Plotting ratio of green posting to low-carbon investment

ToDo

1. Setup
2. Plot raw ratio
3. Plot normalized ratio

1. Setup

```
ratios <- read_csv(here("data", "1_ratios.csv"))
glimpse(ratios)
```

```
## Rows: 8
## Columns: 6
## $ company                   <chr> "exxon", "exxon", "exxon", "exxon", "exxon",~
## $ year                      <dbl> 2017, 2018, 2019, 2020, 2021, 2022, 2023, 20~
## $ green_ratio               <dbl> 0.0000000, 0.6923077, 0.4666667, 0.6000000, ~
## $ low_carbon_ratio          <dbl> 0.02061431, 0.01838573, 0.01531159, 0.022251~
## $ posts_to_capex            <dbl> 0.000000, 37.654615, 30.478000, 26.964000, 1~
## $ posts_to_capex_normalized <dbl> -1.0000000, 0.9482597, 0.9364636, 0.9284795,~
```

2. Plot raw ratio

Let

$R = p \div i$ (Equation 1)

where R is the raw ratio of green posting to low-carbon investment, p is the green posting rate, and i is the low-carbon investment share.

Further, let

$p = \frac{g}{(g+b)}$ (Equation 2)

where g is the number of posts with any green label, and b is the number of posts with any brown label *but* without a green label.

Further, let

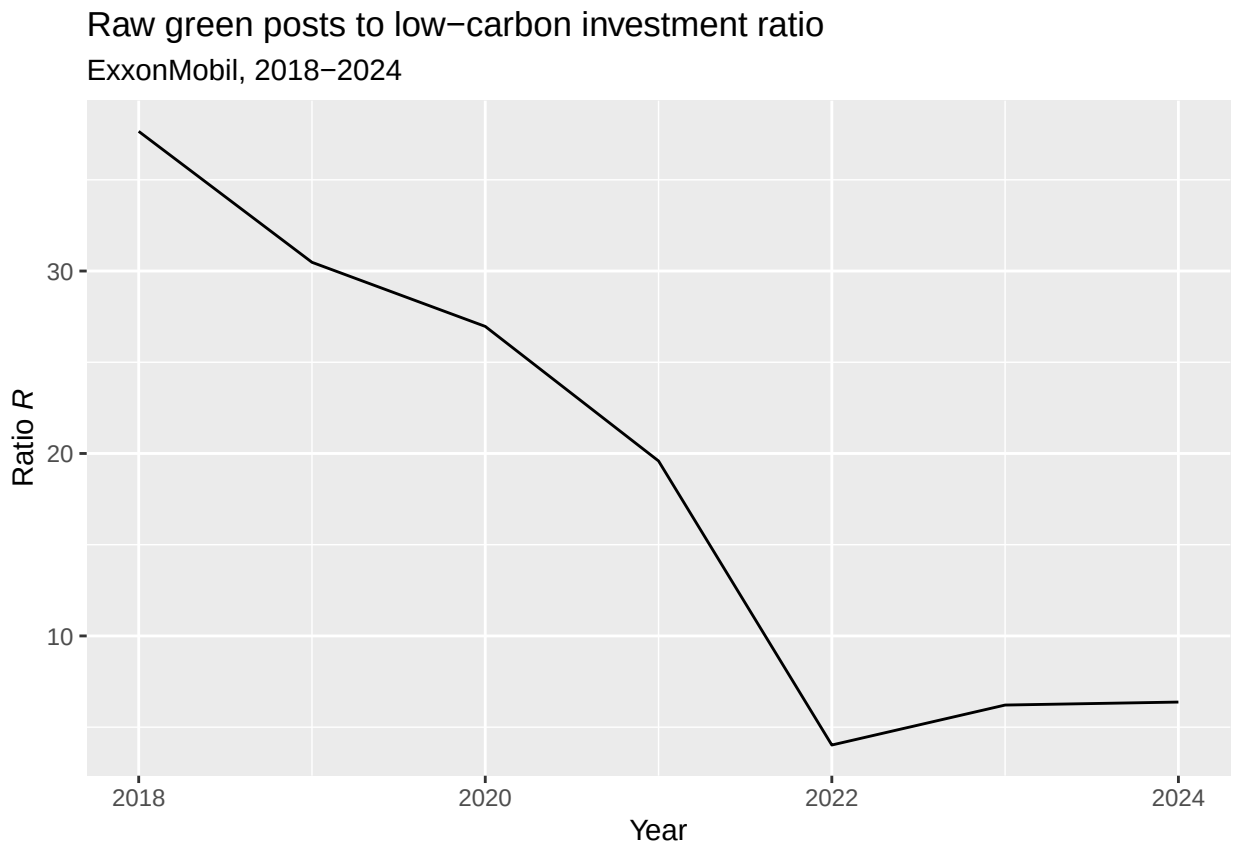
$i = \frac{e}{c}$ (Equation 3)

where e is the investment into low-carbon, and c is capital expenditure (CapEx).

