

Is France Really Doing Well?

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```
knitr::opts_chunk$set(echo = TRUE)
```

We will download all the packages

```
library(dplyr)
```

```
##  
## Attaching package: 'dplyr'
```

```
## The following objects are masked from 'package:stats':  
##  
##   filter, lag
```

```
## The following objects are masked from 'package:base':  
##  
##   intersect, setdiff, setequal, union
```

```
library(ggplot2)  
library(lubridate)
```

```
##  
## Attaching package: 'lubridate'
```

```
## The following objects are masked from 'package:base':  
##  
##   date, intersect, setdiff, union
```

```
library(rdbnomics)
```

```
## Visit <https://db.nomics.world>.
```

```
library(tidyverse)
```

```
## — Attaching packages ————— tidyverse 1.3.2  
## —
```

```
## ✓ tibble 3.1.8      ✓ purrr 1.0.1
## ✓ tidyr 1.3.0      ✓ stringr 1.5.0
## ✓ readr 2.1.3     ✓ forcats 0.5.2
## — Conflicts ————— tidyverse_conflicts() —
## ✗ lubridate::as.difftime() masks base::as.difftime()
## ✗ lubridate::date() masks base::date()
## ✗ dplyr::filter() masks stats::filter()
## ✗ lubridate::intersect() masks base::intersect()
## ✗ dplyr::lag() masks stats::lag()
## ✗ lubridate::setdiff() masks base::setdiff()
## ✗ lubridate::union() masks base::union()
```

```
library(eurostat)
```

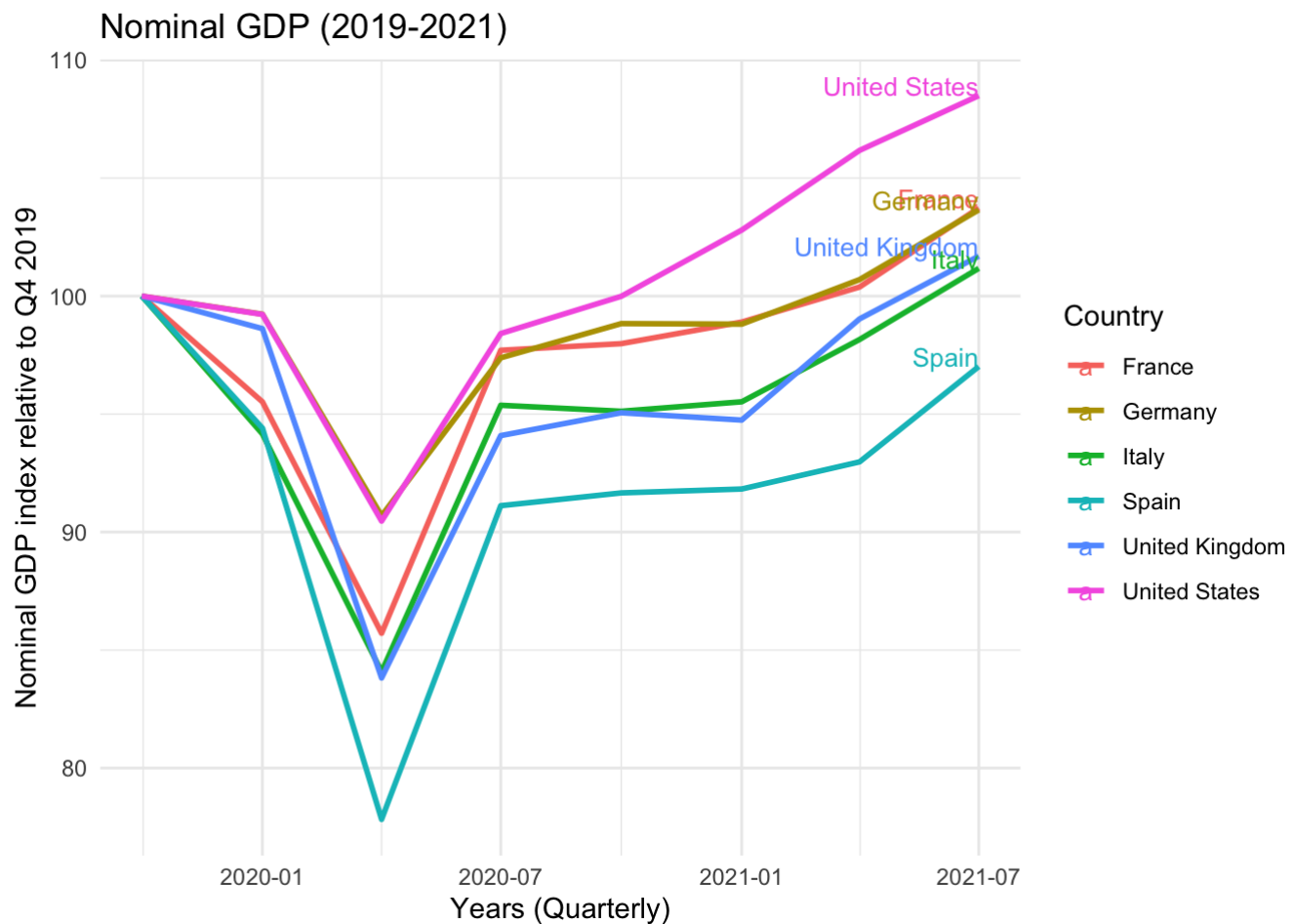
Is France gloomy ? Aux larmes, citoyens!

Q1. Nominal GDP Ananlysis

```
nominal_data_oecd = rdb(ids = c("OECD/QNA/USA.B1_GS1.CQRSA.Q",
                                "OECD/QNA/DEU.B1_GE.CQRSA.Q",
                                "OECD/QNA/ESP.B1_GE.CQRSA.Q",
                                "OECD/QNA/FRA.B1_GE.CQRSA.Q",
                                "OECD/QNA/ITA.B1_GE.CQRSA.Q",
                                "OECD/QNA/GBR.B1_GE.CQRSA.Q"))

nominal_data_oecd%>%
  group_by(Country) %>%
  mutate(index1995 = 100*value/value[period == as.Date("2019-10-01")]) %>%
  filter(period >= as.Date("2019-10-01") & period <= as.Date("2021-07-01")) %>%
  ungroup() %>%
  mutate(quartile = ntile(index1995, 4)) %>%
  ggplot(aes(x = period, y = index1995, color = Country)) +
  geom_line(size = 1) +
  geom_text(data = . %>% group_by(Country) %>% slice_tail(n = 1),
            aes(x = period, y = index1995, label = Country),
            hjust = 1, vjust = 0, size = 3.5) +
  theme_minimal() +
  labs(y = "Nominal GDP index relative to Q4 2019", x = "Years (Quarterly)", color = "Co
untry",
       title = "Nominal GDP (2019-2021)")
```

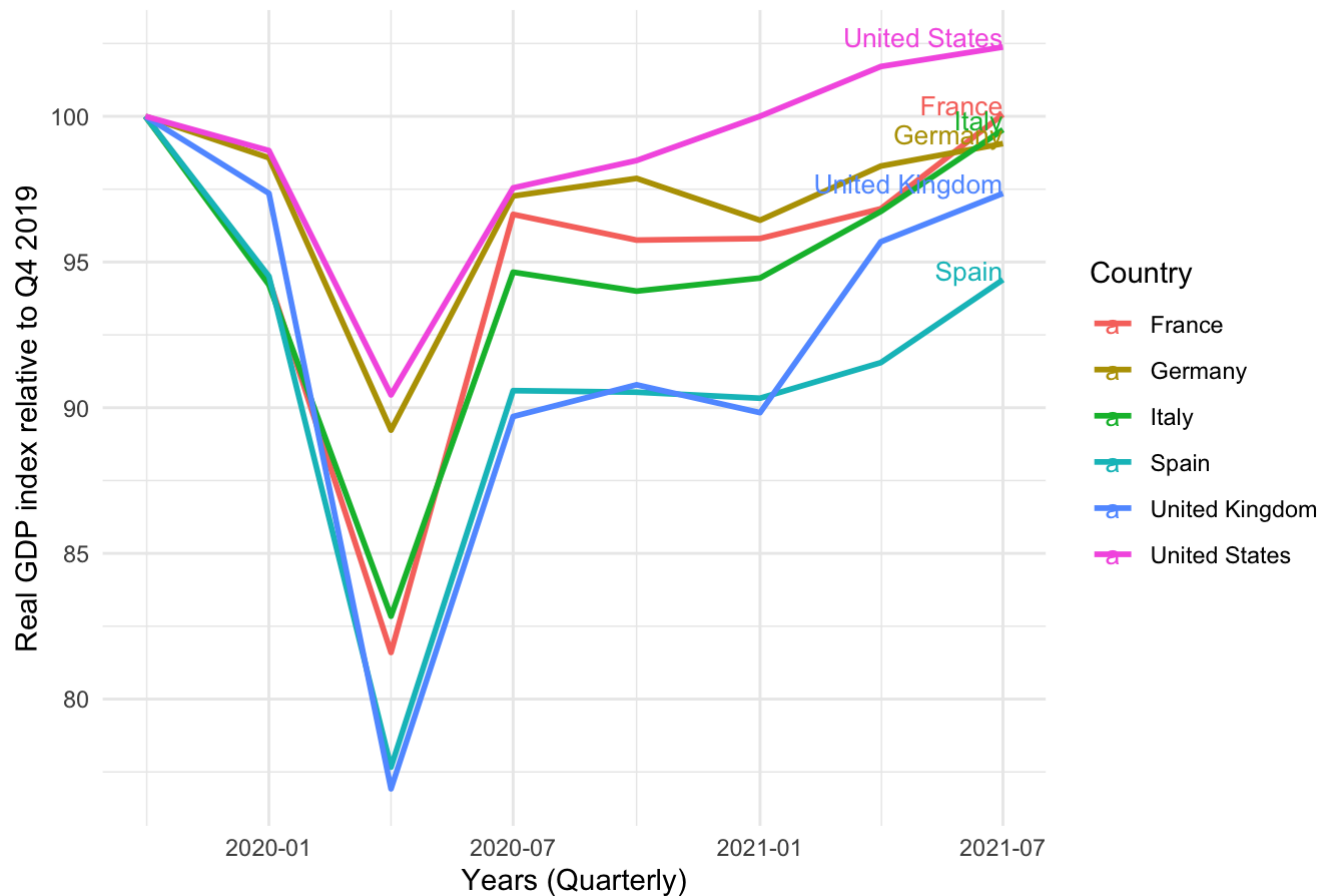
```
## Warning: Using `size` aesthetic for lines was deprecated in ggplot2 3.4.0.
## i Please use `linewidth` instead.
```



Q2. Real GDP Analysis

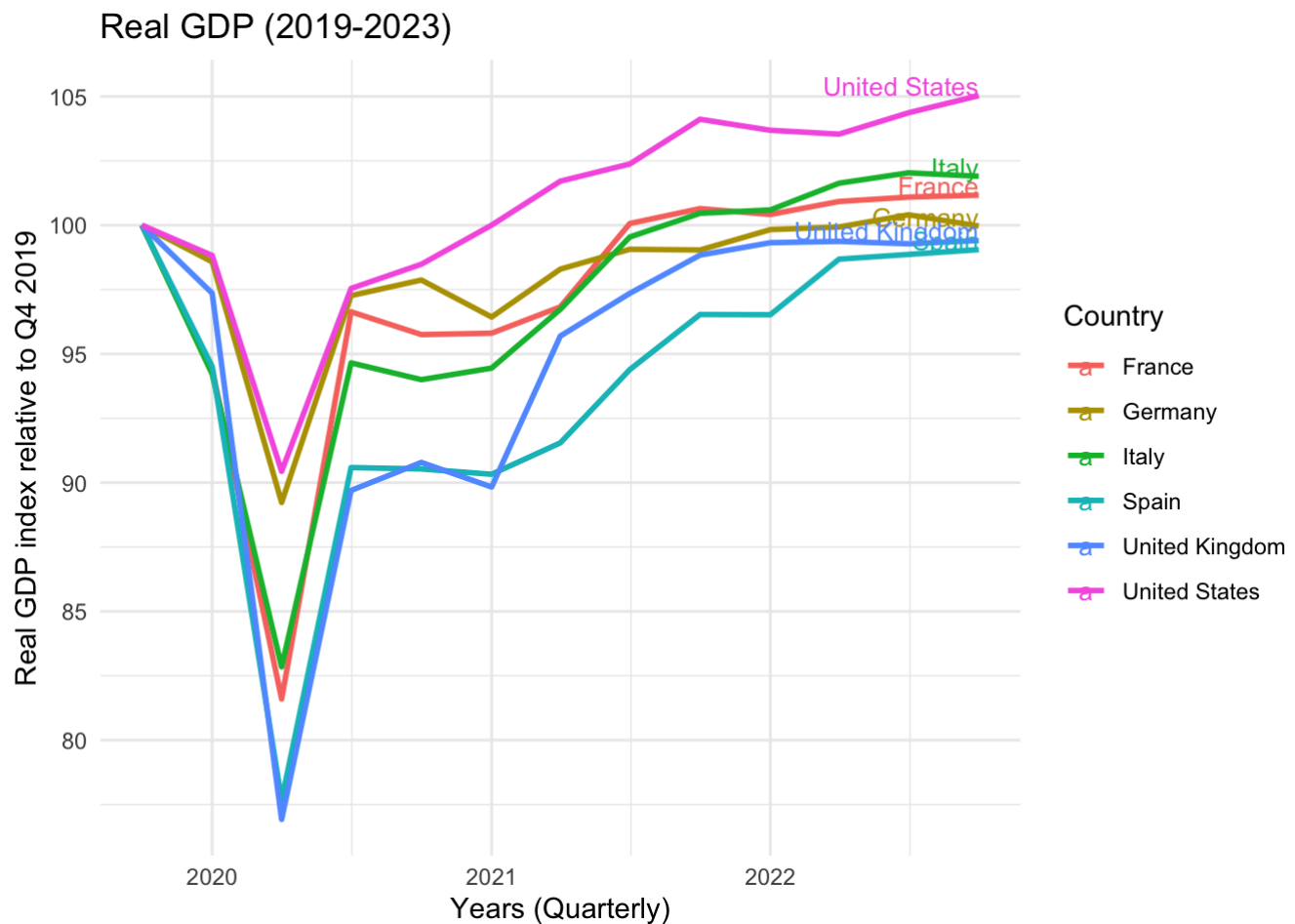
```
real_data_oecd = rdb(ids = c("OECD/QNA/DEU.B1_GE.VOBARSA.Q",
                             "OECD/QNA/USA.B1_GE.VOBARSA.Q",
                             "OECD/QNA/FRA.B1_GE.VOBARSA.Q",
                             "OECD/QNA/ITA.B1_GE.VOBARSA.Q",
                             "OECD/QNA/GBR.B1_GE.VOBARSA.Q",
                             "OECD/QNA/ESP.B1_GE.VOBARSA.Q"))
real_data_oecd%>%
  group_by(Country) %>%
  mutate(index1995 = 100*value/value[period == as.Date("2019-10-01")]) %>%
  filter(period >= as.Date("2019-10-01") & period <= as.Date("2021-07-01")) %>%
  ungroup() %>%
  mutate(quartile = ntile(index1995, 4)) %>%
  ggplot(aes(x = period, y = index1995, color = Country)) +
  geom_line(size = 1) +
  geom_text(data = . %>% group_by(Country) %>% slice_tail(n = 1),
            aes(x = period, y = index1995, label = Country),
            hjust = 1, vjust = 0, size = 3.5) +
  theme_minimal() +
  labs(y = "Real GDP index relative to Q4 2019", x = "Years (Quarterly)", color = "Country",
       title = "Real GDP (2019-2021)")
```

Real GDP (2019-2021)



Q3. Latest Macroeconomic data.

