

AE-13

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```
library(tidyverse)
```

```
-- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
v dplyr     1.1.4     v readr     2.1.5
v forcats   1.0.0     v stringr   1.5.1
v ggplot2   3.5.1     v tibble    3.2.1
v lubridate  1.9.3     v tidyr    1.3.1
v purrr     1.0.4
-- Conflicts -----
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become non-conflicting
```

```
library(tidymodels)
```

```
-- Attaching packages ----- tidymodels 1.3.0 --
v broom      1.0.7     v rsample    1.2.1
v dials      1.4.0     v tune       1.3.0
v infer      1.0.7     v workflows  1.2.0
v modeldata   1.4.0     v workflowsets 1.1.0
v parsnip     1.3.0     v yardstick  1.3.2
v recipes     1.1.1
-- Conflicts -----
x scales::discard() masks purrr::discard()
x dplyr::filter()   masks stats::filter()
x recipes::fixed()  masks stringr::fixed()
x dplyr::lag()      masks stats::lag()
x yardstick::spec() masks readr::spec()
x recipes::step()   masks stats::step()
```

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library(tidyquant)

Registered S3 method overwritten by 'quantmod':
method           from
as.zoo.data.frame zoo
-- Attaching core tidyquant packages ----- tidyquant 1.0.11 --
v PerformanceAnalytics 2.0.8      v TTR                  0.24.4
v quantmod            0.4.27     v xts                  0.14.1-- Conflicts -----
x zoo::as.Date()          masks base::as.Date()
x zoo::as.Date.numeric()  masks base::as.Date.numeric()
x scales::col_factor()   masks readr::col_factor()
x scales::discard()     masks purrr::discard()
x dplyr::filter()        masks stats::filter()
x xts::first()           masks dplyr::first()
x recipes::fixed()       masks stringr::fixed()
x dplyr::lag()            masks stats::lag()
x xts::last()             masks dplyr::last()
x PerformanceAnalytics::legend() masks graphics::legend()
x TTR::momentum()         masks dials::momentum()
x yardstick::spec()       masks readr::spec()
x quantmod::summary()    masks base::summary()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become non-conflicting.

index_info <- tibble(
  Country = c("United States", "Germany", "China", "United Kingdom", "Canada", "Japan"),
  Ticker = c("^GSPC", "^GDAXI", "000001.SS", "^FTSE", "^GSPTSE", "^N225")
)

indexes <- index_info %>%
  mutate(Data = map(Ticker, ~ tq_get(.x, from = "2020-01-01", get = "stock.prices"))) %>%
  unnest(Data)

indexes <- indexes %>%
  filter(date >= as.Date("2025-01-20")) %>%
  group_by(Country) %>%
  mutate(Baseline = close[date == as.Date("2025-01-20")][1]) %>%
  ungroup() %>%
  mutate(Pct_Change = 100 * (close - Baseline) / Baseline)

```

```

ggplot(indexes, aes(x = date, y = Pct_Change, color = Country)) +
  geom_line(size = 1.1) +
  theme_minimal(base_size = 14) +
  scale_y_continuous(labels = scales::percent_format(scale = 1)) +
  labs(
    title = "Major Global Stock Indexes Since Jan 17, 2020",
    y = "Percent Change",
    x = NULL,
    caption = "Source: Yahoo Finance via tidyquant"
  ) +
  theme(legend.position = "right")

```

Warning: Using `size` aesthetic for lines was deprecated in ggplot2 3.4.0.
i Please use `linewidth` instead.

Warning: Removed 62 rows containing missing values or values outside the scale range (`geom_line()`).

