CPS in Japan

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Contents

Chapter 1

Summary

- Describe Japanese Labor market from 1986-2021.
- Use the Labor force survey, which is open-access and includes similar variables as the current population survey in U.S.

Chapter 2

Simple description: Long-run

2.1 Environment

```
library(data.table)
library(tidytable)
library(tidyverse)
library(lubridate)
```

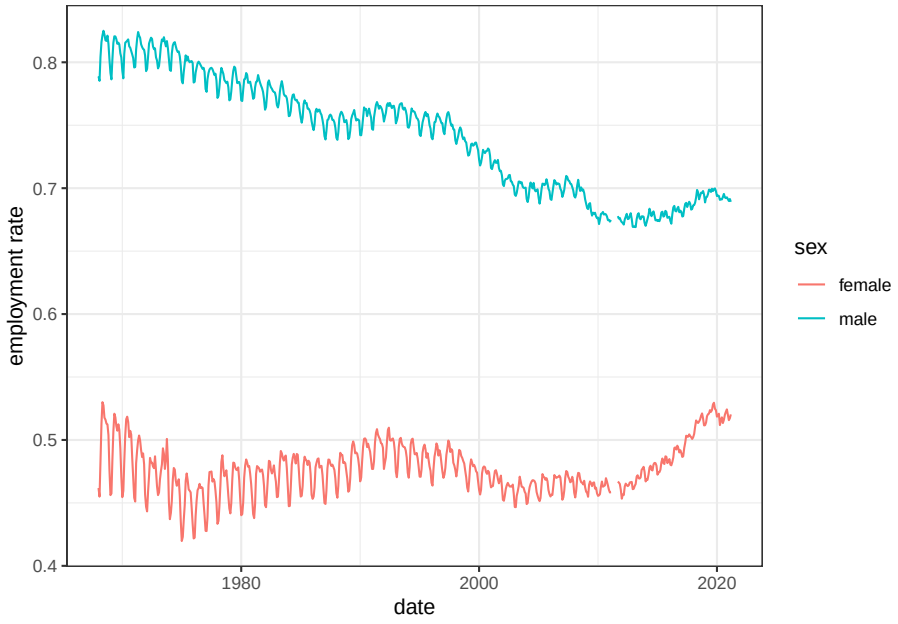
2.2 Data

```
raw <-
  fread("data/aggregate_time_series.csv") %>%
  mutate(date = ymd(date),
         employment = as.numeric(  )/as.numeric(`15    `),
         sex = if_else(  == " ", "male", "female"))
```

2.3 Employment rate

- Report $e_{g,m,y} = \frac{Employment_{g,m,y}}{Population_{g,m,y}}$, where $Employment_{g,m,y}$ and $Population_{g,m,y}$ are numbers of employment and population over 15 years old in month m, year y and gender group g, respectively.

```
raw %>%
  ggplot(aes(x = date,
             y = employment,
             color = sex)
         ) +
  geom_line() +
  theme_bw() +
  ylab("employment rate")
```