```
real_data_oecd%>%
  group_by(Country) %>%
  mutate(index1995 = 100*value/value[period == as.Date("2019-10-01")]) %>%
  filter(period >= as.Date("2019-10-01")) %>%
  ungroup() %>%
  mutate(quartile = ntile(index1995, 4)) %>%
  ggplot(aes(x = period, y = index1995, color = Country)) +
  geom_line(size = 1) +
  geom_text(data = . %>% group_by(Country) %>% slice_tail(n = 1),
            aes(x = period, y = index1995, label = Country),
            hjust = 1, vjust = 0, size = 3.5) +
  theme_minimal() +
  labs(y = "Real GDP index relative to Q4 2019", x = "Years (Quarterly)", color = "Country",
        title = "Real GDP (2019-2023)")
```



Q4. How I would advice Emmanuel Macron

While advising Macron's opponent, the countries showcased would be the ones which prove that Macron is using prevaricate methods to show that France's GDP is comparatively doing well. Without even going outside of Europe it is possible to prove that France is infact far behind other economies within Europe. As a matter of fact, if we replicate the graph using real gdp and the same time line, but 5 different European economies like Denmark, Norway, Finland, Sweden and the Netherlands and compare them to France, we can prove the hypothesis. It shows the stark difference between the upward trend in GDP. France is undoubtedly not performing really well. In the original graph it looks like France is doing better than many (Italy and Spain) as these countries were handpicked to falsely showcase and conclude that France's economy is booming and in par with great economies. Looking at the graph below, it is evident that France is at the bottom when compared to other European Economies. Especially between January and July 2020, during COVID. That was the time period where it performed the worst. After that there was a robust recovery but still not enough to come in par with the other economies.

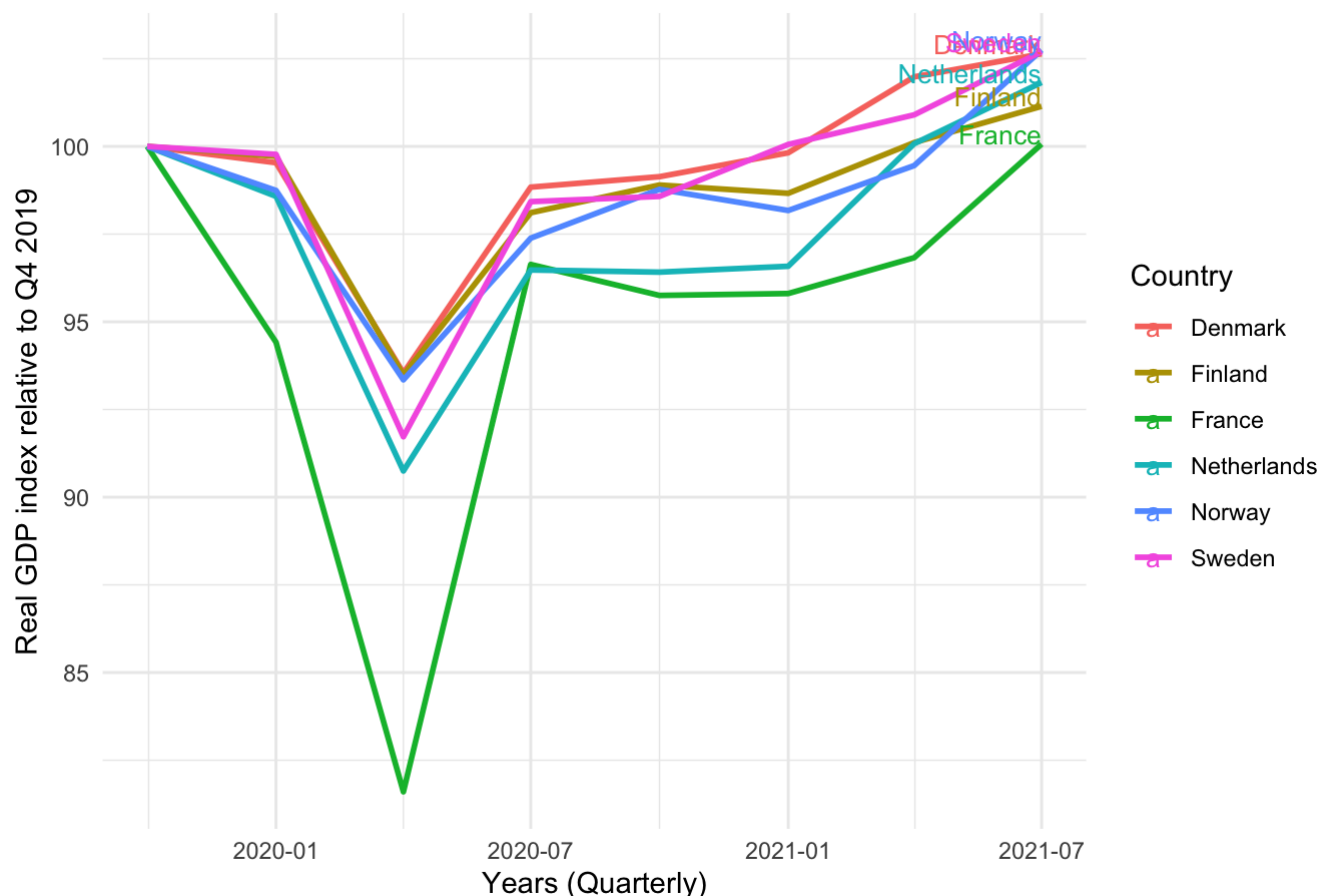
```

real_data_new_oecd = rdb(ids = c("OECD/QNA/NOR.B1_GE.VOBARSA.Q",
                                "OECD/QNA/NLD.B1_GE.VOBARSA.Q",
                                "OECD/QNA/FRA.B1_GE.VOBARSA.Q",
                                "OECD/QNA/DNK.B1_GE.VOBARSA.Q",
                                "OECD/QNA/FIN.B1_GE.VOBARSA.Q",
                                "OECD/QNA/SWE.B1_GE.VOBARSA.Q"))

