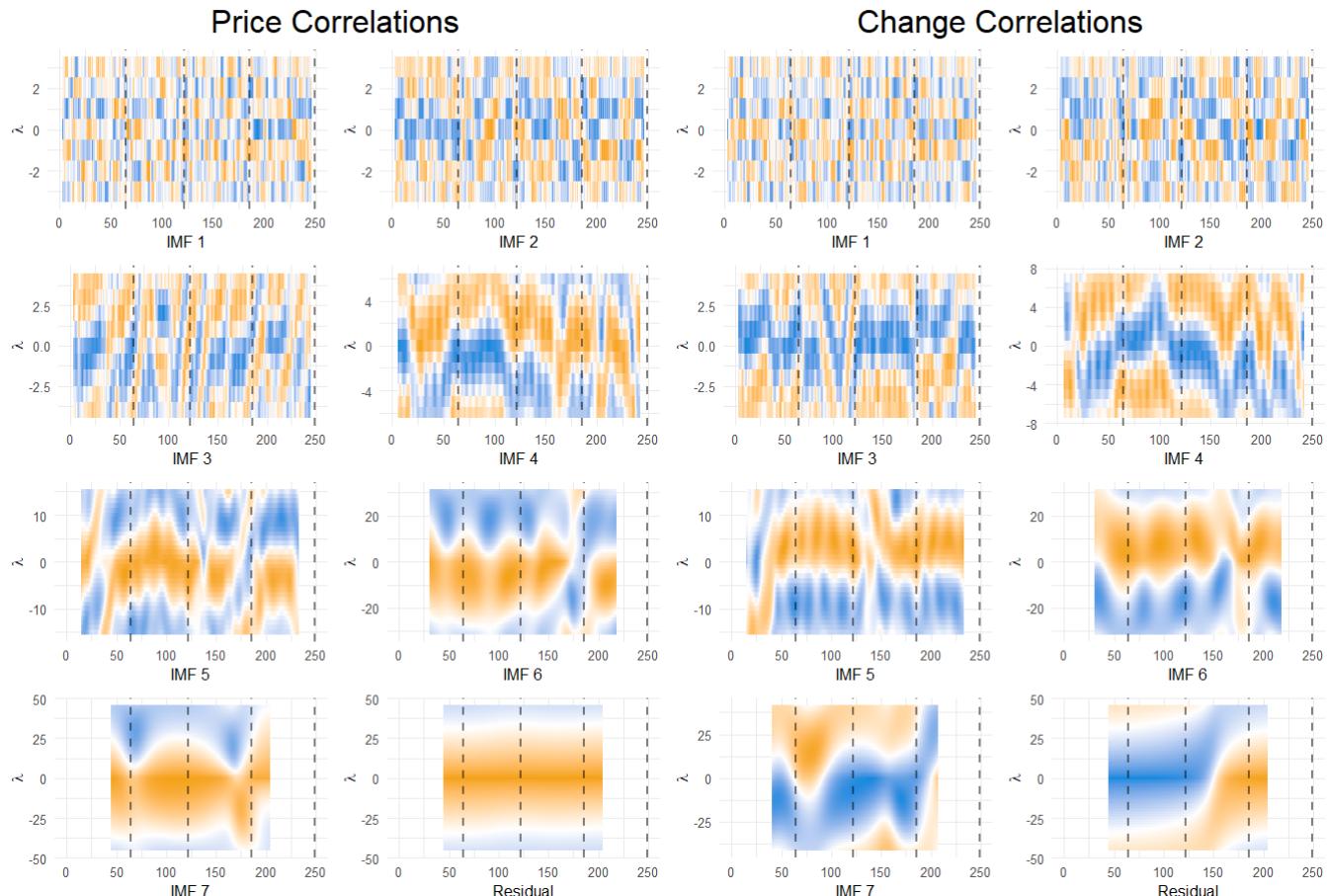
Change Correlations



CCH: 22 November 2021 - 08 November 2022



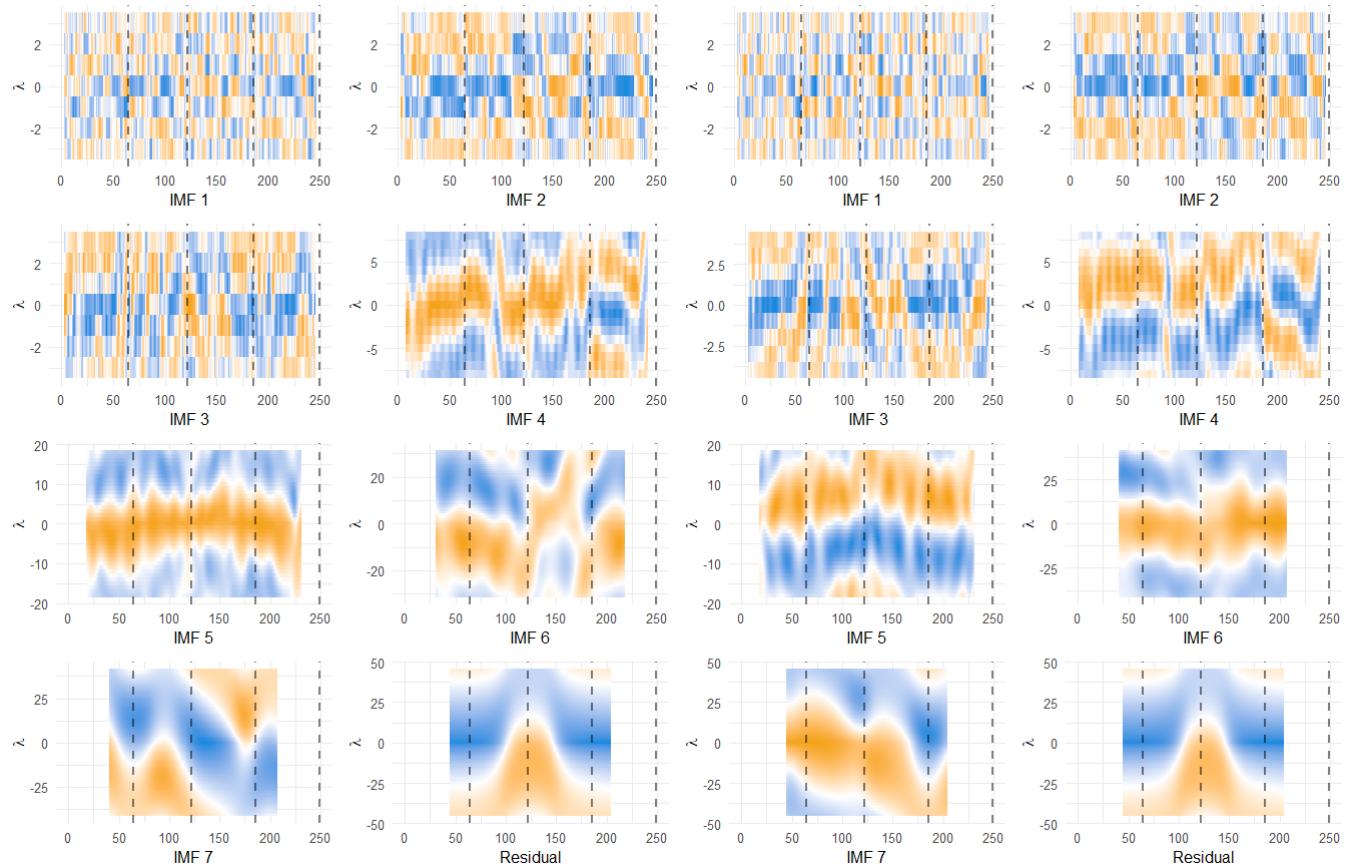
GSK: 05 November 2019 - 28 October 2020



GSK: 03 November 2020 - 27 October 2021

Price Correlations

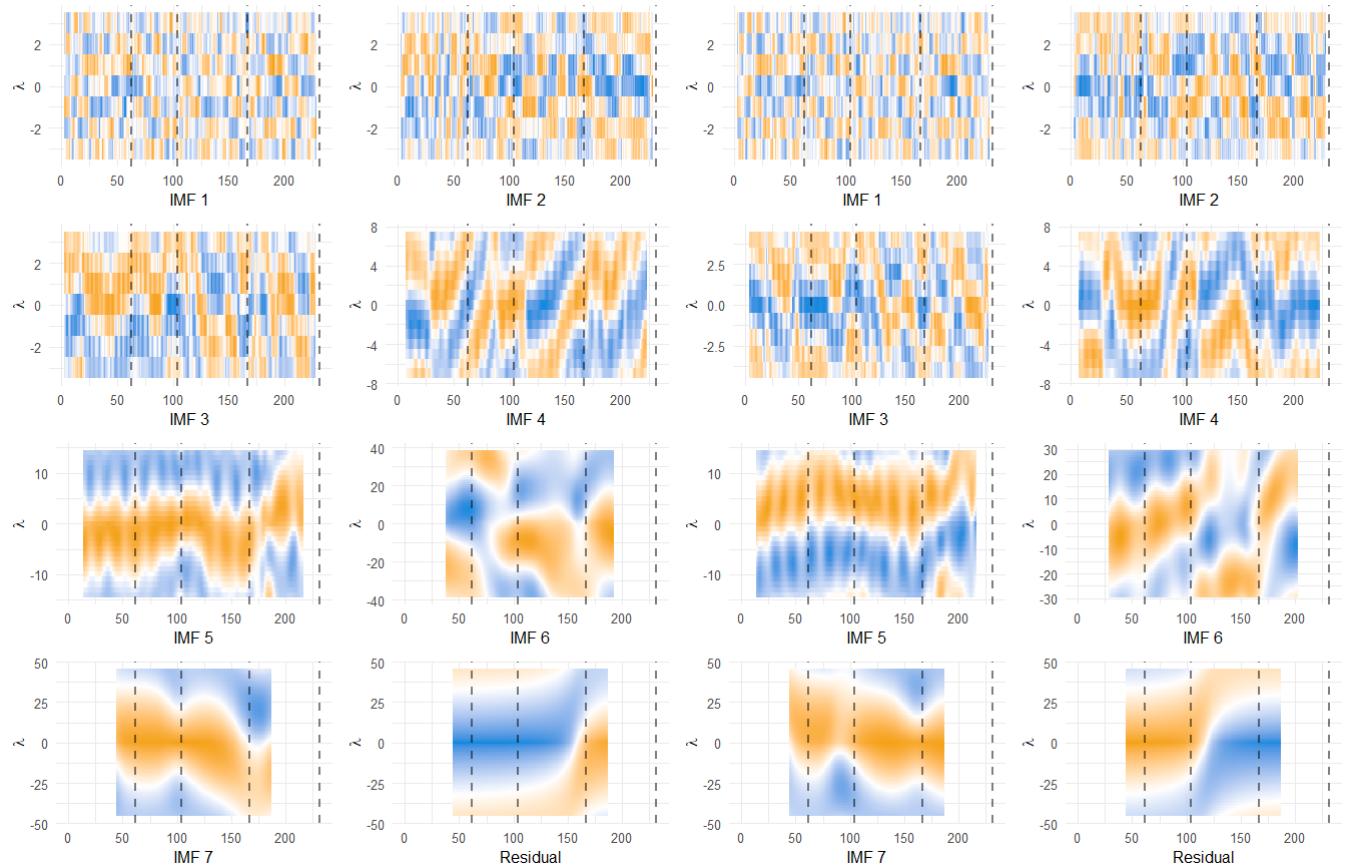
Change Correlations



HSX: 03 December 2020 - 02 November 2021

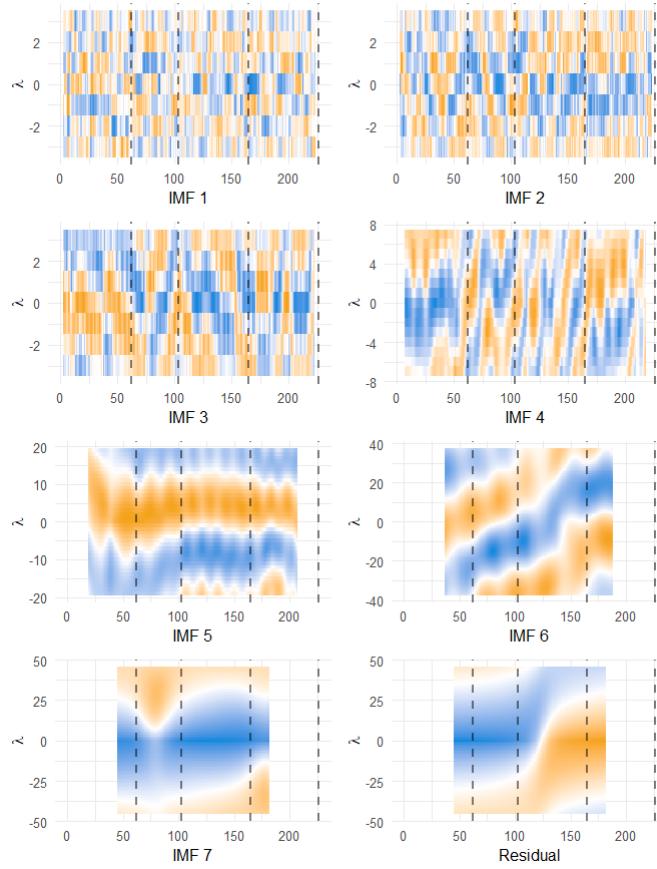
Price Correlations