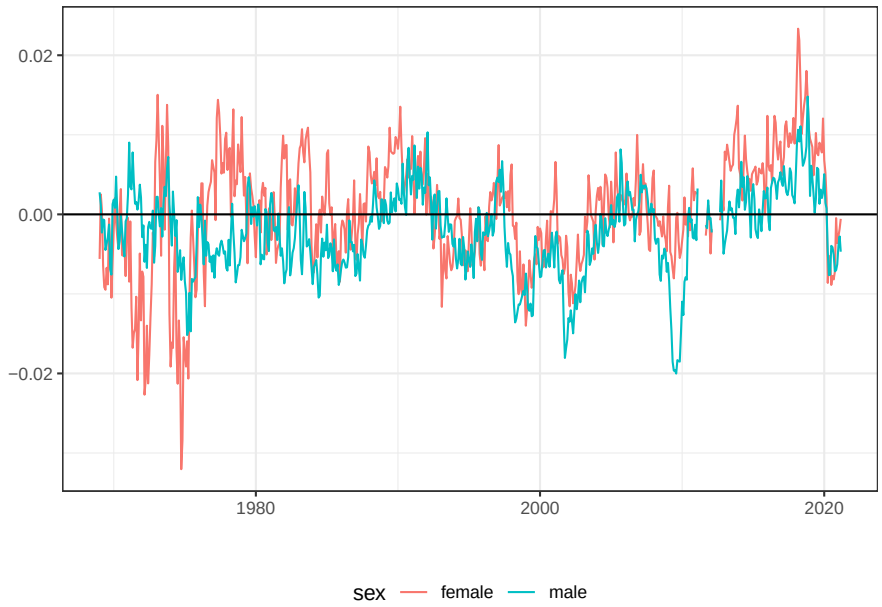


2.4 Year-to-year difference of employment rate

- Report change of employment rate $\tilde{e}_{g,m,y} = e_{g,m,y} - e_{g,m,y-1}$

```
raw %>%
  mutate(year = year(date),
         month = month(date)
         ) %>%
  arrange(sex,
          month,
          year) %>%
  group_by(sex,
           month) %>%
```

```
  mutate(employment = employment - lag(employment)) %>%
  ungroup %>%
  filter(year >= 1969) %>%
  ggplot(aes(x = date,
             y = employment,
             color = sex)
         ) +
  geom_line() +
  geom_hline(yintercept = 0) +
  ylab("") +
  xlab("") +
  theme_bw() +
  theme(legend.position = "bottom")
```

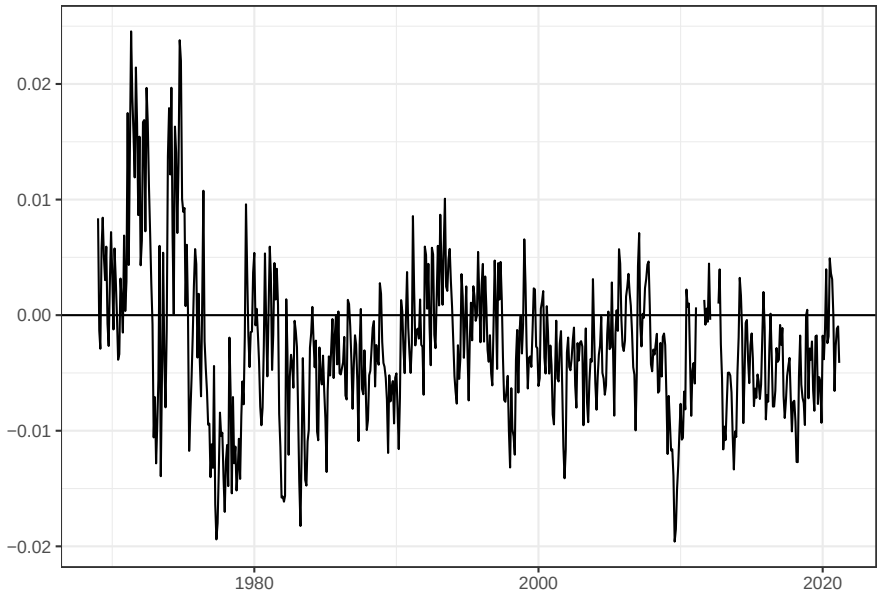


2.5 Gender gap

- Report change of employment rate $\tilde{e}_{male,m,y} - \tilde{e}_{female,m,y}$

```
raw %>%
  mutate(year = year(date),
         month = month(date)
         ) %>%
```

```
  arrange(sex,
          month,
          year) %>%
  group_by(sex,
           month) %>%
  mutate(employment = employment - lag(employment)) %>%
  ungroup %>%
  filter(year >= 1969) %>%
  arrange(date,
          sex) %>%
  group_by(date) %>%
  mutate(employment = employment - lag(employment)) %>%
  ungroup %>%
  filter(sex == "male") %>%
  ggplot(aes(x = date,
             y = employment)
         ) +
  geom_line() +
  geom_hline(yintercept = 0) +
  ylab("") +
  xlab("") +
  theme_bw()
```



Chapter 3

Simple description

3.1 Environment

```
library(data.table)
library(tidytable)
library(tidyverse)
library(lubridate)
```

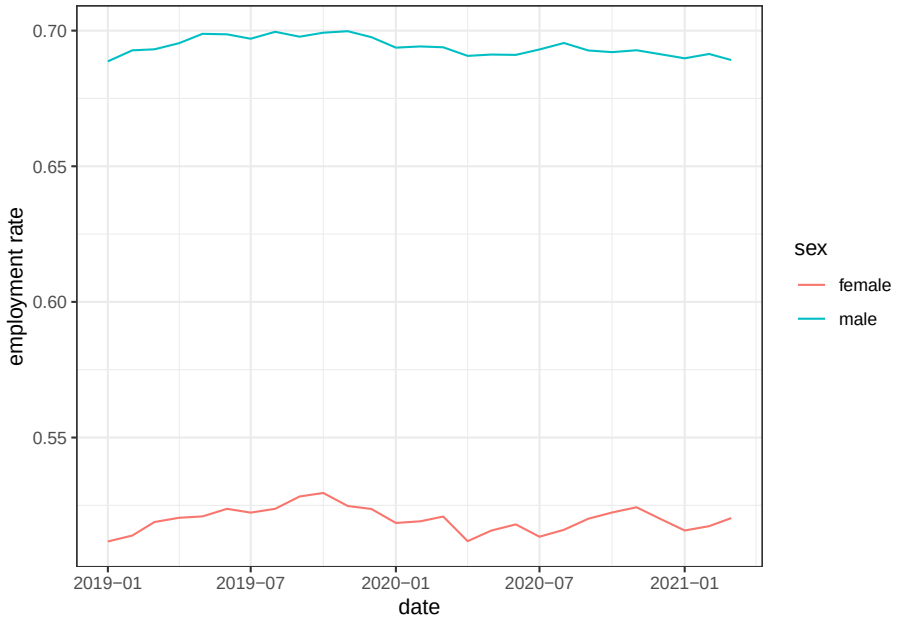
3.2 Data

```
raw <-
  fread("data/aggregate_time_series.csv") %>%
  mutate(date = ymd(date),
         employment = as.numeric(  )/as.numeric(`15   `),
         sex = if_else(  == " ", "male", "female"))
```