real_data_new_oecd%>%
  group_by(Country) %>%
  mutate(index1995 = 100*value/value[period == as.Date("2019-10-01")]) %>%
  filter(period >= as.Date("2019-10-01") & period <= as.Date("2021-07-01")) %>%
  ungroup() %>%
  mutate(quartile = ntile(index1995, 4)) %>%
  ggplot(aes(x = period, y = index1995, color = Country)) +
  geom_line(size = 1) +
  geom_text(data = . %>% group_by(Country) %>% slice_tail(n = 1),
            aes(x = period, y = index1995, label = Country),
            hjust = 1, vjust = 0, size = 3.5) +
  theme_minimal() +
  labs(y = "Real GDP index relative to Q4 2019", x = "Years (Quarterly)", color = "Country",
       title = "Real GDP (2019-2023)")

```

Real GDP (2019-2023)

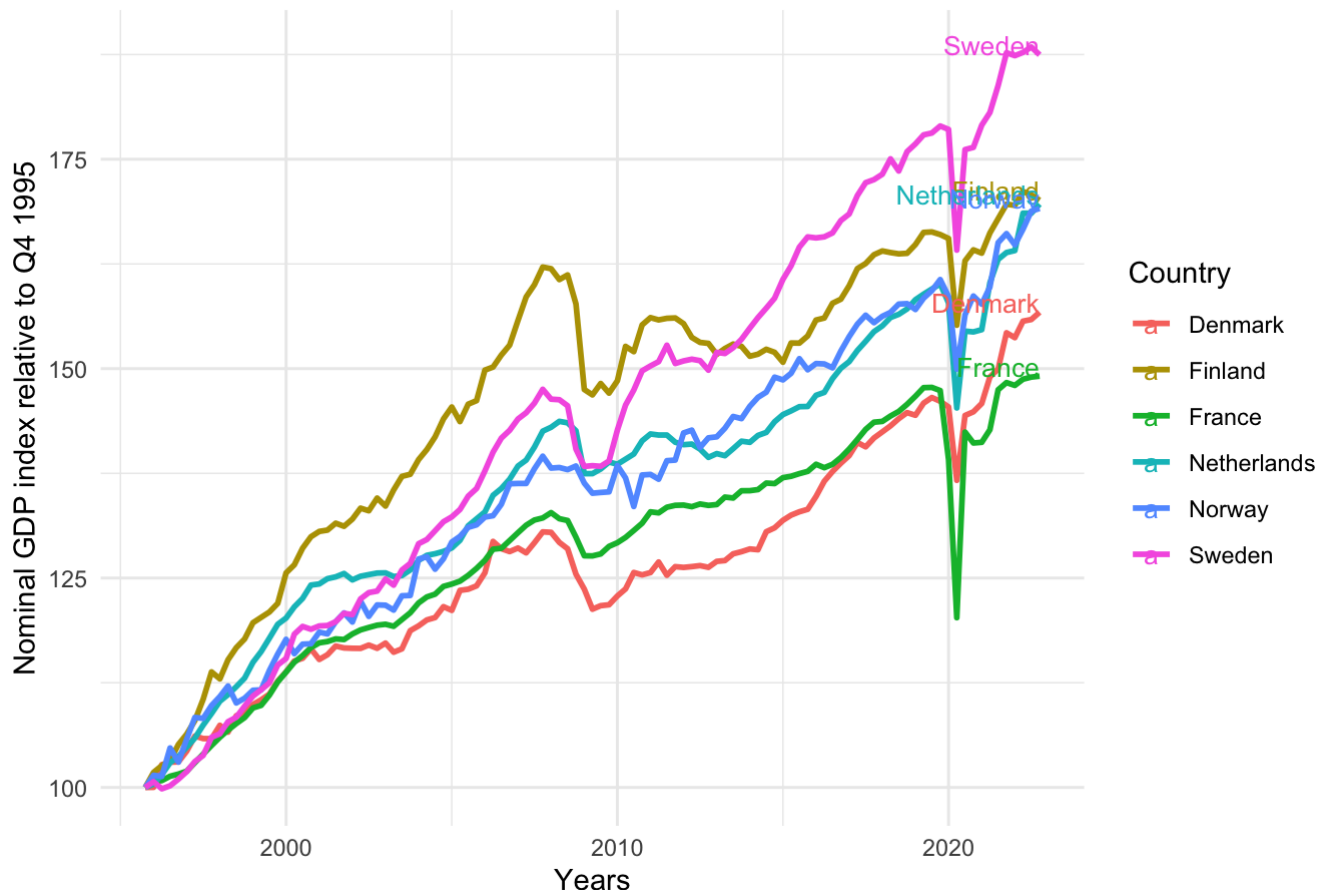


Q5. Longer Analysis

From 1995 to 2019, the results hold up. As is evident, before the covid shock in 2020, France was still amongst the bottom, at times doing better than Denmark. However, it faced major challenges in 2020 and the economy performed very low. Ever since then, the economy is recovering but it is not in par with the other economies. So if we take a longer time frame, the results of our analysis still hold up as France in 2023 is still not fully recovered and is not at the same level as the 5 other economies.

```
real_data_new_oecd%>%
  group_by(Country) %>%
  mutate(index1995 = 100*value/value[period == as.Date("1995-10-01")]) %>%
  filter(period >= as.Date("1995-10-01")) %>%
  ungroup() %>%
  mutate(quartile = ntile(index1995, 4)) %>%
  ggplot(aes(x = period, y = index1995, color = Country)) +
  geom_line(size = 1) +
  geom_text(data = . %>% group_by(Country) %>% slice_tail(n = 1),
            aes(x = period, y = index1995, label = Country),
            hjust = 1, vjust = 0, size = 3.5) +
  theme_minimal() +
  labs(y = "Nominal GDP index relative to Q4 1995", x = "Years", color = "Country",
       title = "Nominal GDP (1995-2023)")
```

Nominal GDP (1995-2023)

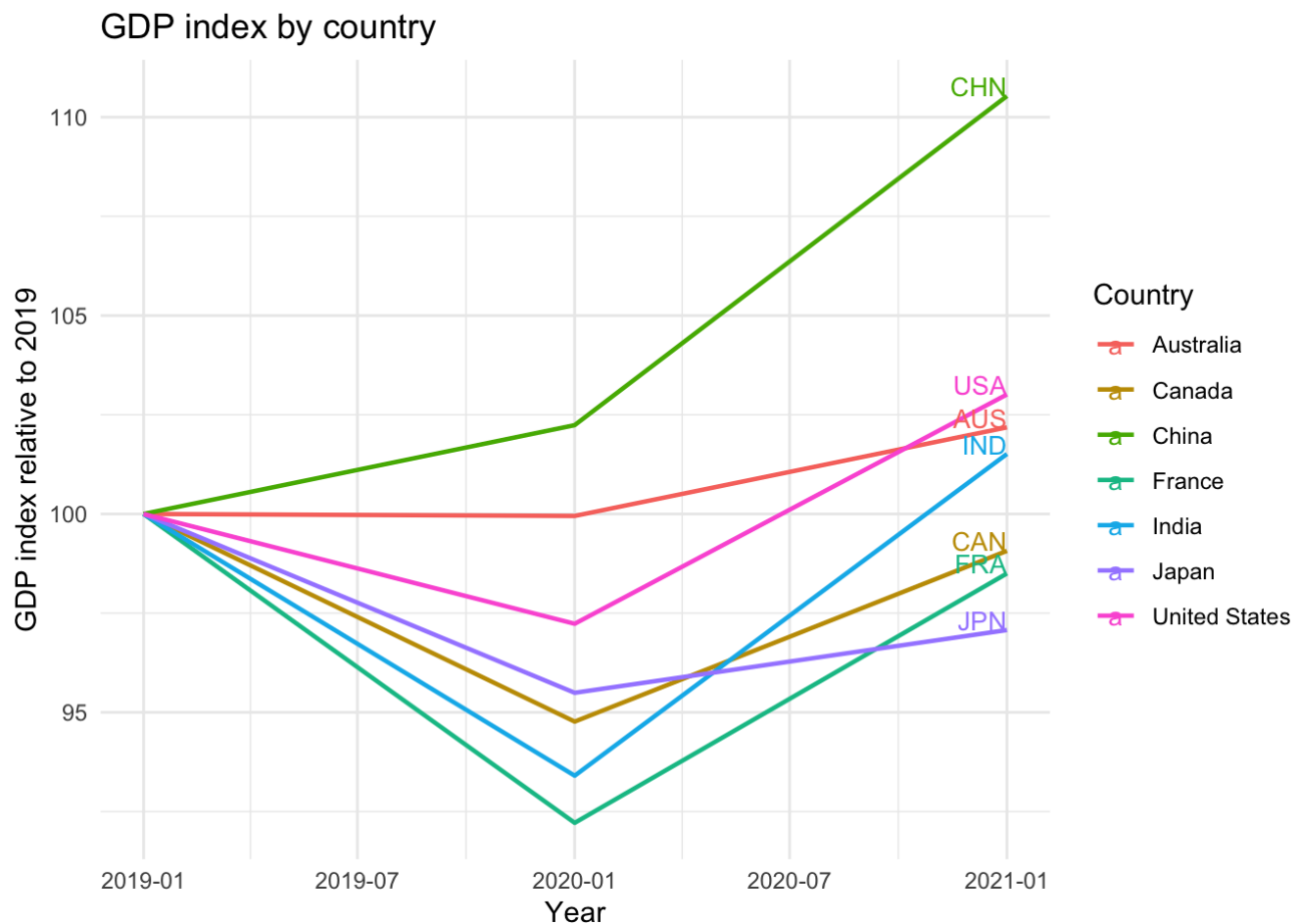


Q6 Important Economies?

In this research, World Bank data is purposely used in order to get a better comparison than with OECD data, since not all great economies are part of this organization. If we do the same analysis as the original, keeping the same time period and the year of reference. Here we have created two graphs. 1st is showing the original graph with 2019 as the base year whereas the second graph is taking into consideration a broader time frame starting from 1995 with 195 as the base year. When France is compared to other important economies like the USA, Canada, India, Japan, China and Australia, which are all among the highest GDP in the world, it still shows that France is not doing very well (graph 1). When we take a broader time frame and change the base year, we see similar results. France is at the bottom, only doing slightly better than Japan. This goes to show that handpicking data to prove a point is not always the full story. Here it can be evidently seen that the French economy is substandard to most major economies.

```
real_data_new_WB = rdb(ids = c("WB/WDI/A-NY.GDP.MKTP.KD-USA",
                              "WB/WDI/A-NY.GDP.MKTP.KD-CAN",
                              "WB/WDI/A-NY.GDP.MKTP.KD-FRA",
                              "WB/WDI/A-NY.GDP.MKTP.KD-IND",
                              "WB/WDI/A-NY.GDP.MKTP.KD-JPN",
                              "WB/WDI/A-NY.GDP.MKTP.KD-CHN",
                              "WB/WDI/A-NY.GDP.MKTP.KD-AUS"))

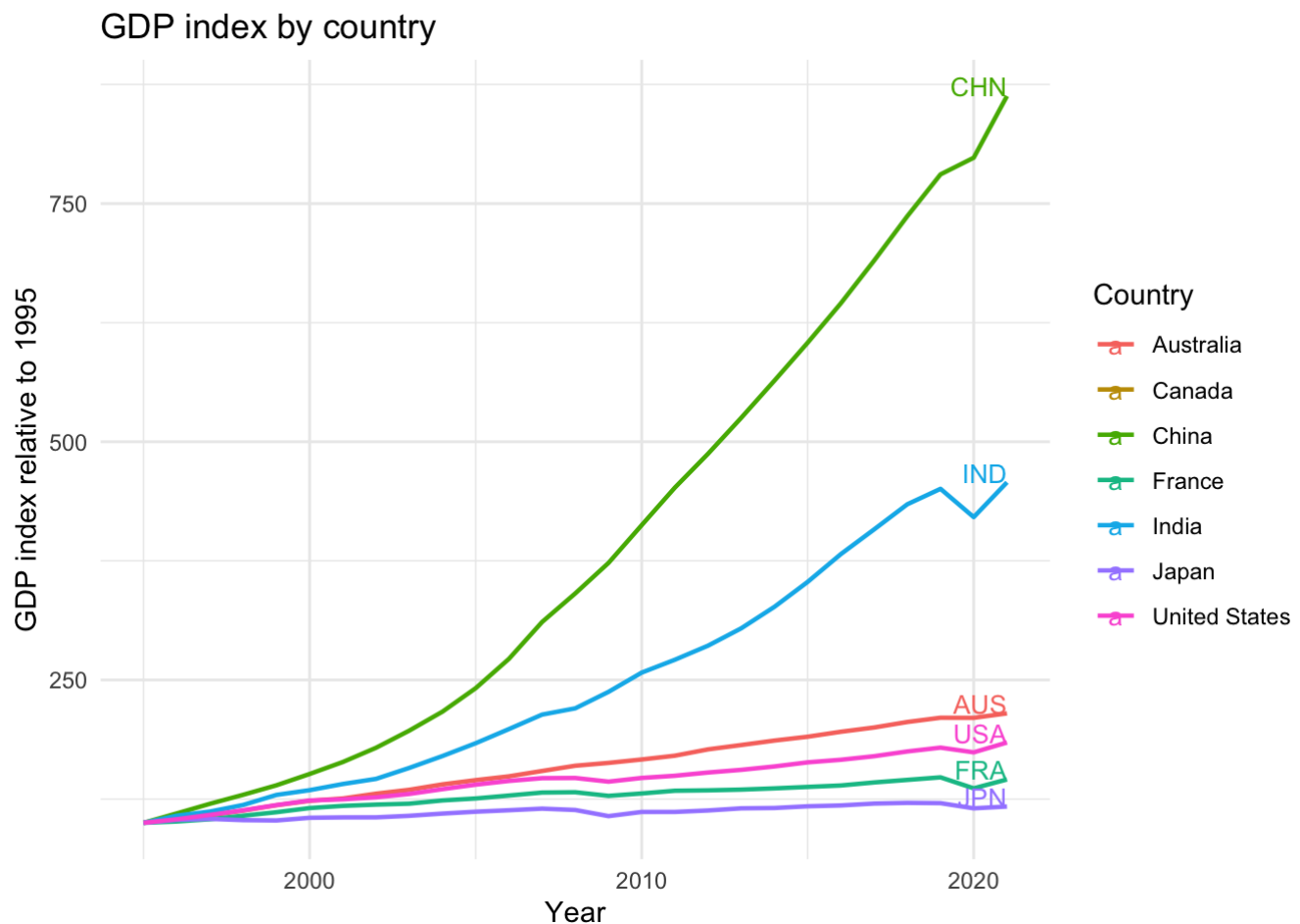
real_data_new_WB%>%
  group_by(country) %>%
  mutate(index1995 = 100*value/value[period == as.Date("2019-01-01")]) %>%
  filter(period >= as.Date("2019-01-01") & period <= as.Date("2021-01-01")) %>%
  ungroup() %>%
  mutate(quartile = ntile(index1995, 4)) %>%
  ggplot(aes(x = period, y = index1995, color = country)) +
  geom_line(size = 0.8) +
  geom_text(data = . %>% group_by(country) %>% slice_tail(n = 1),
            aes(x = period, y = index1995, label = country),
            hjust = 1, vjust = 0, size = 3.5) +
  theme_minimal() +
  labs(y = "GDP index relative to 2019", x = "Year", color = "Country",
       title = "GDP index by country") +
  scale_color_discrete(labels = c("Australia", "Canada", "China", "France", "India", "Japan", "United States"))
```