For now, omitting the year 2017 for which the total number of posts is very low and the number of green posts is zero.

```
ratios %>%
  filter(year != 2017) %>%
  ggplot(aes(x = year, y = posts_to_capex)) +
    geom_line() +
    labs(x = "Year", y = expression(paste("Ratio ",
                                          italic("R"))),
```

```
        title = "Raw green posts to low-carbon investment ratio",
        subtitle = "ExxonMobil, 2018-2024") +
  theme(
    plot.caption = element_text(hjust = 0)   # Left-align the caption
  )
```



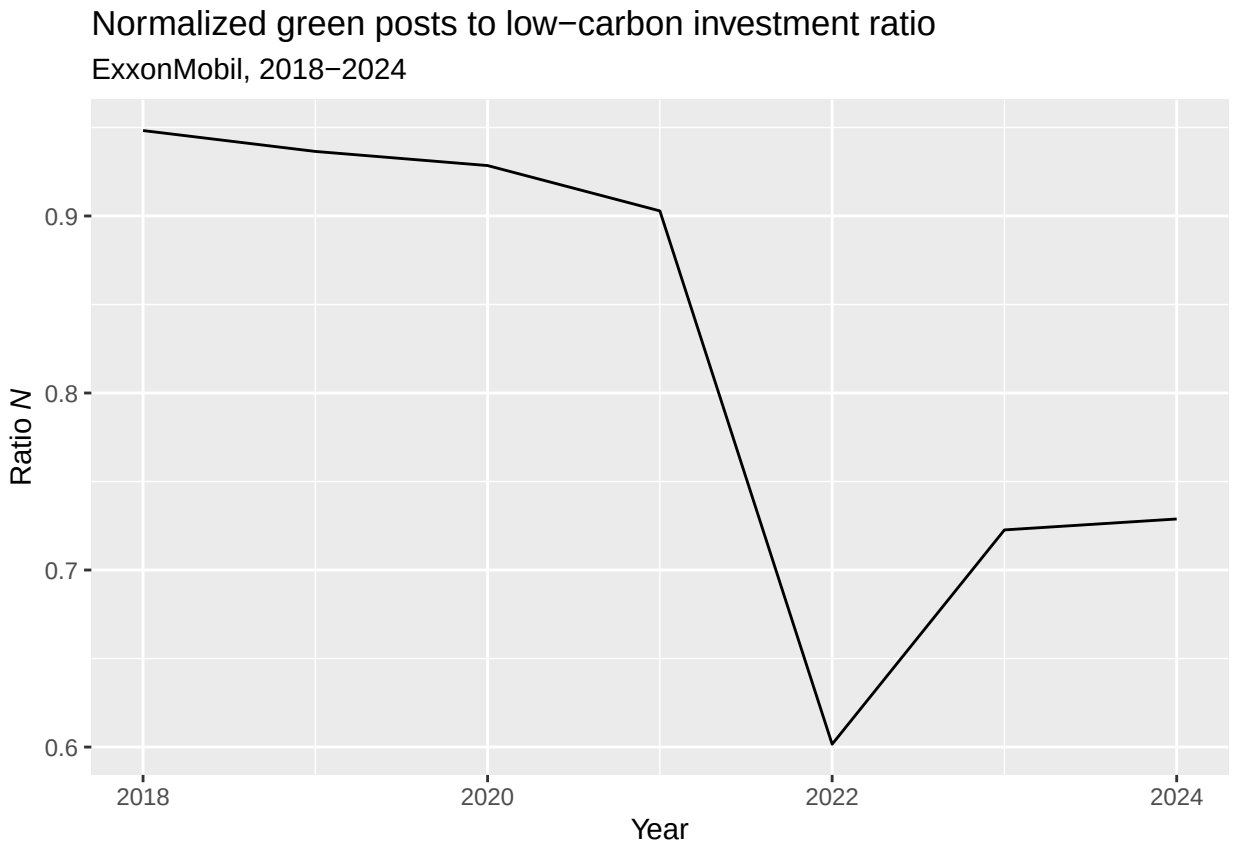
3. Plot normalized ratio

Let

$N = \frac{p-i}{p+i}$ (Equation 1)

where N is the normalized ratio of green posting to low-carbon investment.

```
ratios %>%
  filter(year != 2017) %>%
  ggplot(aes(x = year, y = posts_to_capex_normalized)) +
    geom_line() +
    labs(x = "Year", y = expression(paste("Ratio ",
                                          italic("N"))),
         title = "Normalized green posts to low-carbon investment ratio",
         subtitle = "ExxonMobil, 2018-2024") +
    theme(
      plot.caption = element_text(hjust = 0)   # Left-align the caption
    )
```


Normalized green posts to low−carbon investment ratio
ExxonMobil, 2018−2024
Ratio N
0.9
0.8
0.7
0.6
2018
2020
2022
2024
Year