Change Correlations

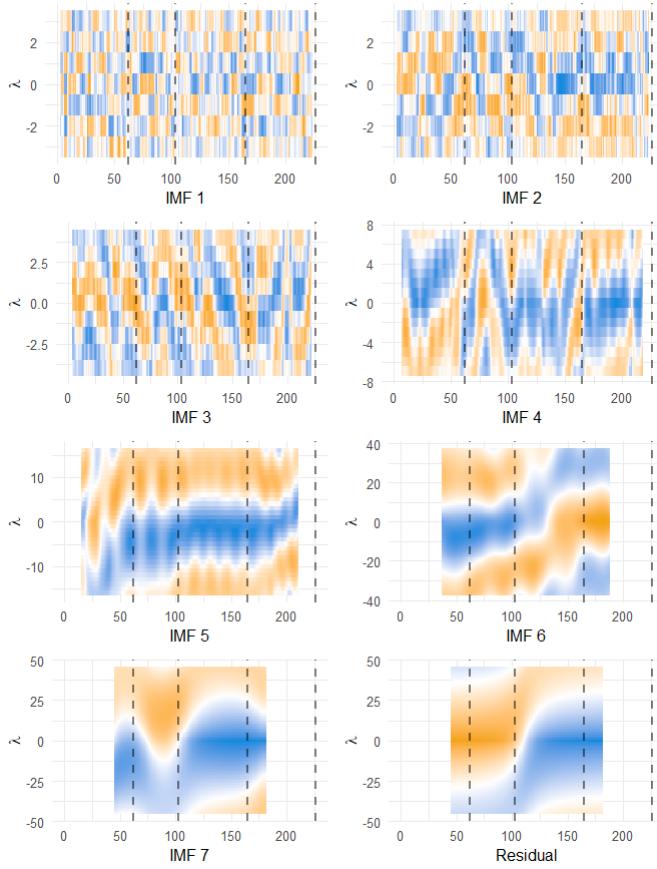


HSX: 02 December 2021 - 02 November 2022

Price Correlations

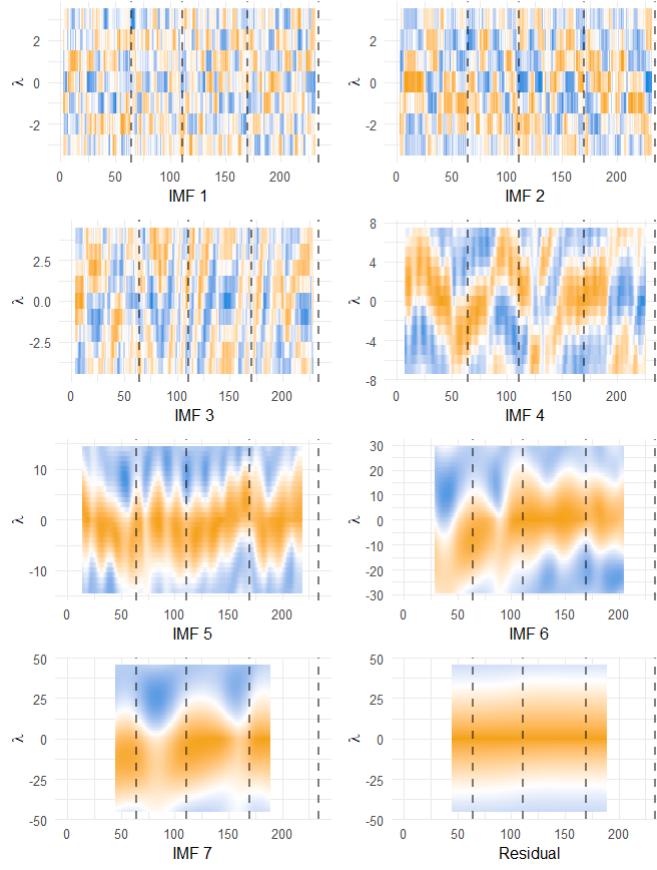


Change Correlations

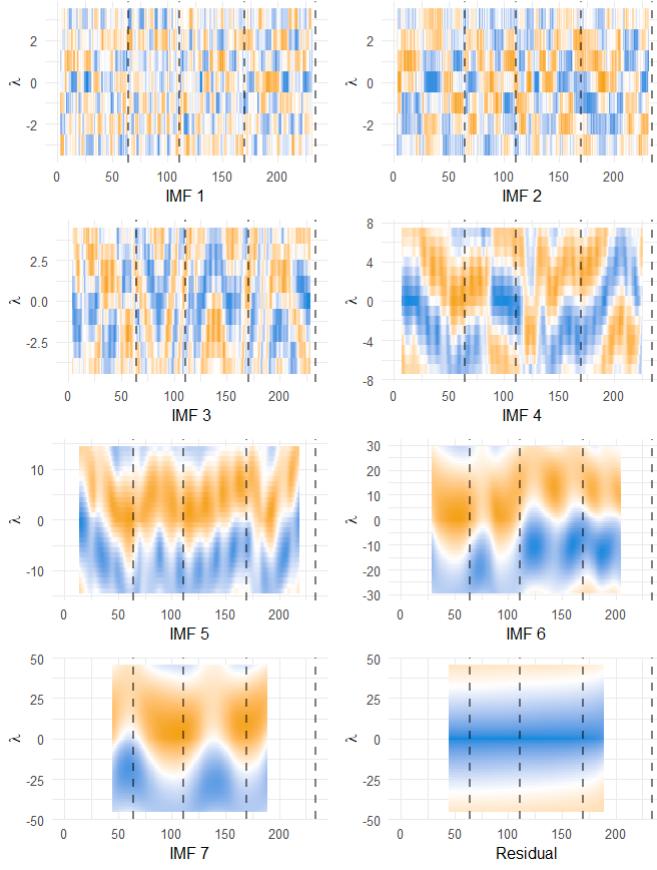


IAG: 28 November 2019 - 30 October 2020

Price Correlations



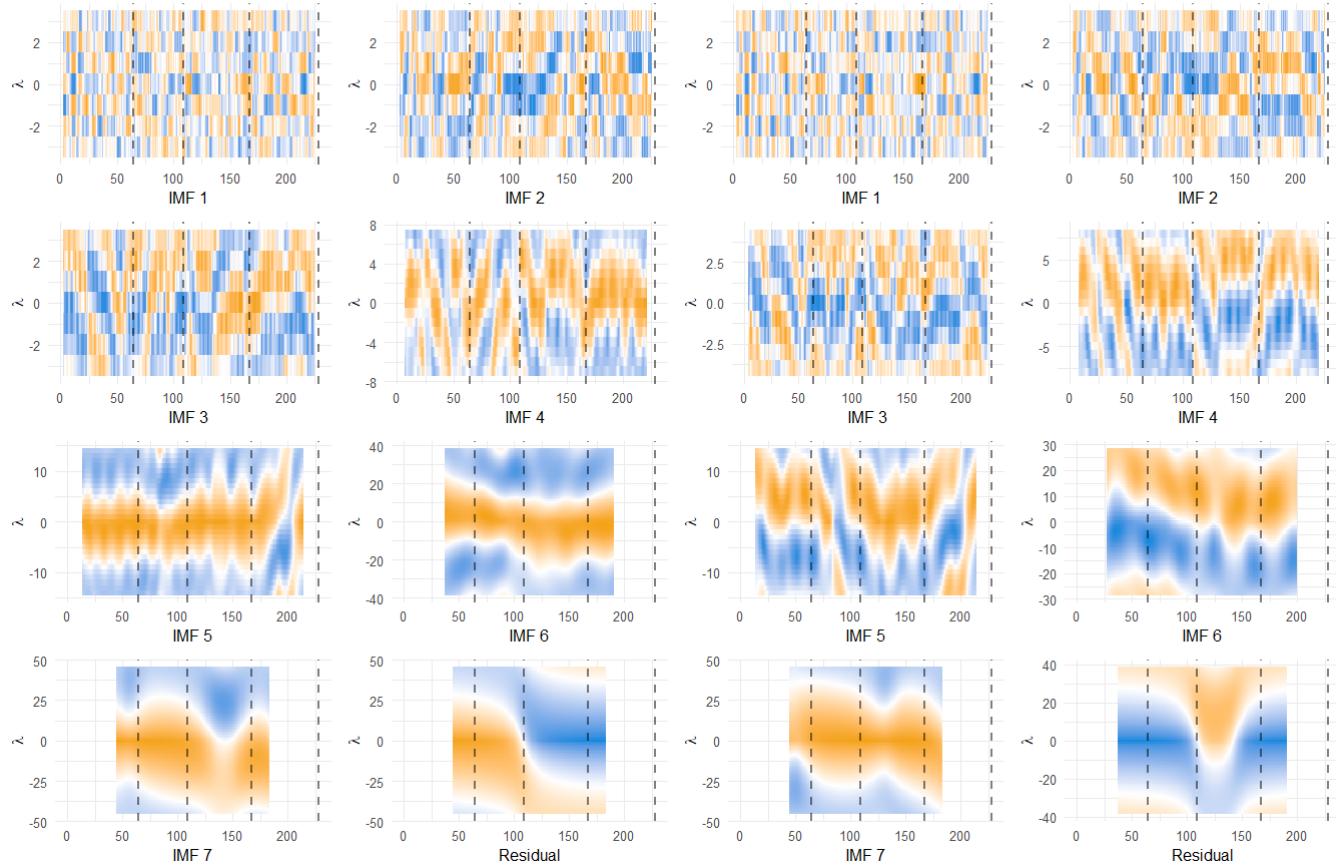
Change Correlations



IAG: 25 November 2021 - 28 October 2022