```
real_data_new_WB%>%
  group_by(country) %>%
  mutate(index1995 = 100*value/value[period == as.Date("1995-01-01")]) %>%
  filter(period >= as.Date("1995-01-01")) %>%
  ungroup() %>%
  mutate(quartile = ntile(index1995, 4)) %>%
  ggplot(aes(x = period, y = index1995, color = country)) +
  geom_line(size = 0.8) +
  geom_text(data = . %>% group_by(country) %>% slice_tail(n = 1),
            aes(x = period, y = index1995, label = country),
            hjust = 1, vjust = 0, size = 3.5) +
  theme_minimal() +
  labs(y = "GDP index relative to 1995", x = "Year", color = "Country",
       title = "GDP index by country") +
  scale_color_discrete(labels = c("Australia", "Canada", "China", "France", "India",
                                  "Japan", "United States"))
```

```
## Warning: Removed 27 rows containing missing values (`geom_line()`).
```

```
## Warning: Removed 1 rows containing missing values (`geom_text()`).
```



Q7 Other measures of wellbeing: GDP per capita, GDP using PPP, consumption, starting in 1995.

Using other measures of wellbeing, the results hold up. Starting with GDP based on purchasing power parity (graph 1), where France is still the second worst economy, only better than Japan. In the case of consumption, we chose to use final consumption expenditure. Indeed, since it is the sum of household final consumption expenditure and general government final consumption expenditure, it appeared as the most comprehensive measure of consumption. And there, France performs better, since from 1995 to 2020, it revolves around the 1995 index, and in the average of the countries chosen. This shows that even if compared to other important economies, France's GDP might not be among the highest, its consumption levels are still important, which could be caused by a dynamic economy, and people trusting it. Lastly, when using GDP per capita (graph 3), the first results hold up: France's GDP is still the second worse, which means that its wealth is not distributed blatantly differently than in the other countries in the comparison.

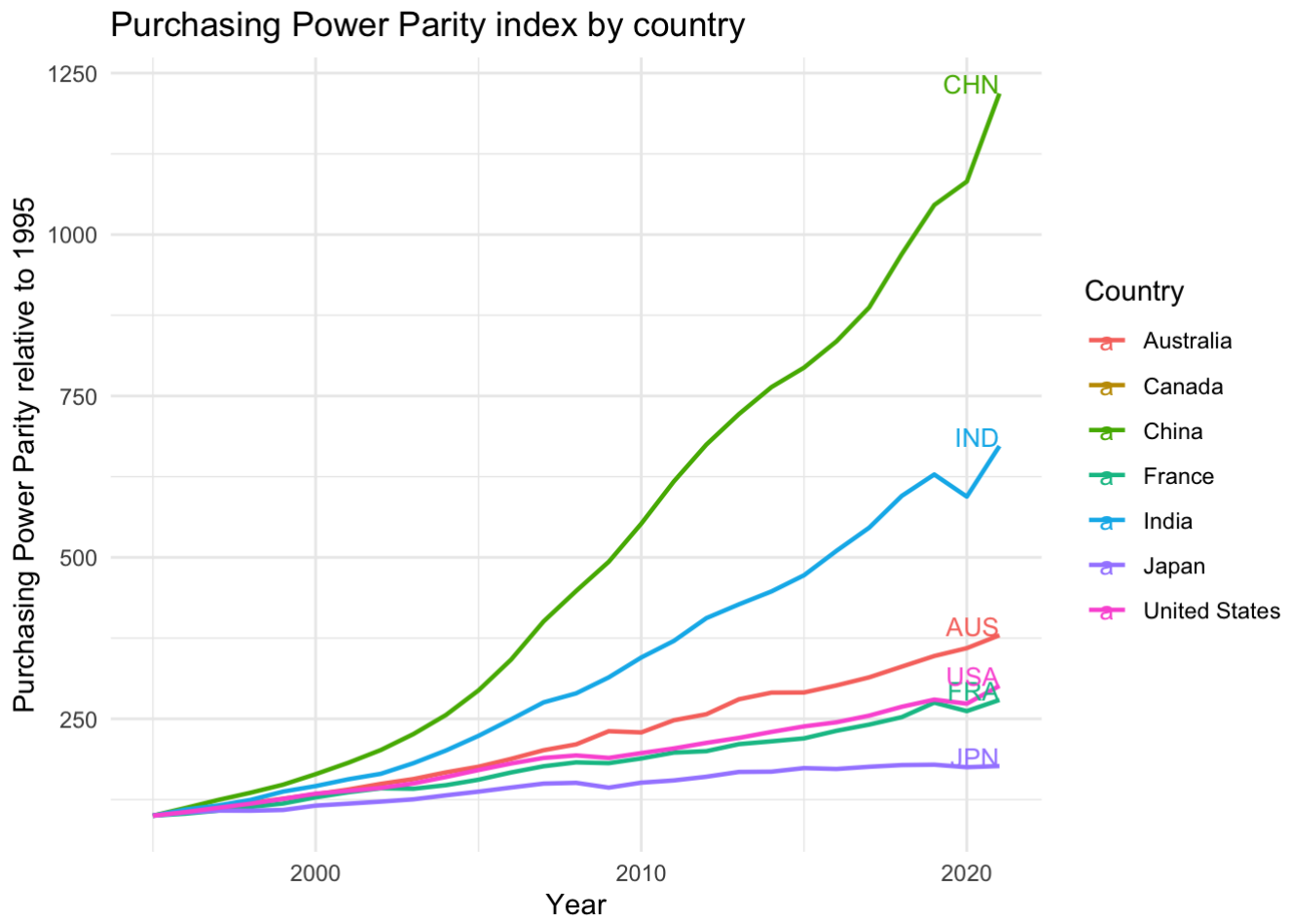
Purchasing Power Parity

```
PPP_data_new_WB = rdb(ids = c("WB/WDI/A-NY.GDP.MKTP.PP.CD-USA",
                              "WB/WDI/A-NY.GDP.MKTP.PP.CD-CAN",
                              "WB/WDI/A-NY.GDP.MKTP.PP.CD-FRA",
                              "WB/WDI/A-NY.GDP.MKTP.PP.CD-IND",
                              "WB/WDI/A-NY.GDP.MKTP.PP.CD-JPN",
                              "WB/WDI/A-NY.GDP.MKTP.PP.CD-CHN",
                              "WB/WDI/A-NY.GDP.MKTP.PP.CD-AUS"))

PPP_data_new_WB%>%
  group_by(country) %>%
  mutate(index1995 = 100*value/value[period == as.Date("1995-01-01")]) %>%
  filter(period >= as.Date("1995-01-01")) %>%
  ungroup() %>%
  mutate(quartile = ntile(index1995, 4)) %>%
  ggplot(aes(x = period, y = index1995, color = country)) +
  geom_line(size = 0.8) +
  geom_text(data = . %>% group_by(country) %>% slice_tail(n = 1),
            aes(x = period, y = index1995, label = country),
            hjust = 1, vjust = 0, size = 3.5) +
  theme_minimal() +
  labs(y = "Purchasing Power Parity relative to 1995", x = "Year", color = "Country",
       title = "Purchasing Power Parity index by country") +
  scale_color_discrete(labels = c("Australia", "Canada", "China", "France", "India",
                                  "Japan", "United States"))
```

```
## Warning: Removed 27 rows containing missing values (`geom_line()`).
```

```
## Warning: Removed 1 rows containing missing values (`geom_text()`).
```



Final Consumption Expenditure

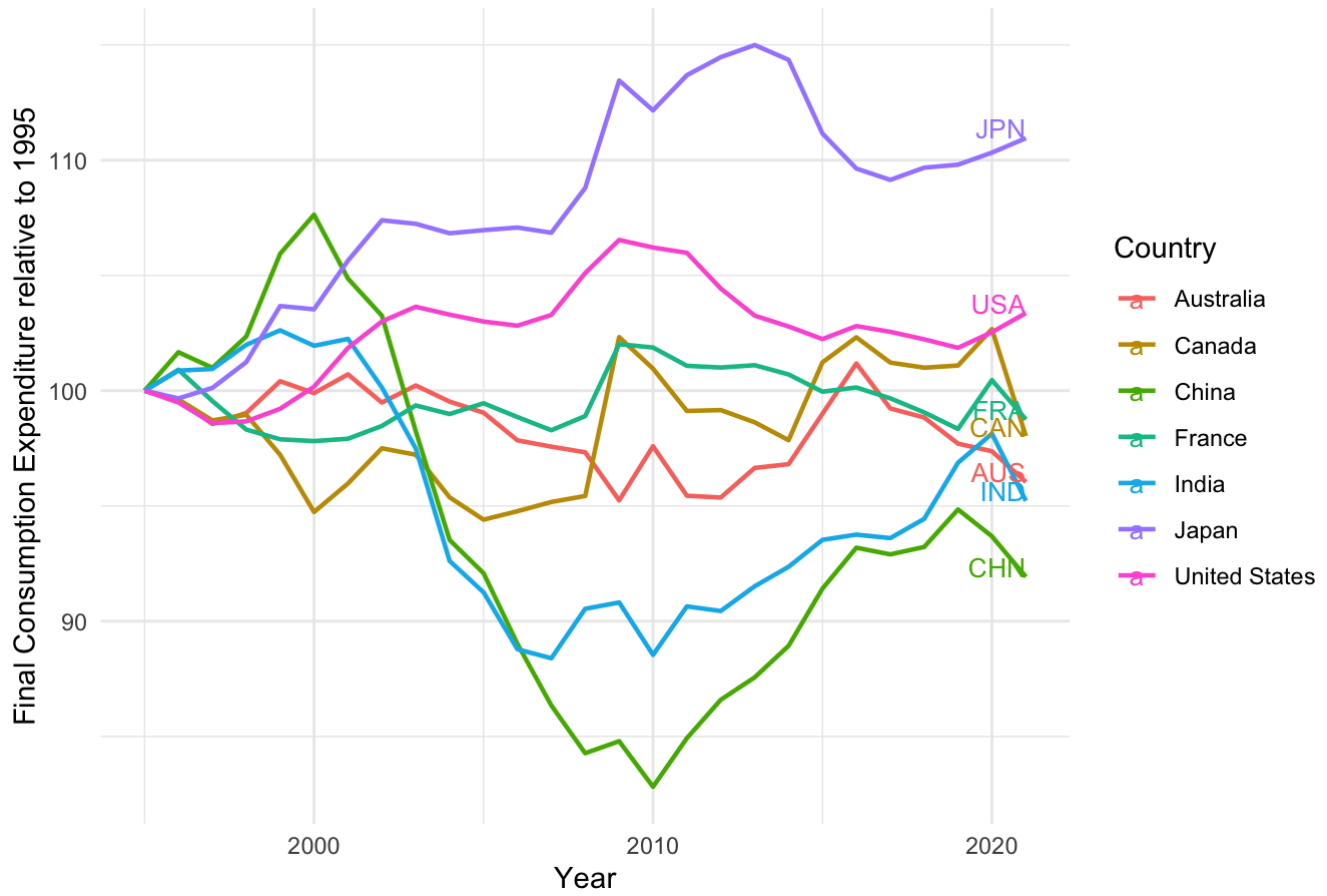
```