3.3 Employment rate

- Report $e_{g,m,y} = \frac{Employment_{g,m,y}}{Population_{g,m,y}}$, where $Employment_{g,m,y}$ and $Population_{g,m,y}$ are numbers of employment and population over 15 years old in month m, year y and gender group g, respectively.

```
raw %>%
  filter(date >= "2019-01-01") %>%
  ggplot(aes(x = date,
             y = employment,
             color = sex)
         ) +
  geom_line() +
  theme_bw() +
  ylab("employment rate")
```



3.4 Year-to-year difference of employment rate

- Report change of employment rate $\tilde{e}_{g,m,y} = e_{g,m,y} - e_{g,m,y-1}$

```
raw %>%
  mutate(year = year(date),
         month = month(date)
         ) %>%
  arrange(sex,
          month,
          year) %>%
  group_by(sex,
```

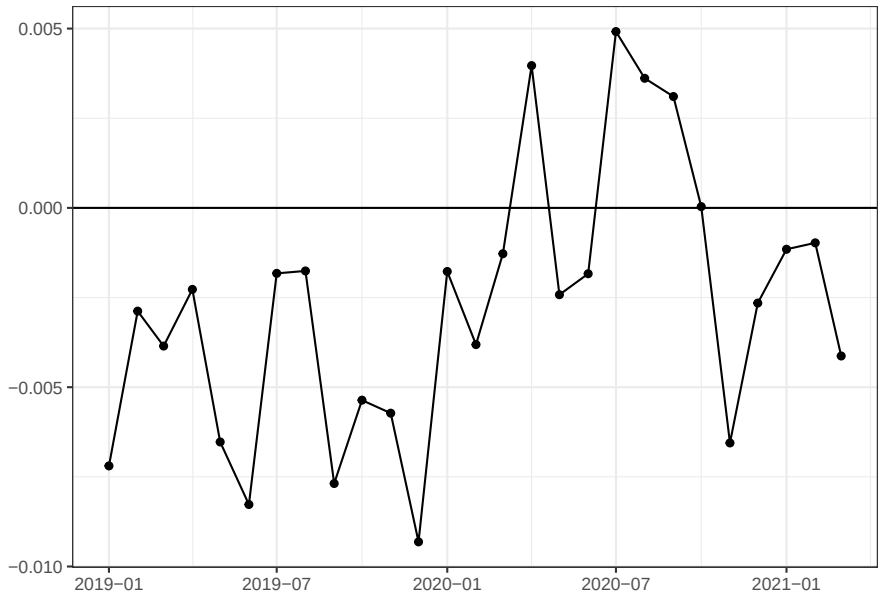
```
          month) %>%
  mutate(employment = employment - lag(employment)) %>%
  ungroup %>%
  filter(year >= 2019) %>%
  ggplot(aes(x = date,
             y = employment,
             color = sex)
         ) +
  geom_line() +
  geom_point() +
  geom_hline(yintercept = 0) +
  ylab("") +
  xlab("") +
  theme_bw() +
  theme(legend.position = "bottom")
```

3.5 Gender gap

- Report change of employment rate $\tilde{e}_{male,m,y} - \tilde{e}_{female,m,y}$

```
raw %>%
  mutate(year = year(date),
```

```
        month = month(date)
        ) %>%
arrange(sex,
         month,
         year) %>%
group_by(sex,
          month) %>%
mutate(employment = employment - lag(employment)) %>%
ungroup %>%
filter(year >= 2019) %>%
arrange(date,
         sex) %>%
group_by(date) %>%
mutate(employment = employment - lag(employment)) %>%
ungroup %>%
filter(sex == "male") %>%
ggplot(aes(x = date,
            y = employment)
        ) +
geom_line() +
geom_point() +
geom_hline(yintercept = 0) +
ylab("") +
xlab("") +
theme_bw()
```


0.005
0.000
−0.005
−0.010
2019−01
2019−07
2020−01
2020−07
2021−01