Price Correlations

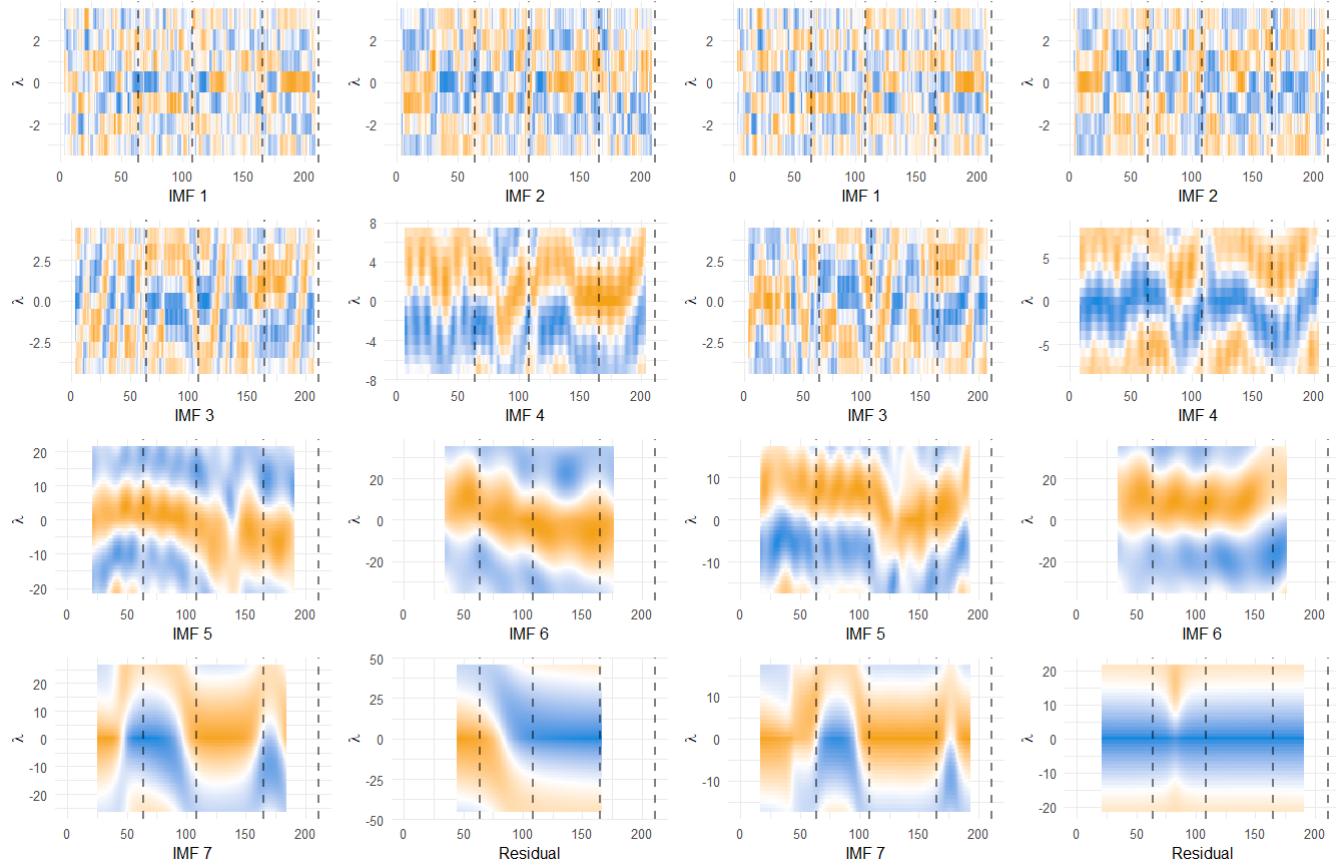
Change Correlations



ITRK: 29 September 2020 - 30 July 2021

Price Correlations

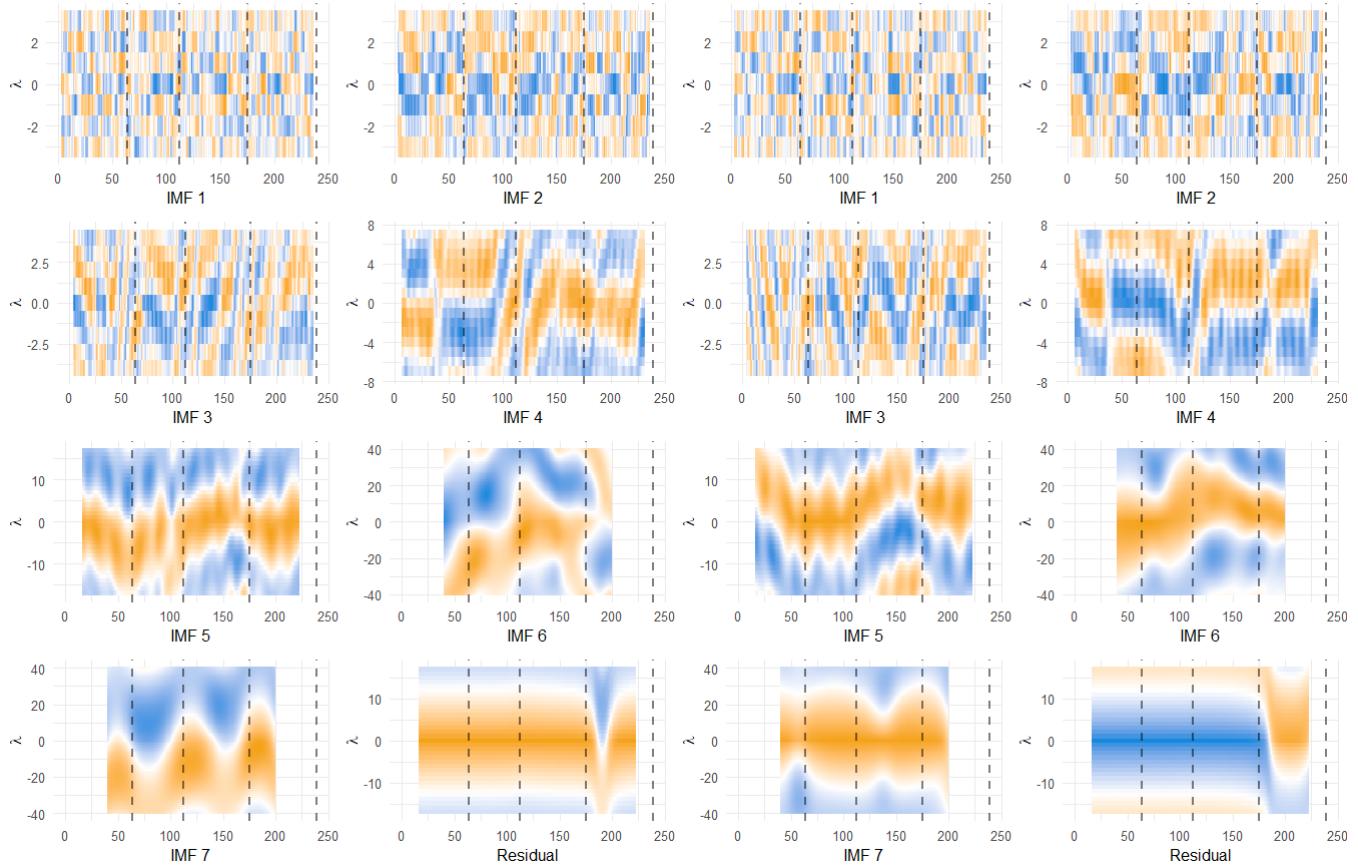
Change Correlations



LLOY: 20 November 2019 - 29 October 2020

Price Correlations

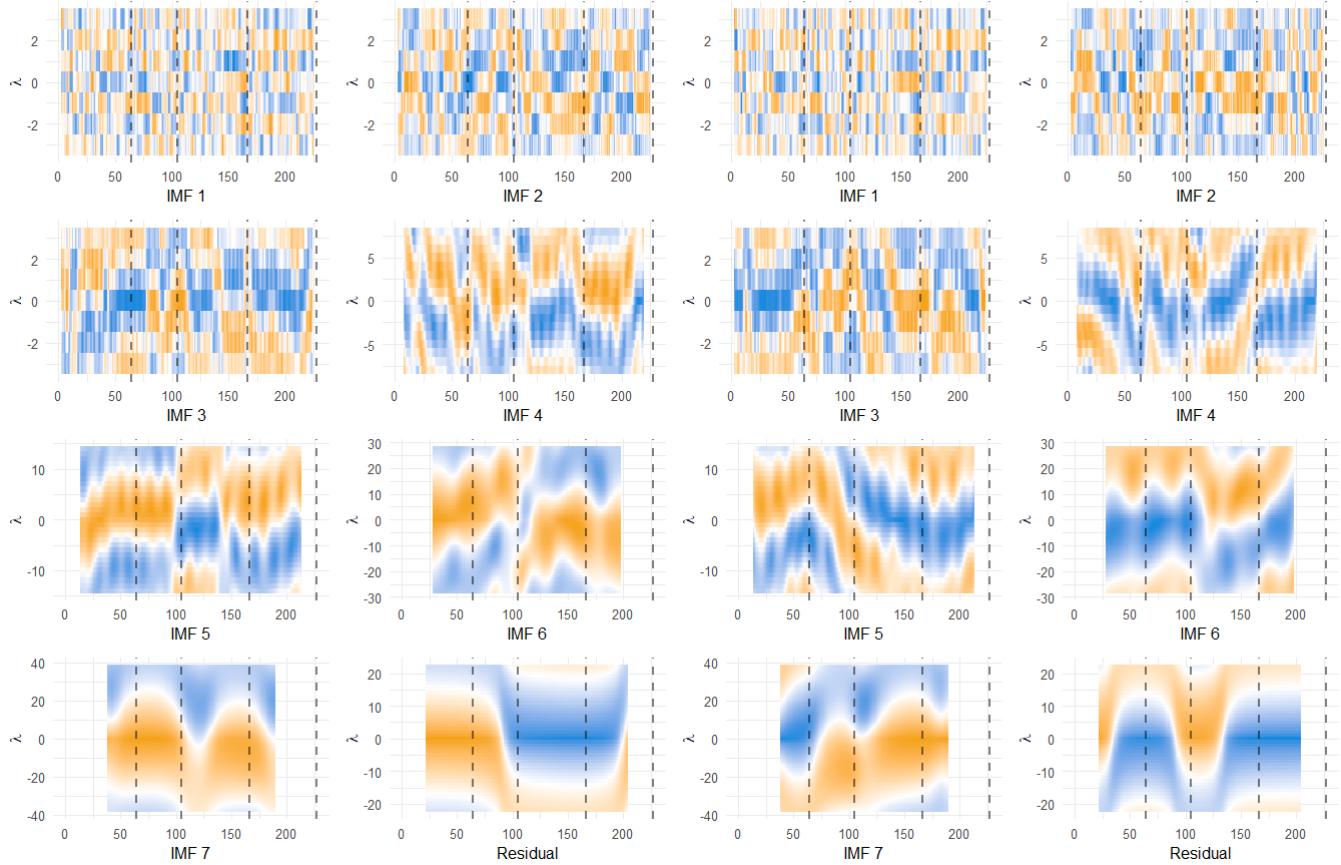
Change Correlations



LLOY: 24 November 2021 - 27 October 2022

Price Correlations