FCE_data_new_WB = rdb(ids = c("WB/WDI/A-NE.CON.TOTL.ZS-USA",
                             "WB/WDI/A-NE.CON.TOTL.ZS-CAN",
                             "WB/WDI/A-NE.CON.TOTL.ZS-FRA",
                             "WB/WDI/A-NE.CON.TOTL.ZS-IND",
                             "WB/WDI/A-NE.CON.TOTL.ZS-JPN",
                             "WB/WDI/A-NE.CON.TOTL.ZS-CHN",
                             "WB/WDI/A-NE.CON.TOTL.ZS-AUS"))

FCE_data_new_WB%>%
  group_by(country) %>%
  mutate(index1995 = 100*value/value[period == as.Date("1995-01-01")]) %>%
  filter(period >= as.Date("1995-01-01")) %>%
  ungroup() %>%
  mutate(quartile = ntile(index1995, 4)) %>%
  ggplot(aes(x = period, y = index1995, color = country)) +
  geom_line(size = 0.8) +
  geom_text(data = . %>% group_by(country) %>% slice_tail(n = 1),
            aes(x = period, y = index1995, label = country),
            hjust = 1, vjust = 0, size = 3.5) +
  theme_minimal() +
  labs(y = "Final Consumption Expenditure relative to 1995", x = "Year", color = "Country",
       title = "Final Consumption index by country") +
  scale_color_discrete(labels = c("Australia", "Canada", "China", "France", "India",
                                  "Japan", "United States"))

```

Final Consumption index by country



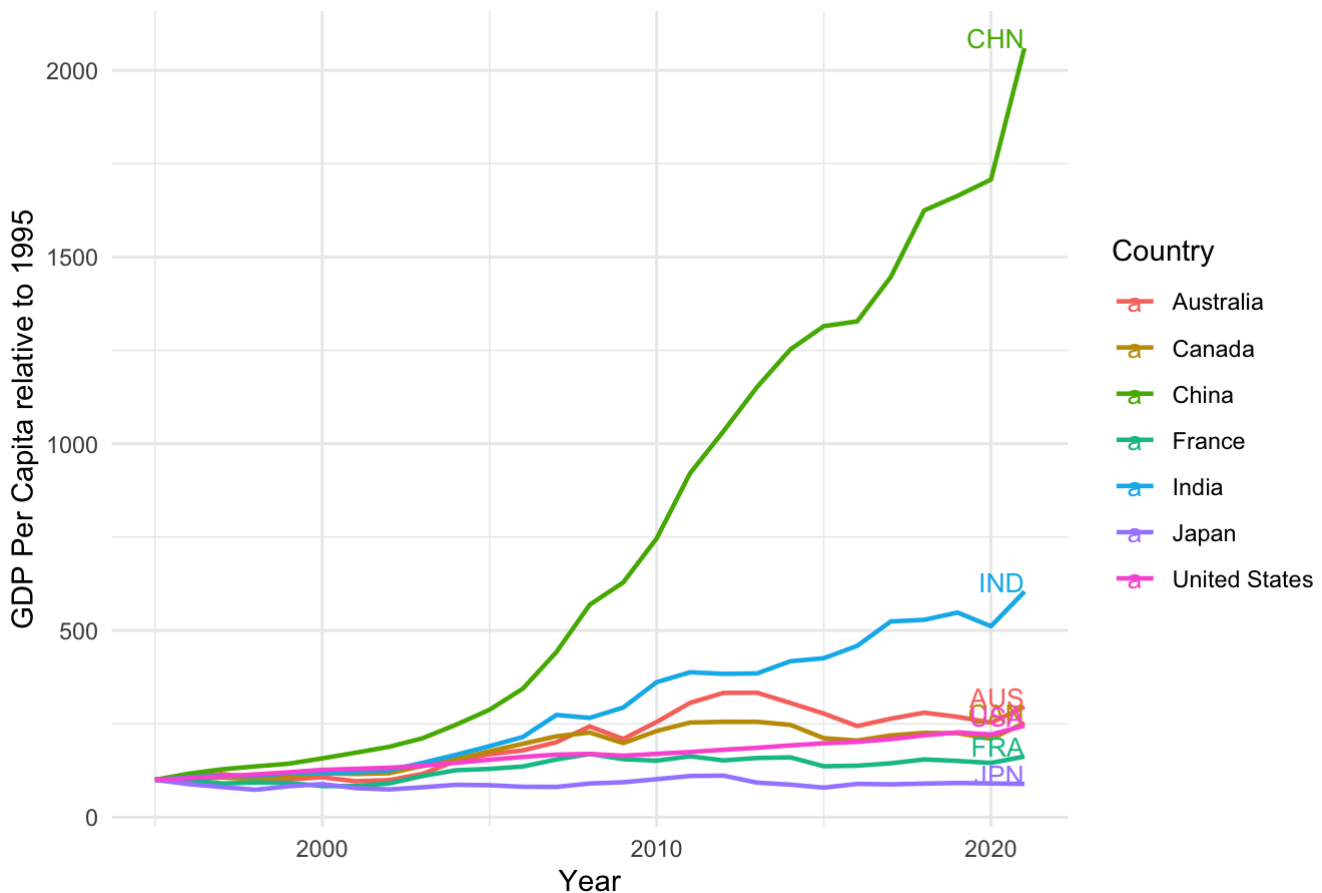
GDP Per Capita

```

GDPPC_data_new_WB = rdb(ids = c("WB/WDI/A-NY.GDP.PCAP.CD-USA",
                                "WB/WDI/A-NY.GDP.PCAP.CD-CAN",
                                "WB/WDI/A-NY.GDP.PCAP.CD-FRA",
                                "WB/WDI/A-NY.GDP.PCAP.CD-IND",
                                "WB/WDI/A-NY.GDP.PCAP.CD-JPN",
                                "WB/WDI/A-NY.GDP.PCAP.CD-CHN",
                                "WB/WDI/A-NY.GDP.PCAP.CD-AUS"))

GDPPC_data_new_WB%>%
  group_by(country) %>%
  mutate(index1995 = 100*value/value[period == as.Date("1995-01-01")]) %>%
  filter(period >= as.Date("1995-01-01")) %>%
  ungroup() %>%
  mutate(quartile = ntile(index1995, 4)) %>%
  ggplot(aes(x = period, y = index1995, color = country)) +
  geom_line(size = 0.8) +
  geom_text(data = . %>% group_by(country) %>% slice_tail(n = 1),
            aes(x = period, y = index1995, label = country),
            hjust = 1, vjust = 0, size = 3.5) +
  theme_minimal() +
  labs(y = "GDP Per Capita relative to 1995", x = "Year", color = "Country",
       title = "GDP Per Capita index by country") +
  scale_color_discrete(labels = c("Australia", "Canada", "China", "France", "India",
                                   "Japan", "United States"))
    
```

GDP Per Capita index by country



Is France really the “employment champion”?

Logistical Code

```
geo <- get_eurostat_dic("geo") %>%
  rename(geo = code_name, Geo = full_name)

geo %>%
  head
```

```
## # A tibble: 6 × 2
##   geo          Geo
##   <chr>       <chr>
## 1 EUR         Europe
## 2 EU          European Union (EU6-1958, EU9-1973, EU10-1981, EU12-1986, EU15...
## 3 EU_V        European Union (aggregate changing according to the context)
## 4 EU27_2020_EFTA European Union - 27 countries (from 2020) and European Free Tr...
## 5 EU27_2020_IS_K European Union - 27 countries (from 2020) and Iceland under th...
## 6 EU27_2020   European Union - 27 countries (from 2020)
```

```
namq_10_a10_e <- get_eurostat("namq_10_a10_e")
```

```
## Table namq_10_a10_e cached at /var/folders/fr/70h2tt654hj9r0hx9ymvttdr0000gn/T//Rtmp2
84UUM/eurostat/namq_10_a10_e_date_code_FF.rds
```

```
na_item <- get_eurostat_dic("na_item") %>%
  rename(na_item = code_name, Na_item = full_name)

nace_r2 <- get_eurostat_dic("nace_r2") %>%
  rename(nace_r2 = code_name, Nace_r2 = full_name)

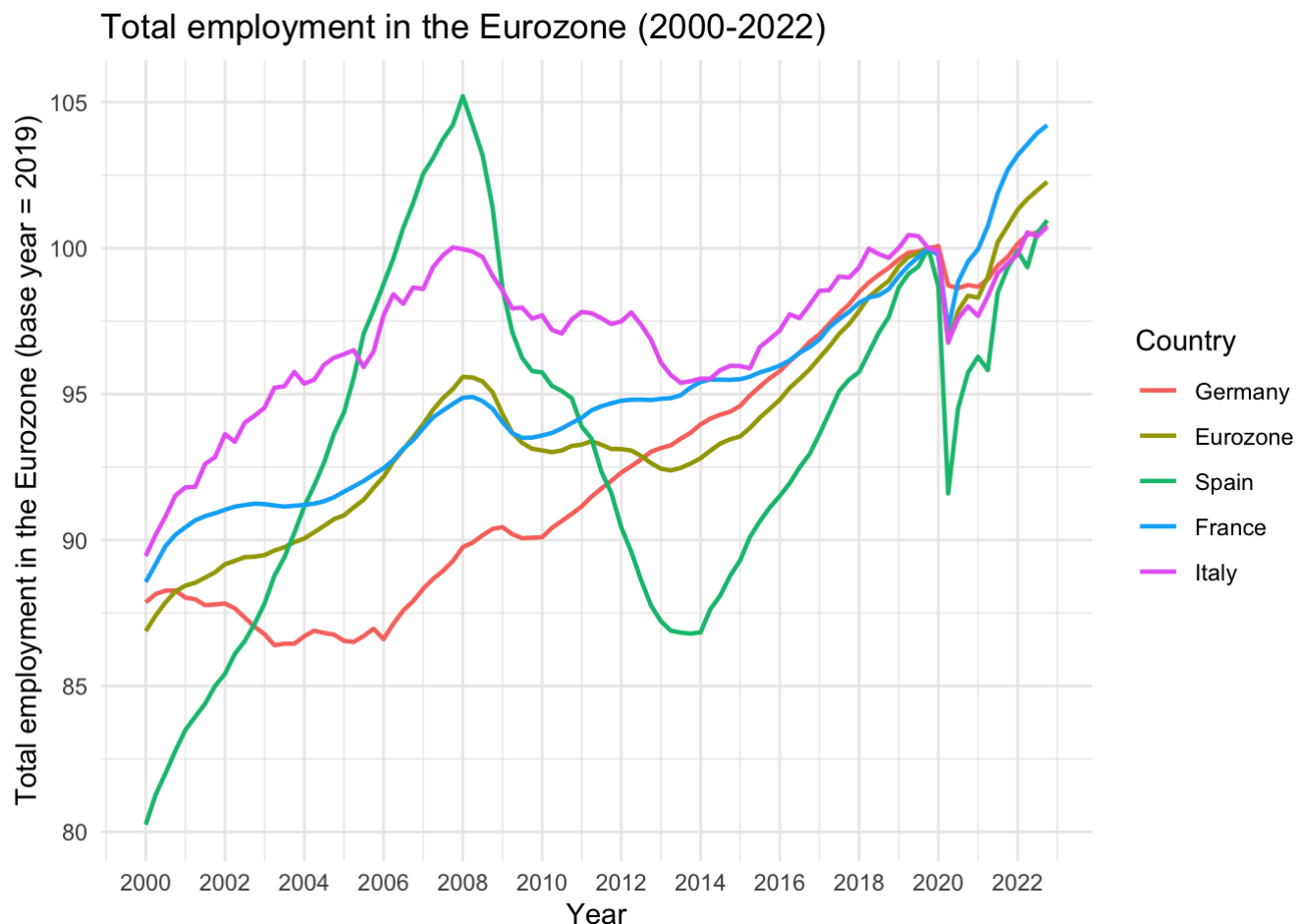
unit <- get_eurostat_dic("unit") %>%
  rename(unit = code_name, Unit = full_name)
```


Q1. Total Employment in France.

```

namq_10_a10_e %>%
  filter(nace_r2 == ("TOTAL"),
         geo %in% c("DE", "IT", "ES", "EA19", "FR"),
         unit == "THS_PER",
         s_adj %in% c("SCA", "SA"),
         na_item == "EMP_DC",
         time >= as.Date("2000-01-01")) %>%
  left_join(nace_r2, by = "nace_r2") %>%
  left_join(unit, by = "unit") %>%
  left_join(geo, by = "geo") %>%
  group_by(Nace_r2, geo) %>%
  mutate(values2 = 100* values / values[time == as.Date("2019-10-01")]) %>%
  ggplot (aes(x = time, y = values2, color = geo)) +
  geom_line(size = 0.8) +
  scale_x_date(date_breaks = "2 years", date_labels = "%Y") +
  theme_minimal() +
  labs(y = "Total employment in the Eurozone (base year = 2019)", x = "Year", color = "Country",
       title = "Total employment in the Eurozone (2000-2022)") +
  scale_color_discrete(labels = c("Germany", "Eurozone", "Spain", "France", "Italy"))

```



Q2 Longer Historical Period

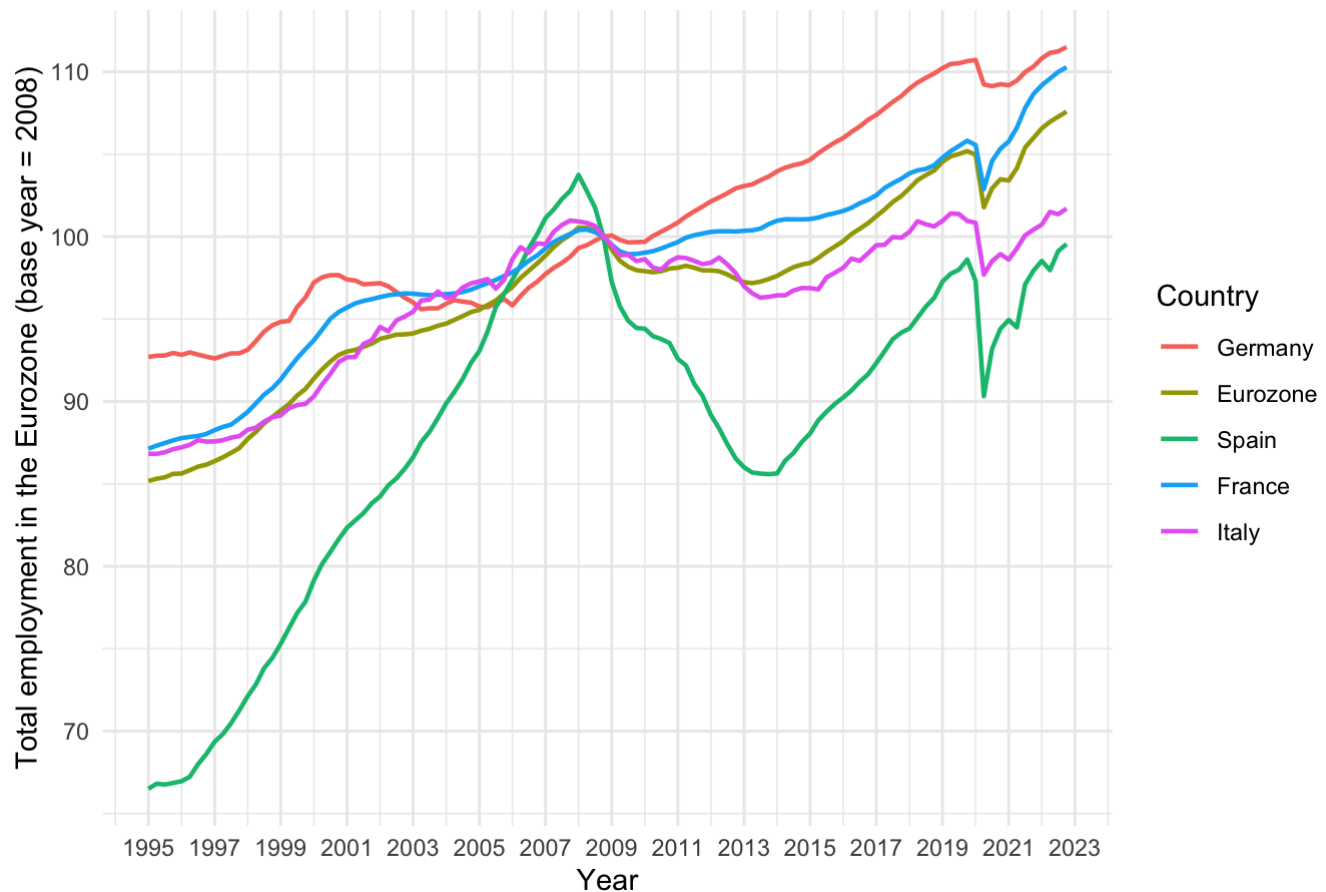
Taking a longer historical perspective and 2008 as a base year allows to change the analysis. Indeed, 2008 came right after the subprime crisis, which had a huge impact on employment in France. And if we take this year as a base, Germany in 2022 seems to be doing better than France, in opposition to the graph taking 2019 as its base year. This shows the importance of choosing the base year carefully. By taking a different base year, we can more clearly see the difference in total employment between the different economies. The results as a whole see a somewhat similar trend but Germany and France interchange their position

```

namq_10_a10_e %>%
  filter(nace_r2 == ("TOTAL"),
         geo %in% c("DE", "IT", "ES", "EA19", "FR"),
         unit == "THS_PER",
         s_adj %in% c("SCA", "SA"),
         na_item == "EMP_DC",
         time >= as.Date("1995-01-01")) %>%
  left_join(nace_r2, by = "nace_r2") %>%
  left_join(unit, by = "unit") %>%
  left_join(geo, by = "geo") %>%
  group_by(Nace_r2, geo) %>%
  mutate(values2 = 100* values / values[time == as.Date("2008-10-01")]) %>%
  ggplot (aes(x = time, y = values2, color = geo)) +
  geom_line(size = 0.8) +
  scale_x_date(date_breaks = "2 years", date_labels = "%Y") +
  theme_minimal() +
  labs(y = "Total employment in the Eurozone (base year = 2008)", x = "Year", color = "Country",
       title = "Total employment in the Eurozone (1995-2022)") +
  scale_color_discrete(labels = c("Germany", "Eurozone", "Spain", "France", "Italy"))

```

Total employment in the Eurozone (1995-2022)



Q3.1 Different types of employment

In order to compare the different types of employment in France, Germany, and the rest of the EU, we looked at what part of employment in these countries were employees, or self-employed people. We found that Germany's level of self-employment has been fairly stationary from 1995 to 2023, increasing from 1995 to 2010, and decreasing from 2010 to 2023 until reaching its level of 1995. On the contrary, in France, that same level has boomed since 2010. Indeed, France's part of self-employment has more than doubled, while the average of the EU, and Germany have remained fairly stable (graph 1). On the other hand, Germany has a higher proportion of employees than France. Indeed, while both countries' levels have been in progress since 1995, except from 2003 to 2009, Germany's proportion of employees has constantly remained above that of France (Graph 2)

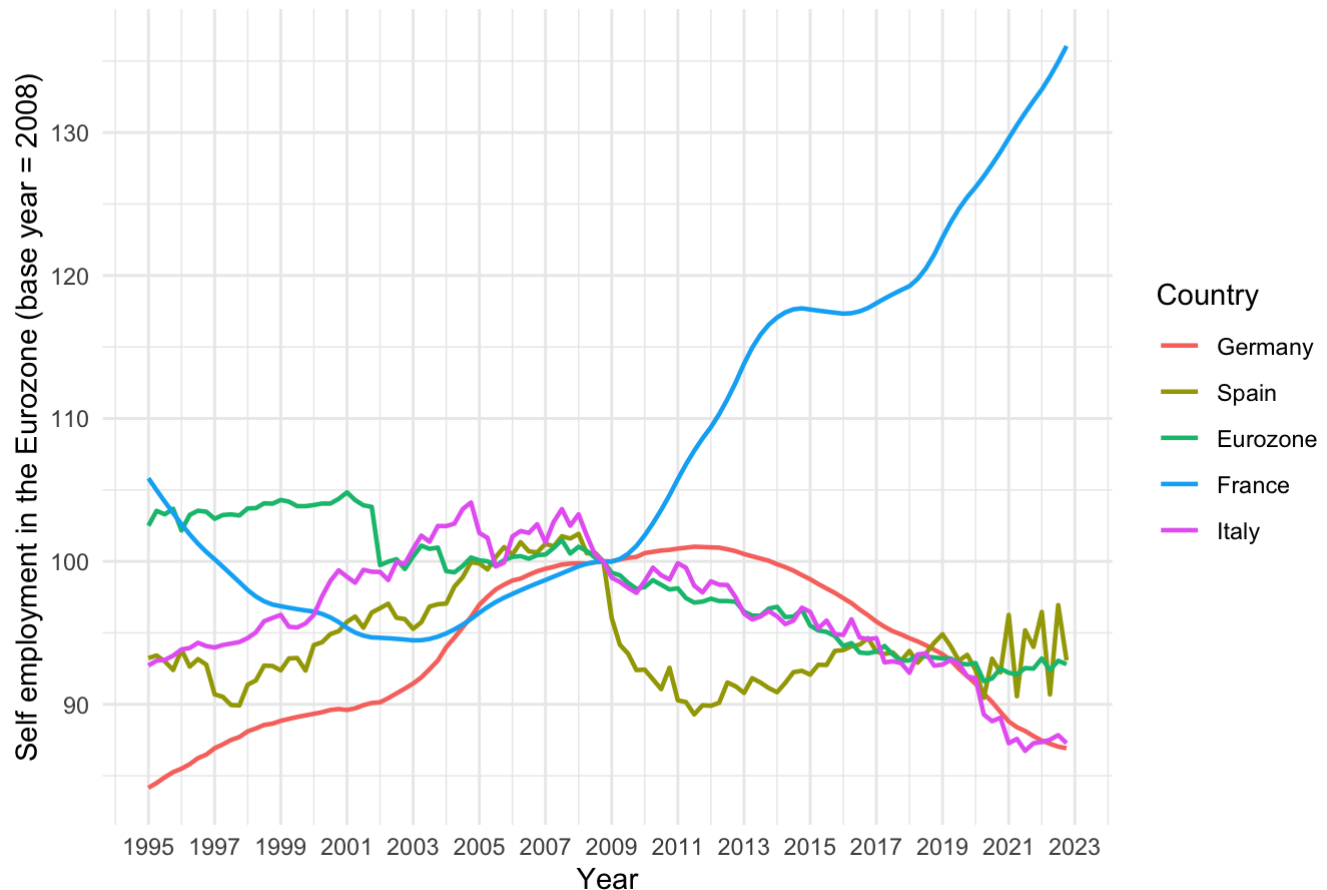
Types of Employment