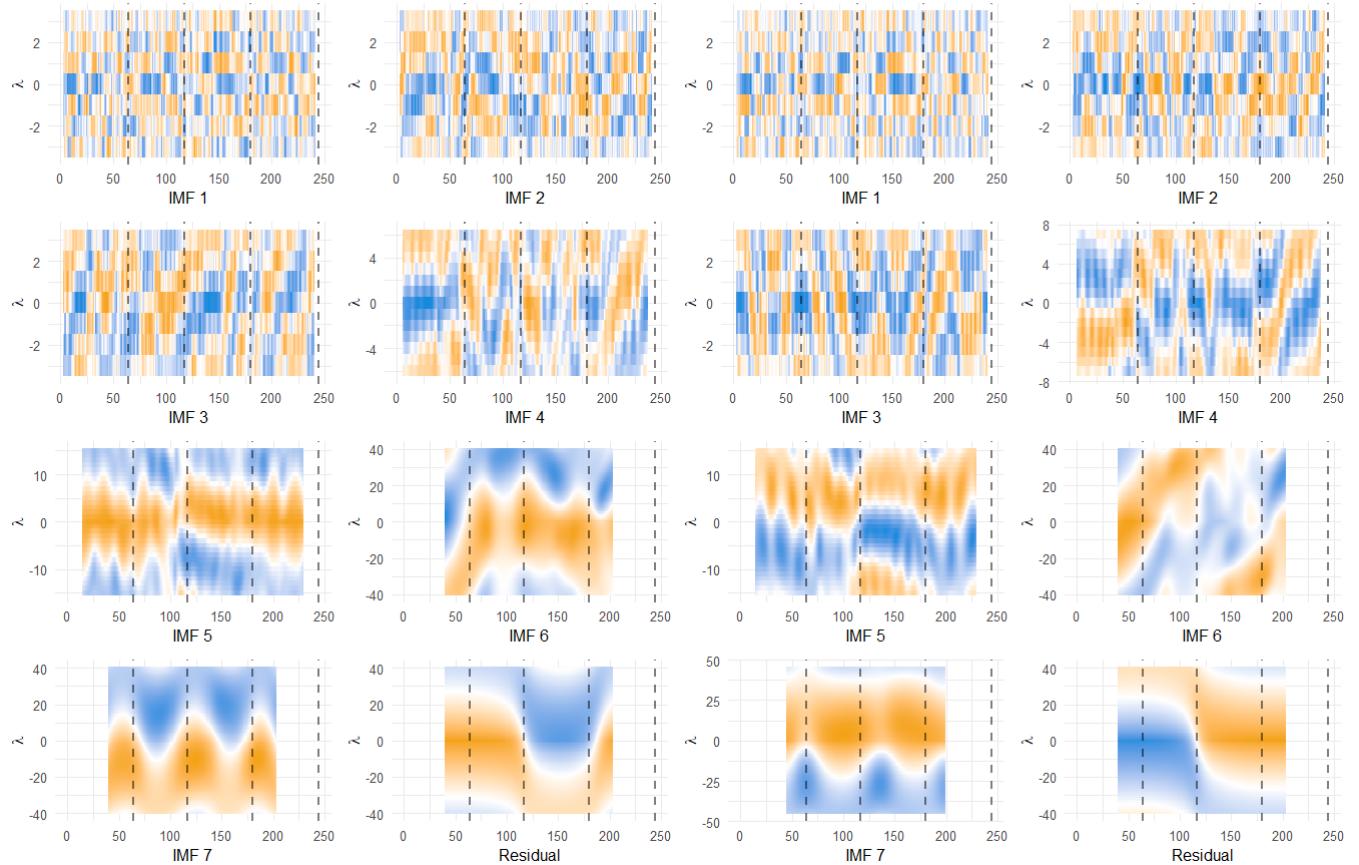
Change Correlations



NWG: 14 November 2019 - 30 October 2020

Price Correlations

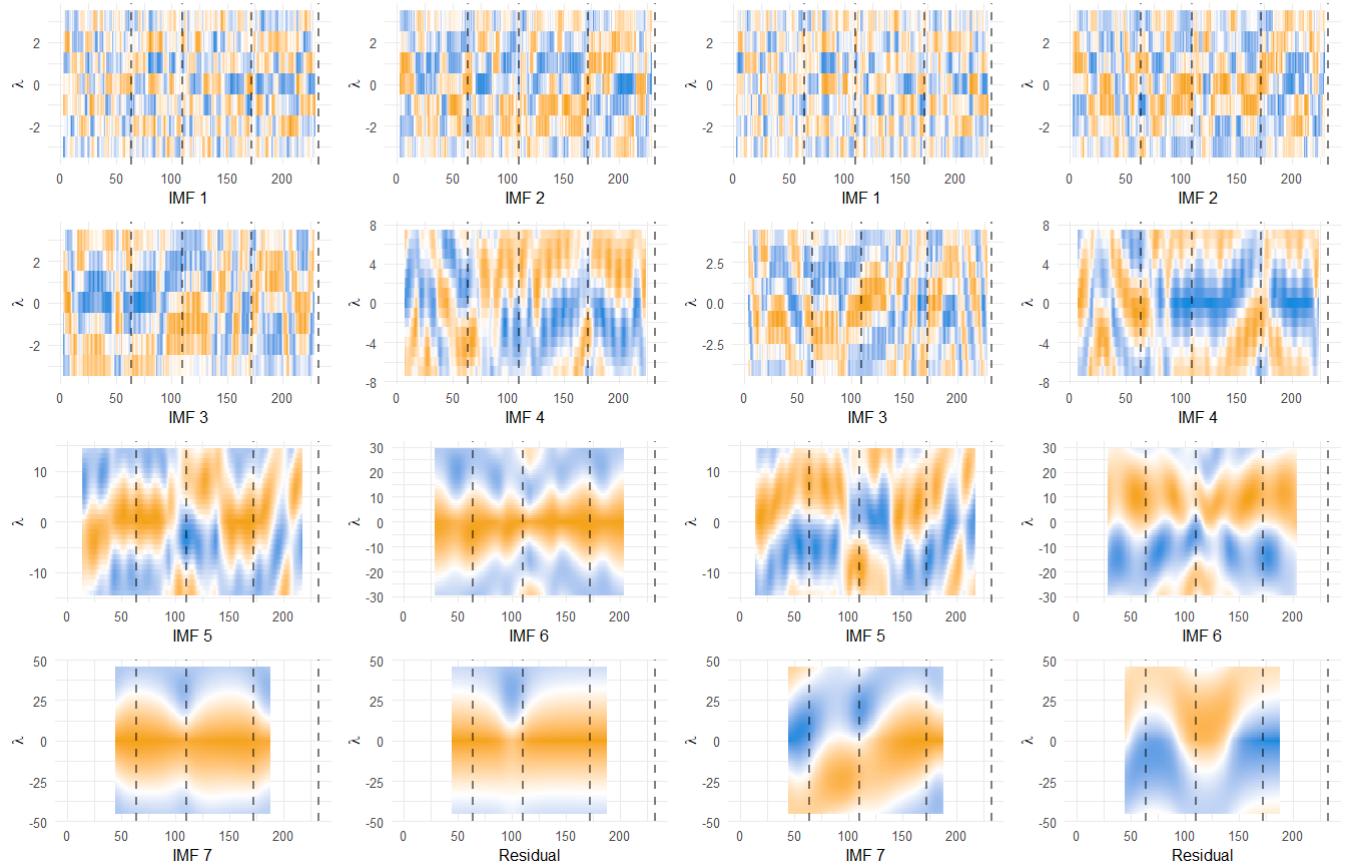
Change Correlations



NWG: 18 November 2021 - 28 October 2022

Price Correlations

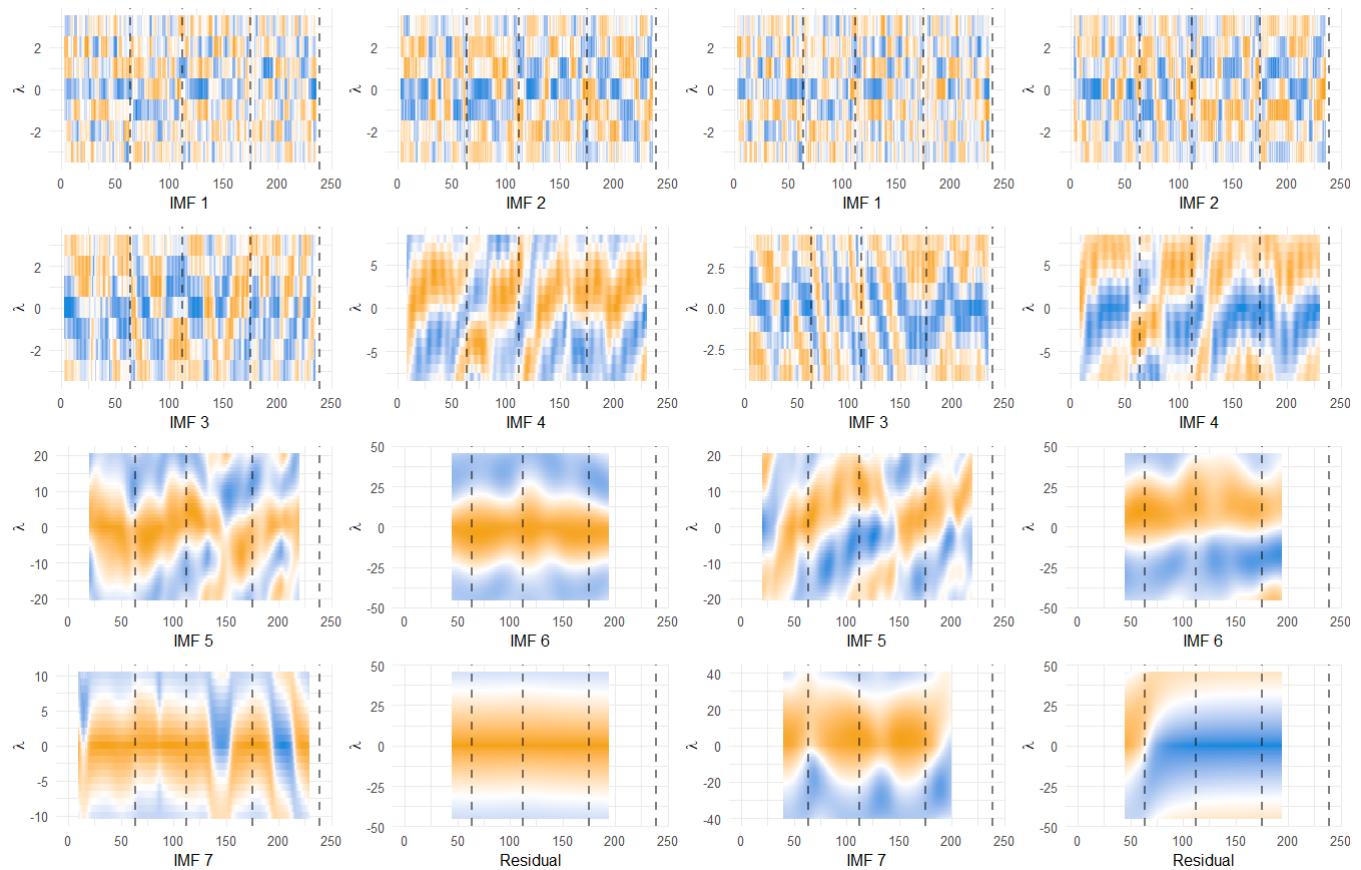
Change Correlations



REL: 13 November 2019 - 22 October 2020

Price Correlations

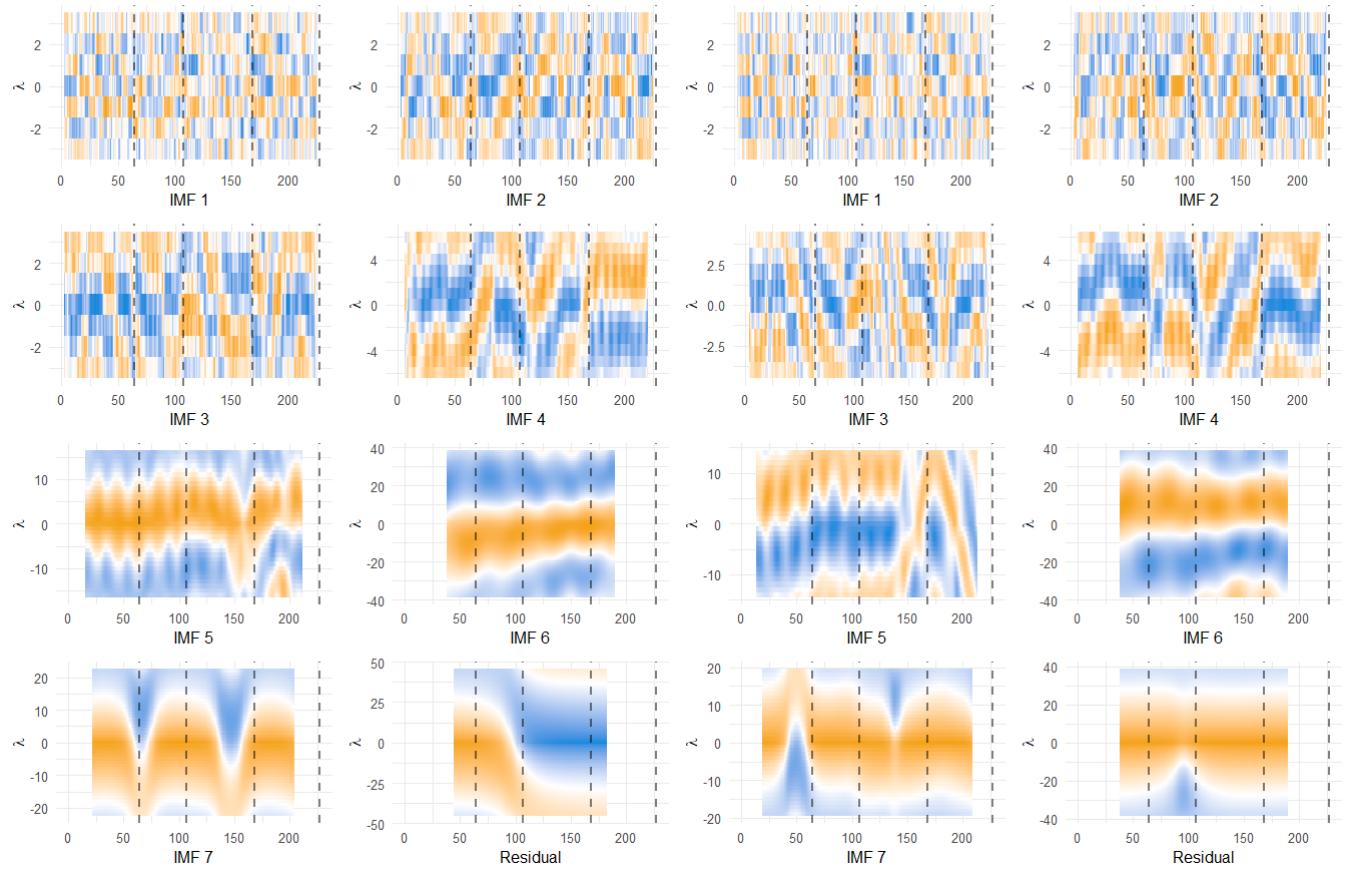
Change Correlations