```

namq_10_a10_e %>%
  filter(nace_r2 == ("TOTAL"),
         geo %in% c("DE", "IT", "ES", "EU27_2020", "FR"),
         unit == "THS_PER",
         s_adj %in% c("SCA", "SA"),
         na_item == "SELF_DC",
         time >= as.Date("1995-01-01")) %>%
  left_join(nace_r2, by = "nace_r2") %>%
  left_join(unit, by = "unit") %>%
  left_join(geo, by = "geo") %>%
  group_by(Nace_r2, geo) %>%
  mutate(values2 = 100* values / values[time == as.Date("2008-10-01")]) %>%
  ggplot + (aes(x = time, y = values2, color = geo)) +
  geom_line(size = 0.8) +
  scale_x_date(date_breaks = "2 years", date_labels = "%Y") +
  theme_minimal() +
  labs(y = "Self employment in the Eurozone (base year = 2008)", x = "Year", color = "Co
untry",
       title = "Part of self-employment among total employment") +
  scale_color_discrete(labels = c("Germany", "Spain", "Eurozone", "France", "Italy"))

```

Part of self-employment among total employment

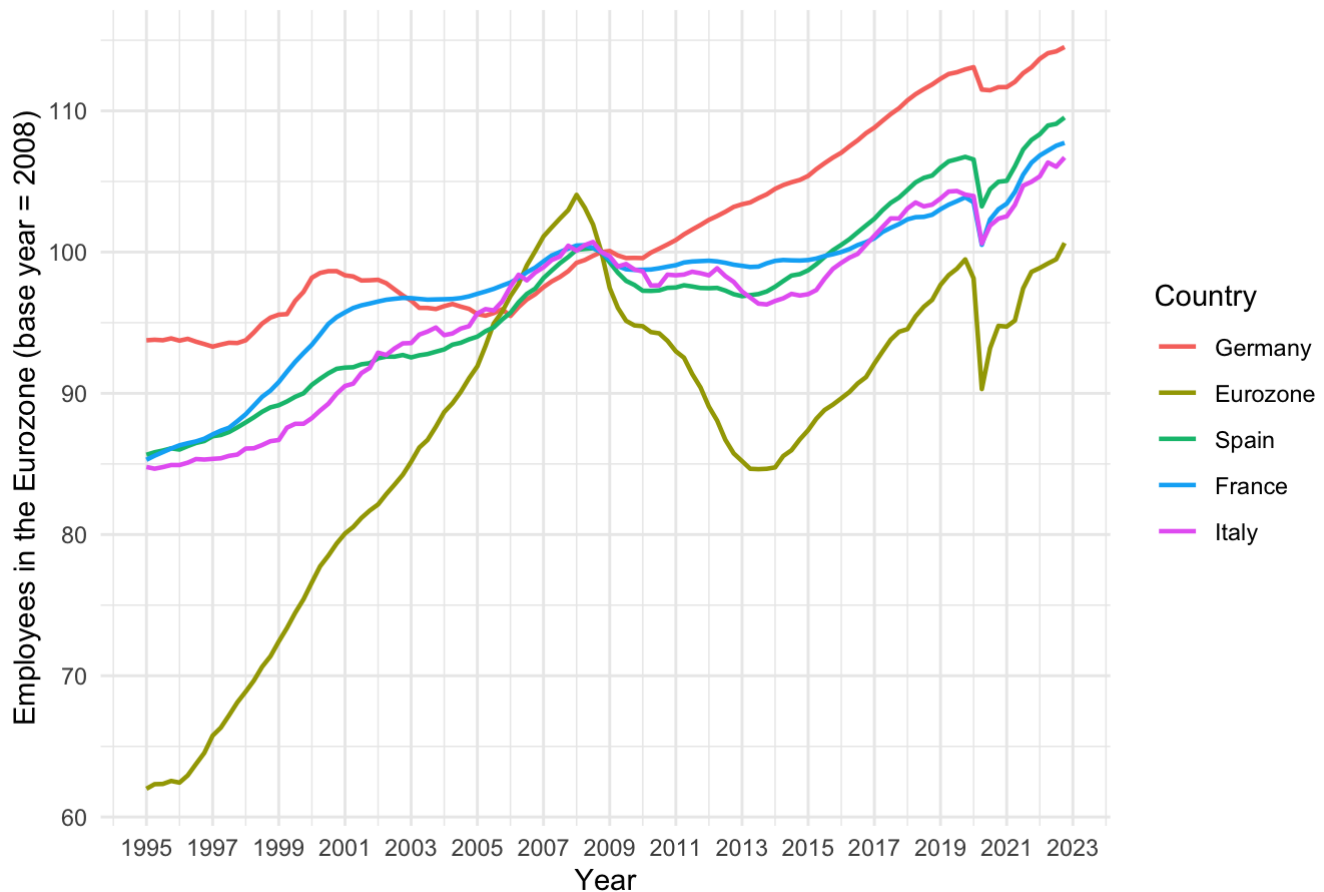


```

namq_10_a10_e %>%
  filter(nace_r2 == ("TOTAL"),
         geo %in% c("DE", "IT", "ES", "EU27_2020", "FR"),
         unit == "THS_PER",
         s_adj %in% c("SCA","SA"),
         na_item == "SAL_DC",
         time >= as.Date("1995-01-01")) %>%
  left_join(nace_r2, by = "nace_r2") %>%
  left_join(unit, by = "unit") %>%
  left_join(geo, by = "geo") %>%
  group_by(Nace_r2, geo) %>%
  mutate(values2 = 100* values / values[time == as.Date("2008-10-01")]) %>%
  ggplot + (aes(x = time, y = values2, color = geo)) +
  geom_line(size = 0.8) +
  scale_x_date(date_breaks = "2 years", date_labels = "%Y") +
  theme_minimal() +
  labs(y = "Employees in the Eurozone (base year = 2008)", x = "Year", color = "Country",
       title = "Part of employees among total employment") +
  scale_color_discrete(labels = c("Germany", "Eurozone", "Spain", "France", "Italy"))

```

Part of employees among total employment



Q3.2 Different sectors

In order to represent sectors of employment, we chose to divide it into three: primary, secondary, and tertiary. For this, we used the NACE, namely the “Nomenclature statistique des Activités économiques dans la Communauté Européenne”.

For the primary sector, which includes all activities whose end purpose consists in exploiting natural resources, we used data taken from agriculture. The graph shows that France is doing better than Germany in that sector. France is still way below the average of EU countries, but Germany is continuously lower than France.

For the secondary sector, as it covers activities consisting in varying degrees of processing of raw materials and manufacturing, we used industry. This graph shows that compared to other EU economies and notably Germany, France’s level of employment in the secondary sector of the economy is low, since it is even much lower than the average of EU countries.

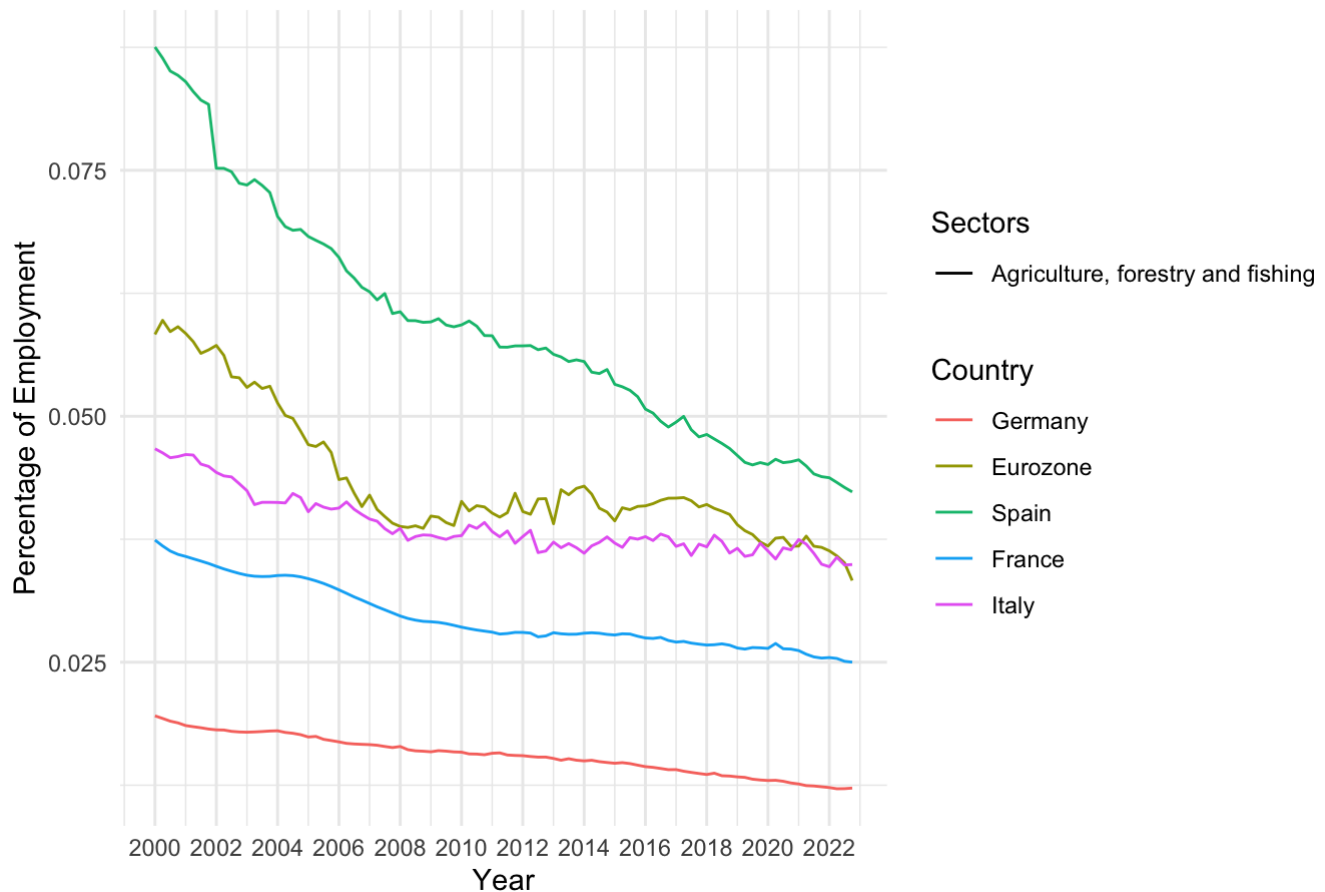
Lastly, for the tertiary sector, consisting of services, we used public administration, defense, education, human health and social work activities, as well as professional, scientific and technical activities; namely, administrative and support service activities as representatives of the type of service-oriented employment. And in this case again, France’s level of employment is higher than that of Germany.

— Overall, these graphs show the large differences in the composition of employment of France and Germany. According to the sectors taken into account, Germany has a high rate of employment in the primary sector, but France is champion in the public administration and administrative activities and more generally, the services employment. Furthermore, France and Germany also show disparities in their majoritarian type of employment. Indeed, the part of self-employment is much higher in France than in Germany, the latter’s part of employees is larger than France’s.

Employment by sector: Primary (Agriculture)