RKT: 27 November 2019 - 20 October 2020

Price Correlations

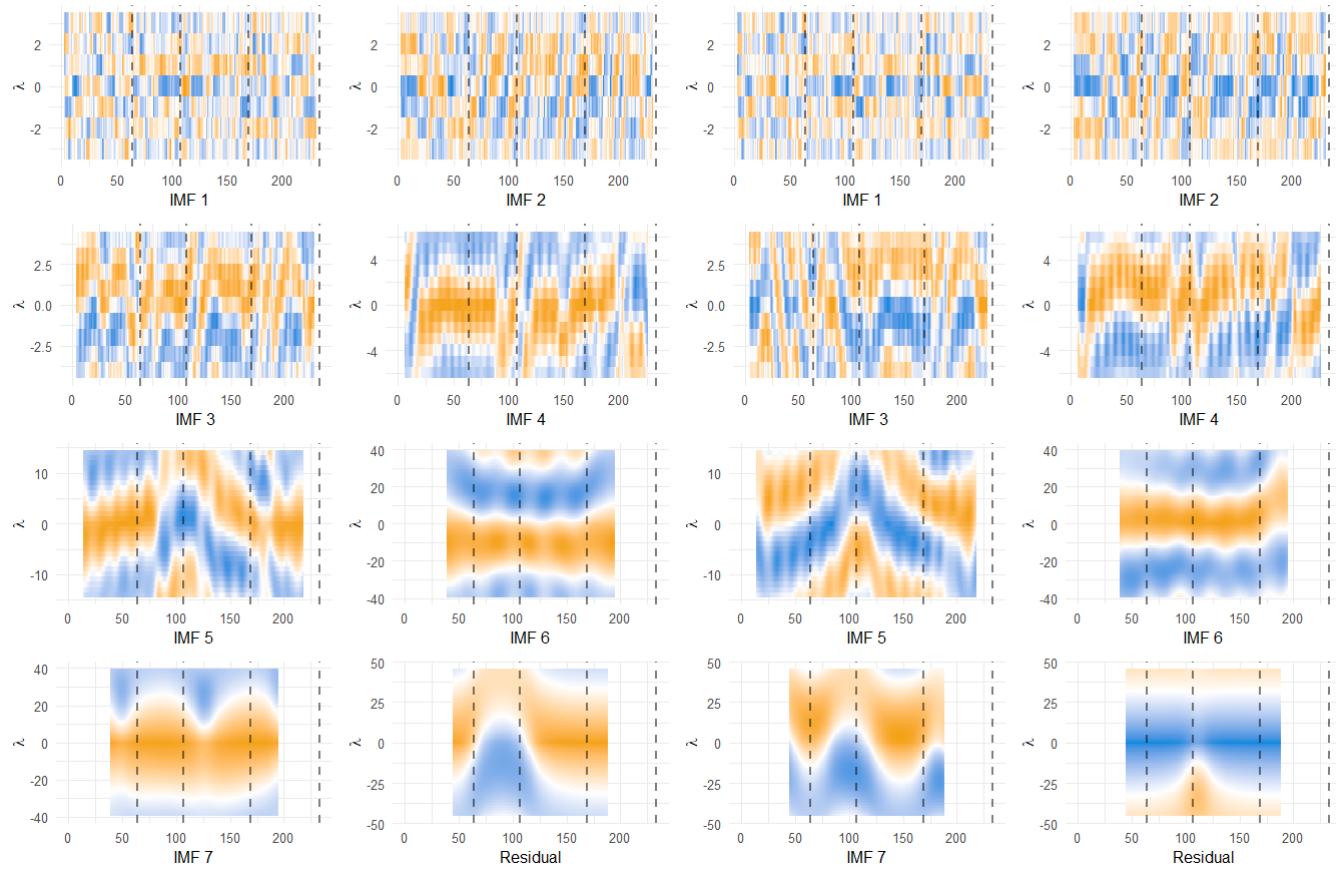
Change Correlations



RKT: 24 November 2020 - 26 October 2021

Price Correlations

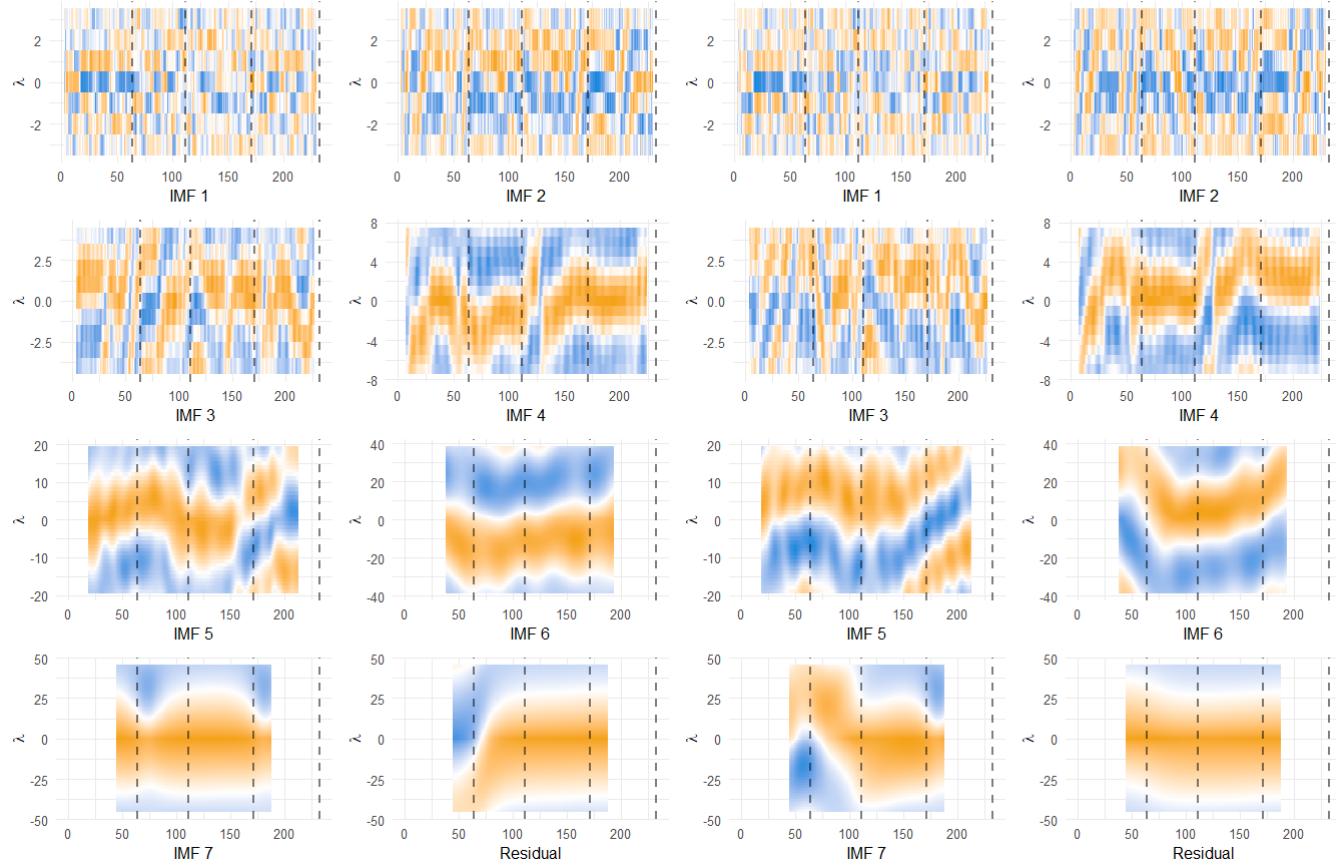
Change Correlations



RKT: 17 November 2021 - 26 October 2022

Price Correlations

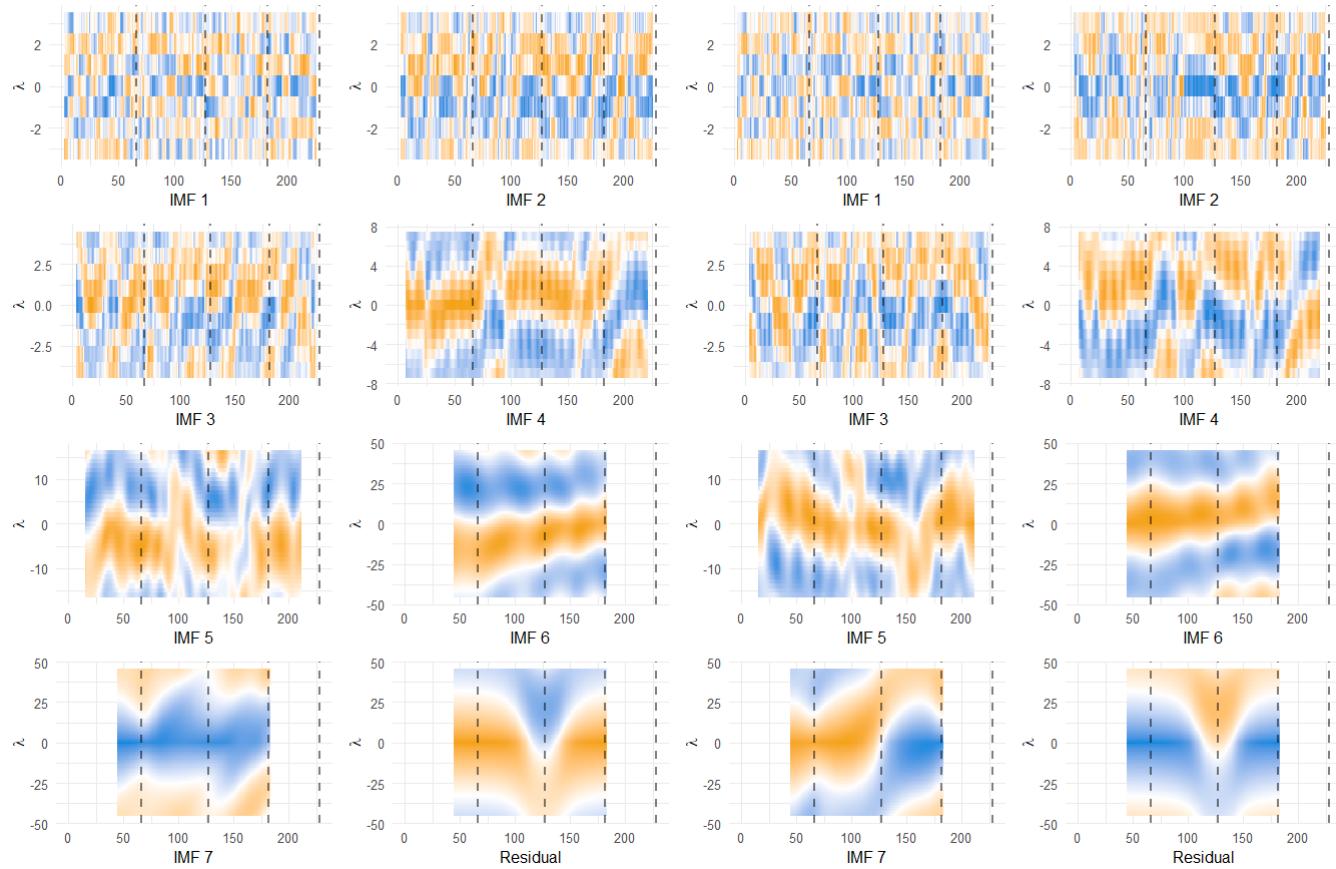
Change Correlations



RR: 11 September 2020 - 05 August 2021

Price Correlations

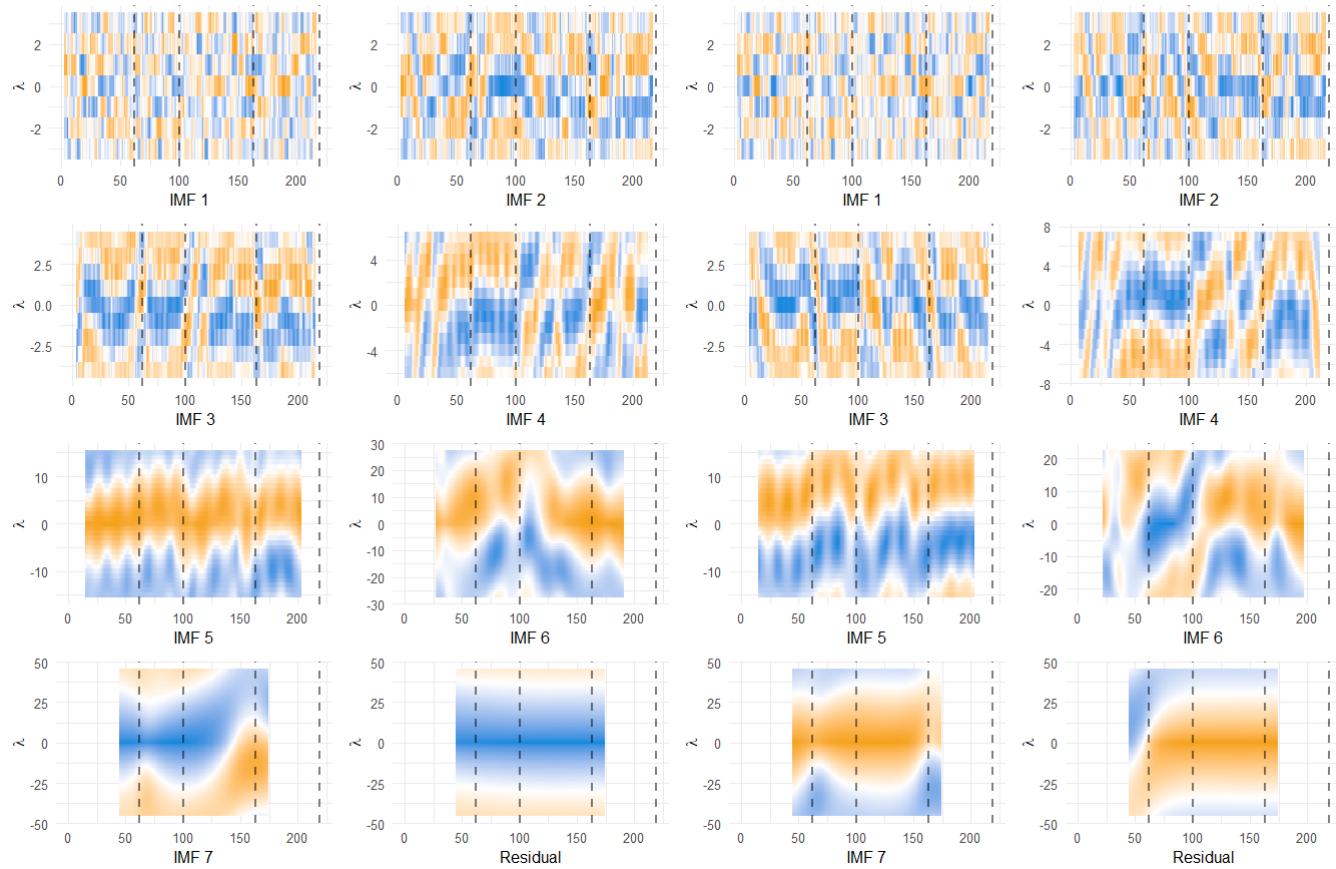
Change Correlations



SDR: 04 December 2020 - 18 October 2021

Price Correlations

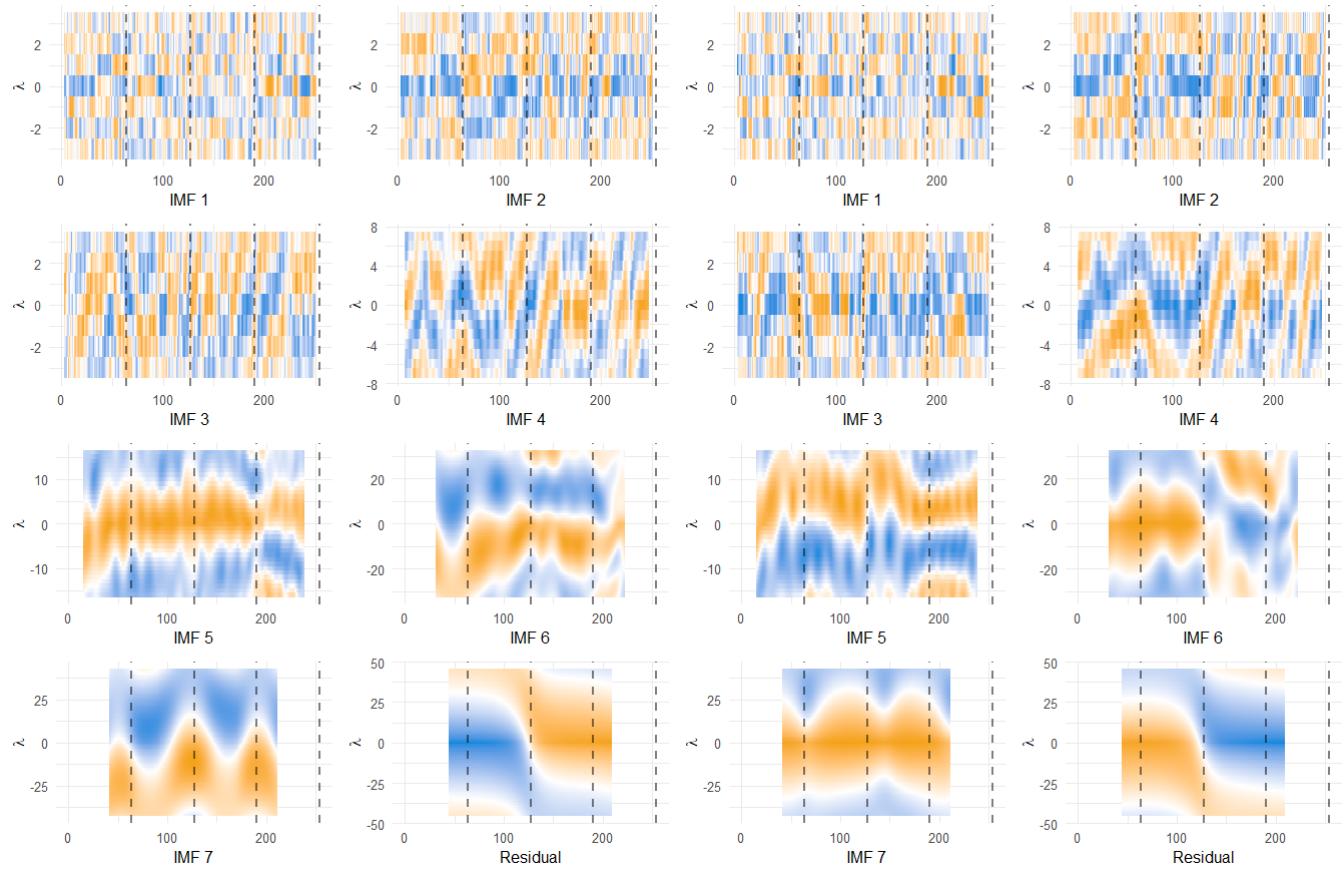
Change Correlations



SHEL: 30 October 2019 - 29 October 2020

Price Correlations

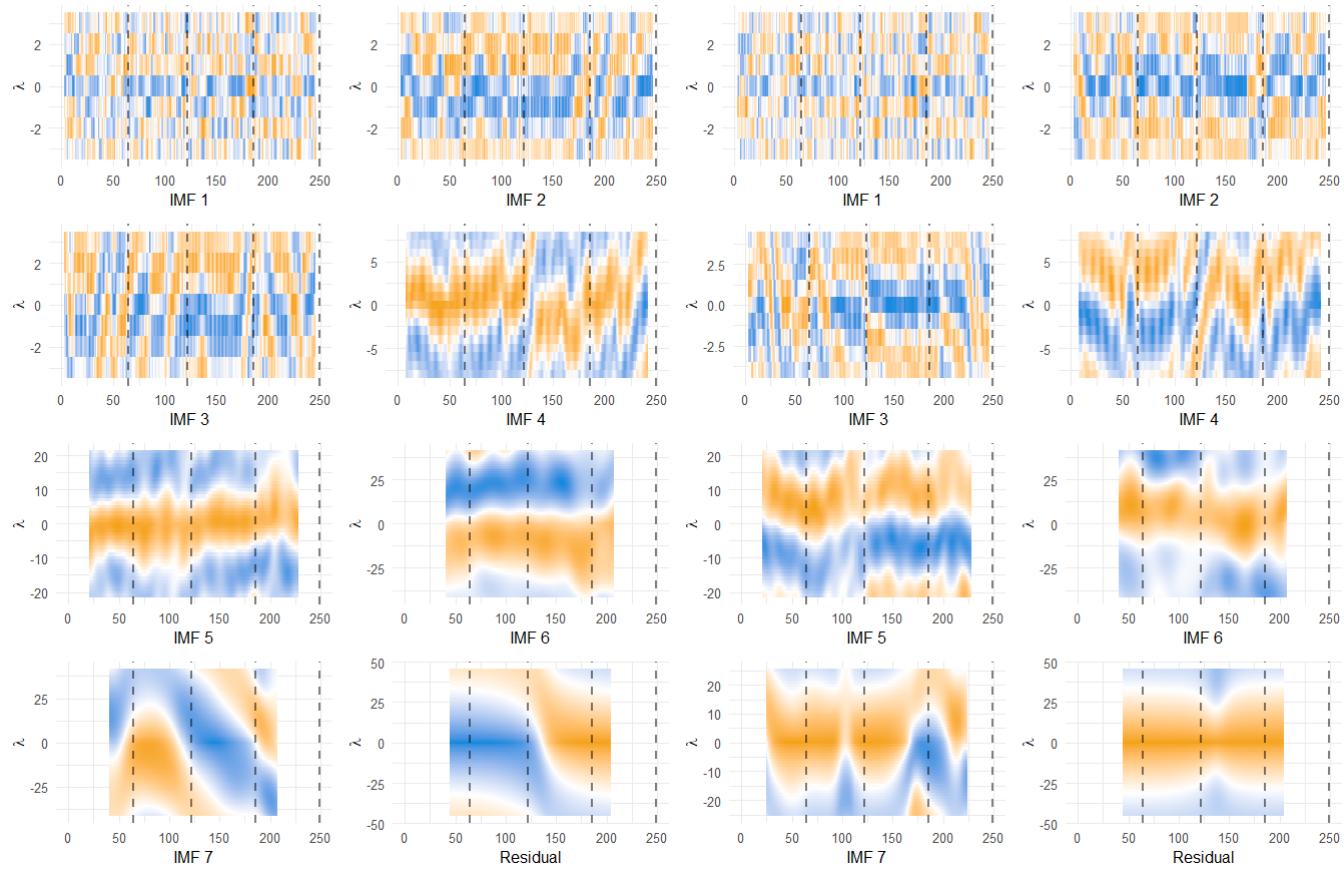
Change Correlations



SHEL: 04 November 2020 - 28 October 2021

Price Correlations