```
namq_10_a10_e %>%
  filter(nace_r2 %in% c("A", "TOTAL"),
         geo %in% c("DE", "IT", "ES", "EU27_2020", "FR"),
         unit == "THS_PER",
         s_adj %in% c("SCA", "SA"),
         na_item == "EMP_DC") %>%
  left_join(geo, by = "geo") %>%
  group_by(time) %>%
  mutate(values2 = values/ values[nace_r2 == "TOTAL"]) %>%
  filter(nace_r2 != "TOTAL",
         time >= as.Date("2000-01-01")) %>%
  ggplot + (aes(x = time, y = values2, color = geo, linetype = nace_r2)) +
  geom_line() +
  scale_x_date(date_breaks = "2 years", date_labels = "%Y") +
  theme_minimal() +
  labs(y = "Percentage of Employment", x = "Year", color = "Country",
       title = "Employment by sector: Primary (Agriculture)", linetype = "Sectors") +
  scale_color_discrete(labels = c("Germany", "Eurozone", "Spain", "France", "Italy")) +
  scale_linetype_discrete(labels = c("Agriculture, forestry and fishing"))
```

Employment by sector: Primary (Agriculture)



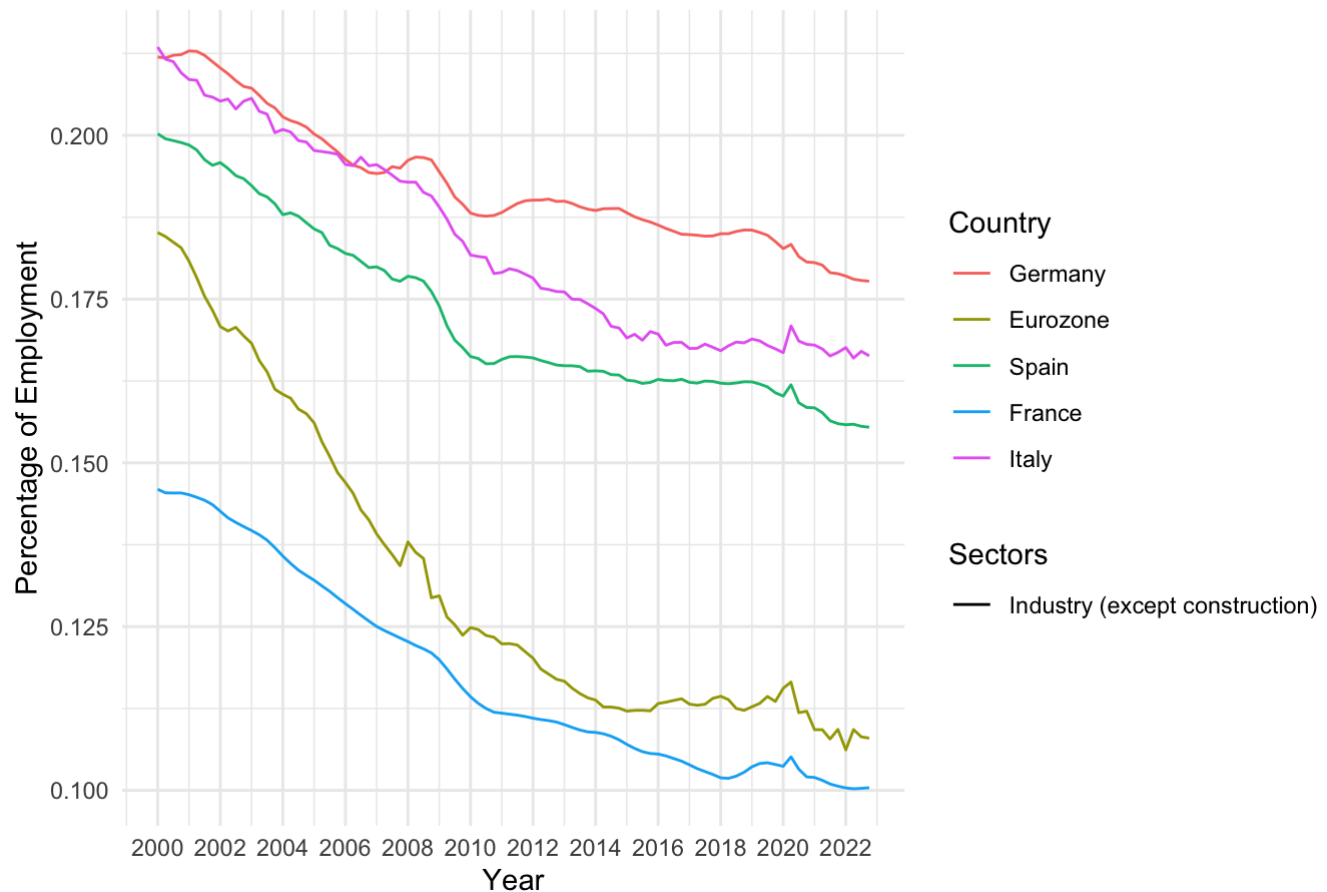
Employment by sector: Secondary (Industry)

```

namq_10_a10_e %>%
  filter(nace_r2 %in% c("TOTAL","B-E"),
         geo %in% c("DE", "IT", "ES", "EU27_2020", "FR"),
         unit == "THS_PER",
         s_adj %in% c("SCA","SA"),
         na_item == "EMP_DC")%>%
  left_join(geo, by = "geo") %>%
  group_by(time) %>%
  mutate(values = values/ values[nace_r2 == "TOTAL"]) %>%
  filter(nace_r2 != "TOTAL",
         time >= as.Date("2000-01-01"))%>%
  ggplot + geom_line(aes(x = time, y = values, color = geo, linetype = nace_r2)) +
  scale_x_date(date_breaks = "2 years", date_labels = "%Y") +
  theme_minimal() +
  labs(y = "Percentage of Employment", x = "Year", color = "Country",
       title = "Employment by sector: Secondary (Industry)", linetype = "Sectors") +
  scale_color_discrete(labels = c("Germany", "Eurozone", "Spain", "France", "Italy")) +
  scale_linetype_discrete(labels = c("Industry (except construction)"))

```

Employment by sector: Secondary (Industry)



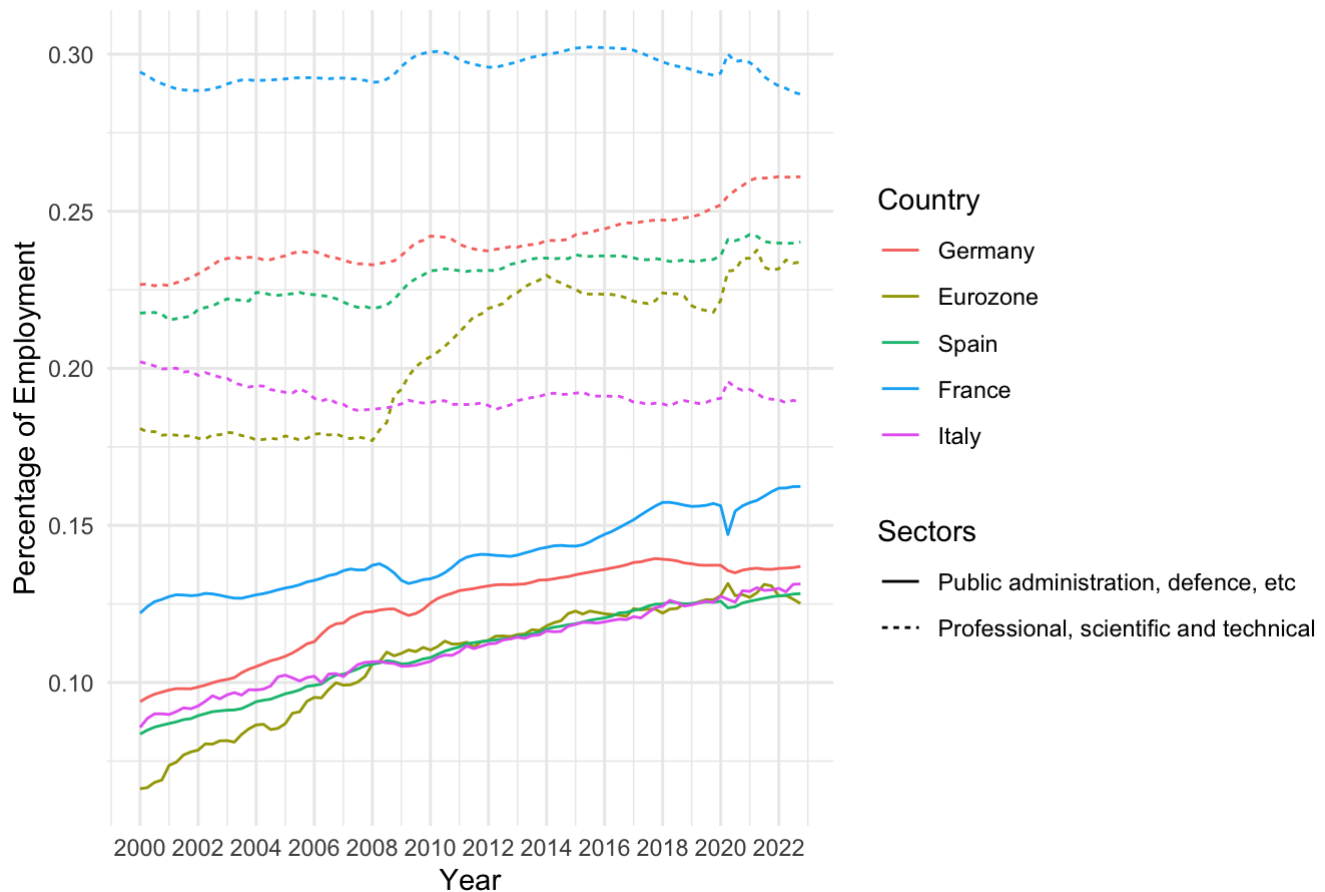
Employment by sector: Tertiary (Public and Administrative activities)

```

namq_10_a10_e %>%
  filter(nace_r2 %in% c("O-Q", "TOTAL", "M_N"),
         geo %in% c("DE", "IT", "ES", "EU27_2020", "FR"),
         unit == "THS_PER",
         s_adj %in% c("SCA", "SA"),
         na_item == "EMP_DC") %>%
  left_join(geo, by = "geo") %>%
  group_by(time) %>%
  mutate(values = values / values[nace_r2 == "TOTAL"]) %>%
  filter(nace_r2 != "TOTAL",
         time >= as.Date("2000-01-01")) %>%
ggplot + geom_line(aes(x = time, y = values, color = geo, linetype = nace_r2)) +
  scale_x_date(date_breaks = "2 years", date_labels = "%Y") +
  theme_minimal() +
  labs(y = "Percentage of Employment", x = "Year", color = "Country",
       title = "Employment by sector: Tertiary (Public and Administrative activities)",
       linetype = "Sectors") +
  scale_color_discrete(labels = c("Germany", "Eurozone", "Spain", "France", "Italy")) +
  scale_linetype_discrete(labels = c("Public administration, defence, etc", "Professional, scientific and technical"))

```


Employment by sector: Tertiary (Public and Administrative activities)



Q.4 Unemployment

The graph analyzing unemployment in several EU countries shows that unemployment has overall shrunk in both Germany and France, with France's unemployment rate higher than that of Germany's, which does not corroborate the first graph on employment levels. Furthermore, Germany does not hold the same position when considering employment and unemployment within the Eurozone. Indeed, in the first graph, considering employment, Germany was third best among the countries used. On the other hand, when it comes to total unemployment, it is last, meaning it has the lowest rate of unemployment among the countries chosen. We can assume the difference between the two countries comes from the different employment rates according to the types of employment, since both countries are not specialized in the same way. Overall, the difference in position for Germany may come from the fact that not the same types of jobs are taken into account: in Germany, the unemployment rate may be low, but it is mainly due to the difference in nature of German and French jobs. As we saw, both countries' rates of employment are not spread in the same way when it comes to types and sectors. Moreover, since the 2000's, Germany has pursued a policy of facilitating smaller, less well-paid and less regular jobs, whereas labor standards are higher in France, which may be partly responsible for the difference in rates between the two countries, and the difference between the employment and unemployment rates in Germany: the unemployment might be low, but this does not mean that people are working full-time, well-paid jobs, that are counted within the employment rate. Thus, the difference between the two rates might also be due to a difference in the calculation of these two economic elements, namely, in what is taken into account in the determination of the rates.

```
une_rt_a <- get_eurostat("une_rt_a")
```

```
## Table une_rt_a cached at /var/folders/fr/70h2tt654hj9r0hx9ymvttdr0000gn/T//Rtmp284UUM/eurostat/une_rt_a_date_code_FF.rds
```

```
une_rt_a %>%
  filter(geo %in% c("DE", "IT", "ES", "EU27_2020", "FR"),
         age == "Y15-74",
         sex == "T",
         time >= as.Date("2009-01-01"),
         unit == "THS_PER") %>%
  left_join(unit, by = "unit") %>%
  left_join(geo, by = "geo") %>%
  group_by(geo) %>%
  mutate(values2 = 100 * values / values[time == as.Date("2009-01-01")]) %>%
  ggplot + geom_line(aes(x = time, y = values2, color = geo)) +
  scale_x_date(date_breaks = "2 years", date_labels = "%Y") +
  theme_minimal() +
  labs(y = "Unemployment in the Eurozone (2009-2022)", x = "Year", color = "Country",
       title = "Total Unemployment") +
  scale_color_discrete(labels = c("Germany", "Eurozone", "Spain", "France", "Italy"))
```