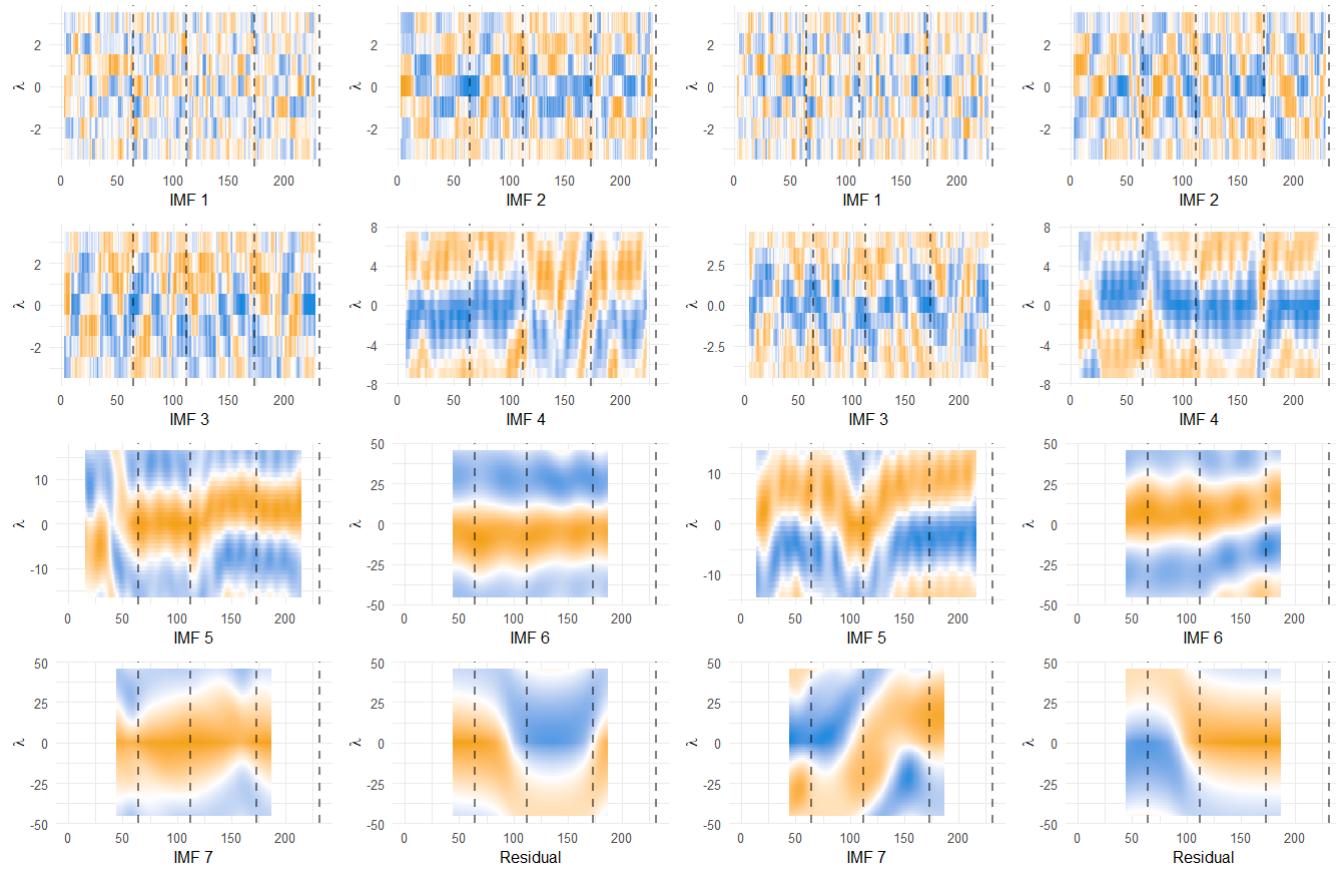
Change Correlations



STAN: 17 November 2021 - 26 October 2022

Price Correlations

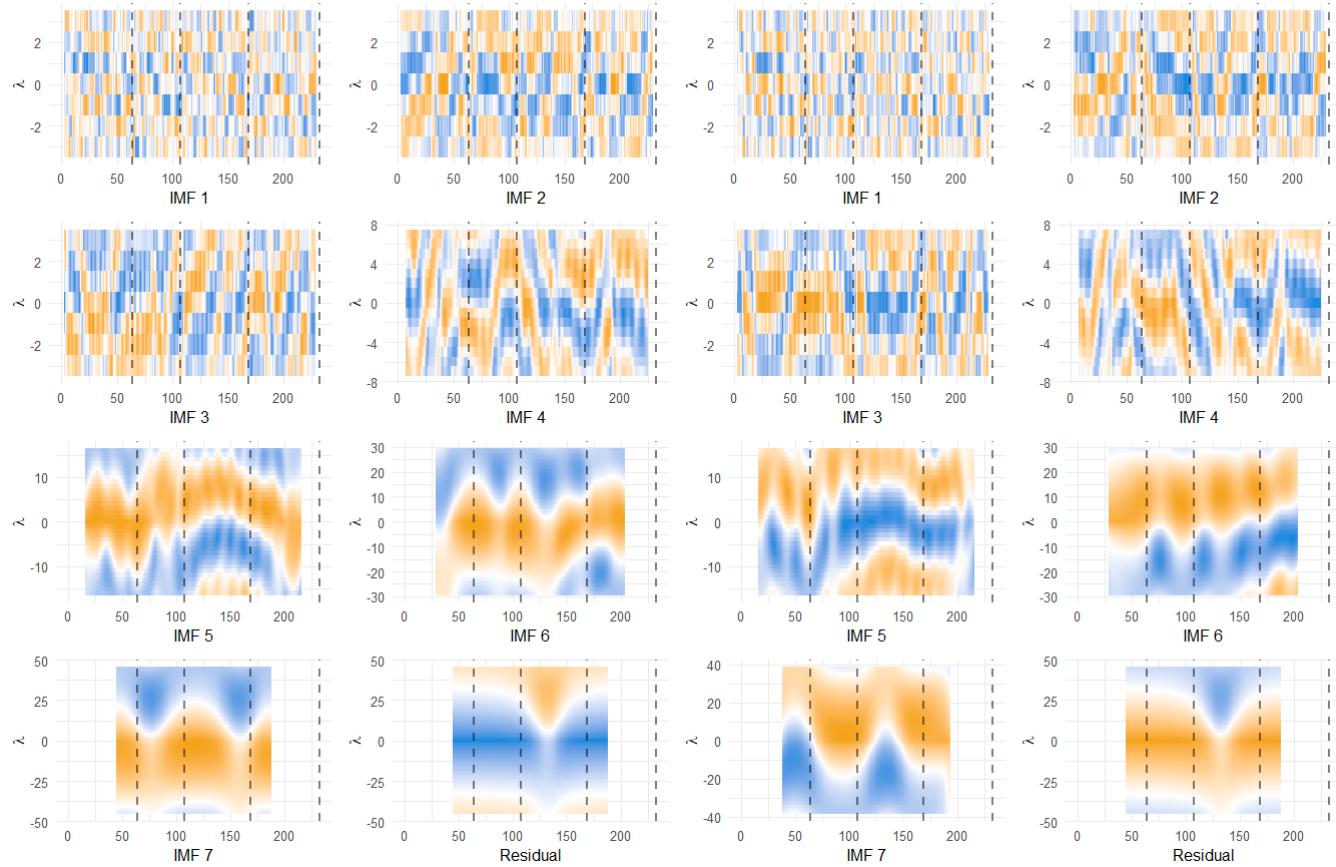
Change Correlations



STJ: 27 November 2019 - 27 October 2020

Price Correlations

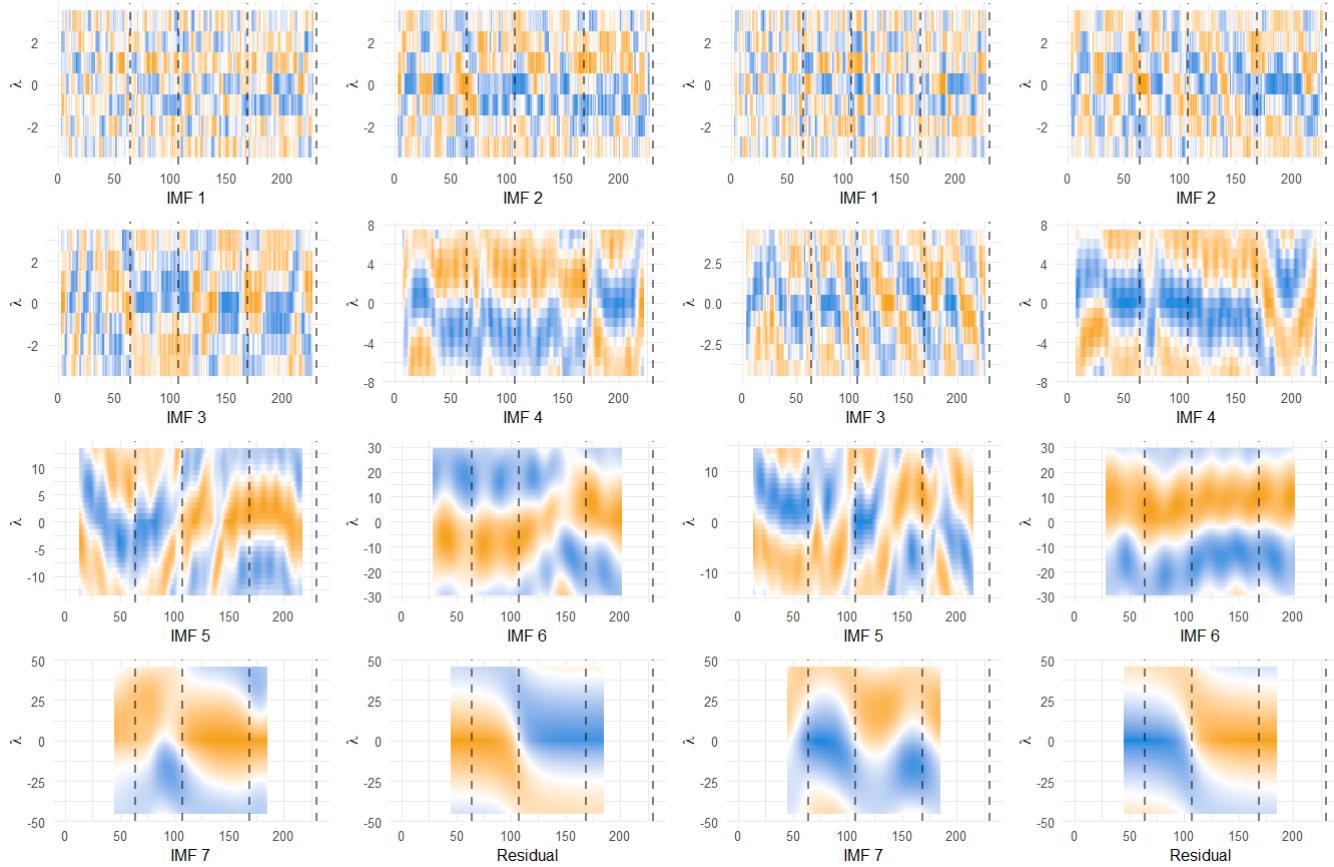
Change Correlations



STJ: 25 November 2020 - 22 October 2021

Price Correlations

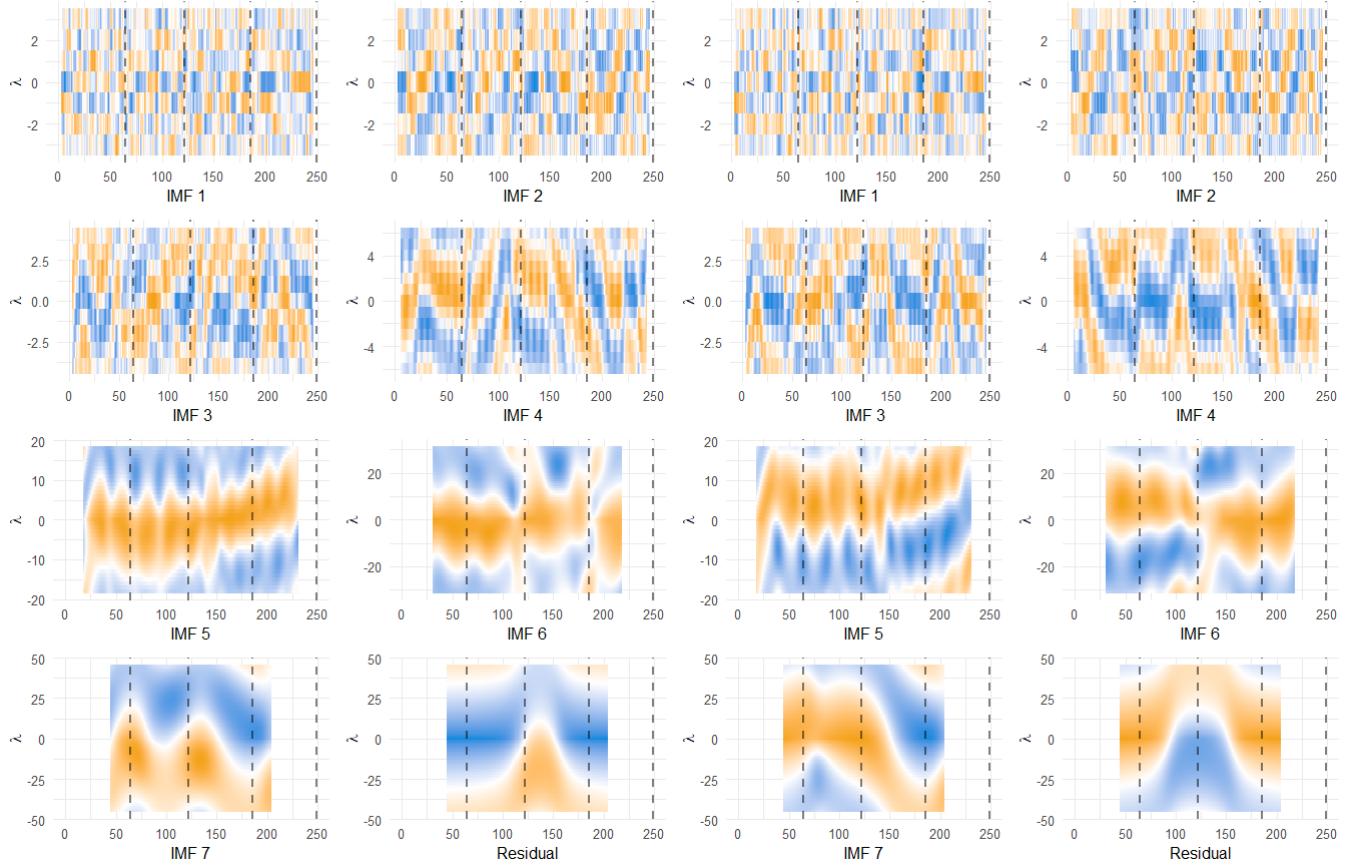
Change Correlations



ULVR: 30 October 2019 - 22 October 2020

Price Correlations

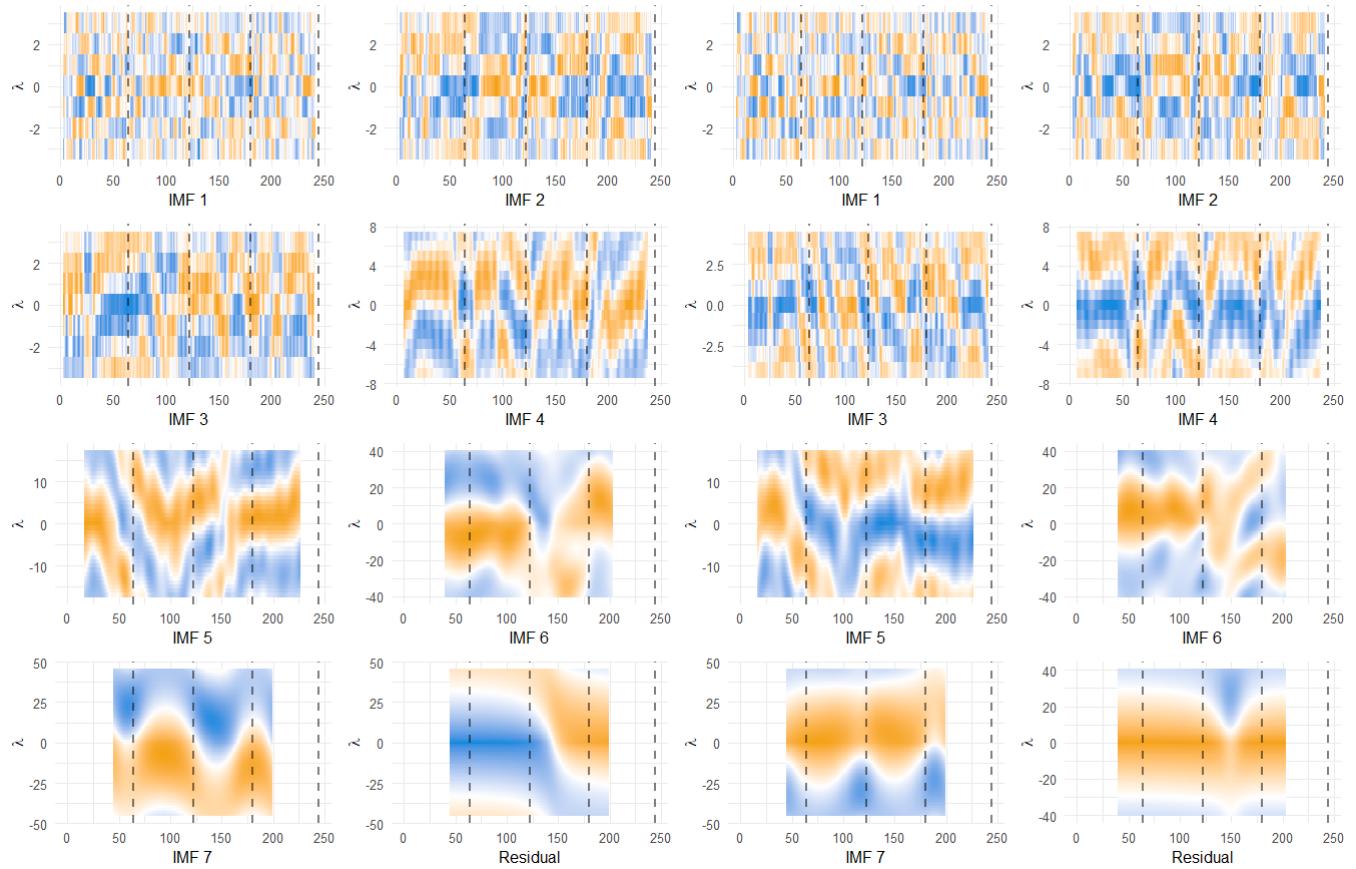
Change Correlations



ULVR: 04 November 2020 - 21 October 2021

Price Correlations

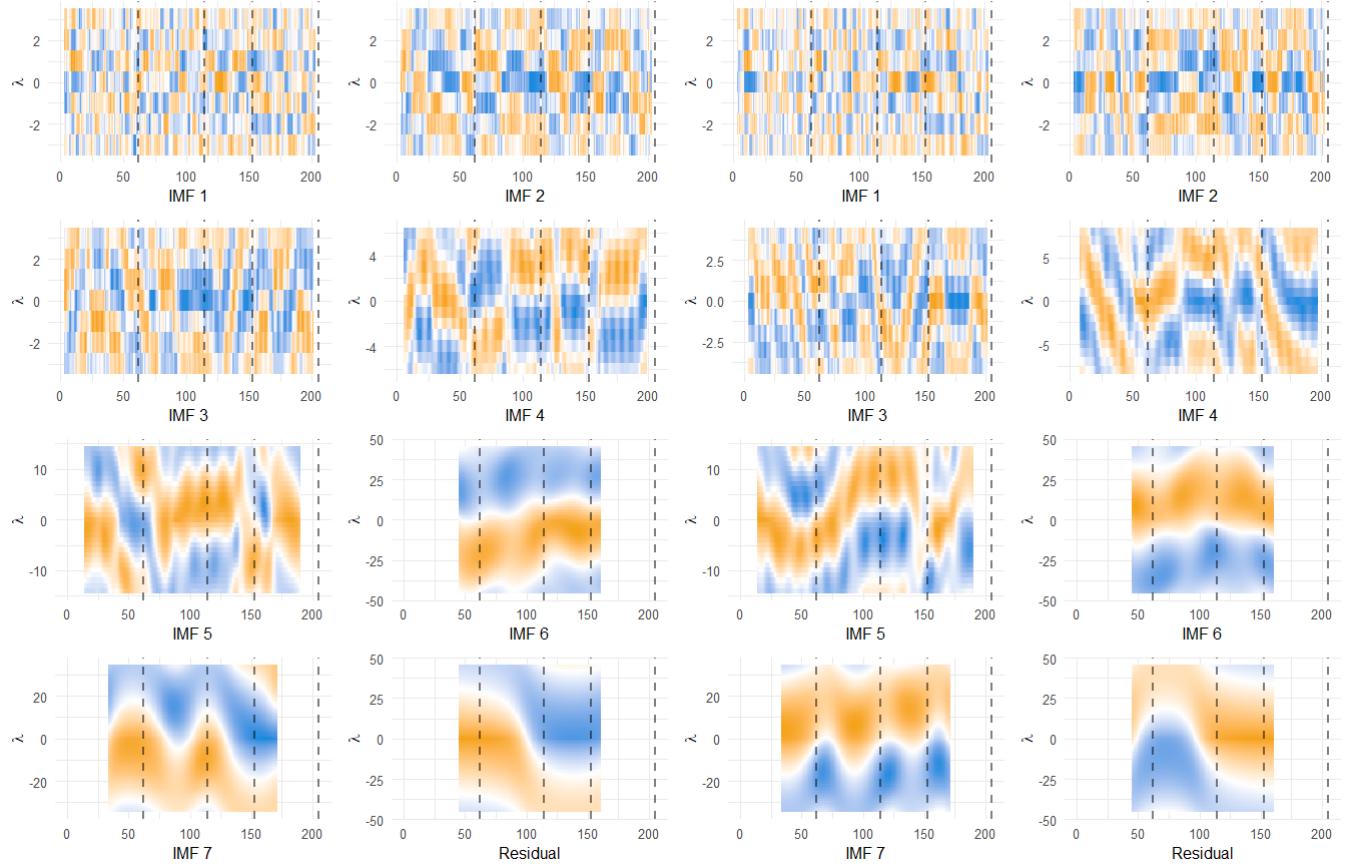
Change Correlations



UTG: 16 December 2020 - 08 October 2021

Price Correlations

Change Correlations



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