Introductory Macroeconomics
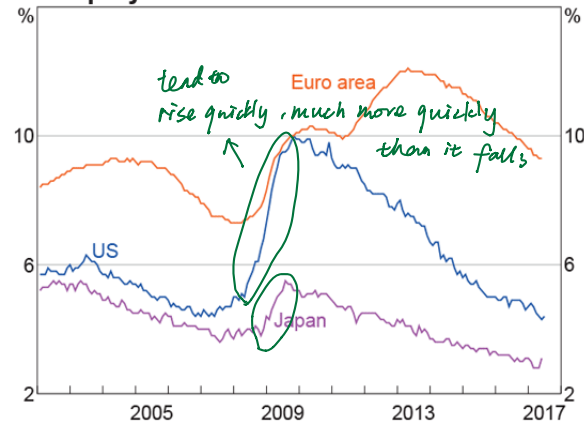
Lecture 4: fundamental macro concepts, part three

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1st Semester 2021

Labour Market Outcomes

Unemployment Rate – Advanced Economies

Handwritten annotations:

tend to rise quickly, much more quickly than it falls

Euro area

US

Japan

asymmetry in the business cycle evolution of unemployment

Source: Bloomberg

This Lecture

- More fundamental macro concepts

- Employment and unemployment

  - labour market states

  - labour market transitions

  - hours and wages

- BOFAH chapter 5

Importance of Labour Market Outcomes

- Labour market outcomes an important determinant of well-being, for individuals and families

    - unemployment a major source of unhappiness (especially long-term unemployment)

      → social problem
      decline in skills, even difficult
      to be employed

    - employment conditions also major determinant of well-being (wages, benefits, hours)

- Well-functioning labour market important for *efficient allocation* of workers to most productive tasks

  workers tend to be allocated to jobs
  best suit their skill set → productivity of economy

- Many economic theories implicitly assume economy is close to some notion of '*full employment*'

Labour Market States

- *Working-age population* divided into three labour market 'states' or outcomes

$$N \;=\; \text{not in the labour force}$$
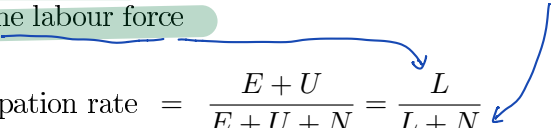
$$E \;=\; \text{employed}$$

$$U \;=\; \text{unemployed}$$

- The sum of the employed and the unemployed is the *labour force*

$$E + U \;=\; L \;=\; \text{labour force}$$

Participation and Unemployment Rates

- The *participation rate* is the fraction of the working-age population that is in the labour force

$$\text{participation rate} \quad = \quad \frac{E + U}{E + U + N} = \frac{L}{L + N}$$
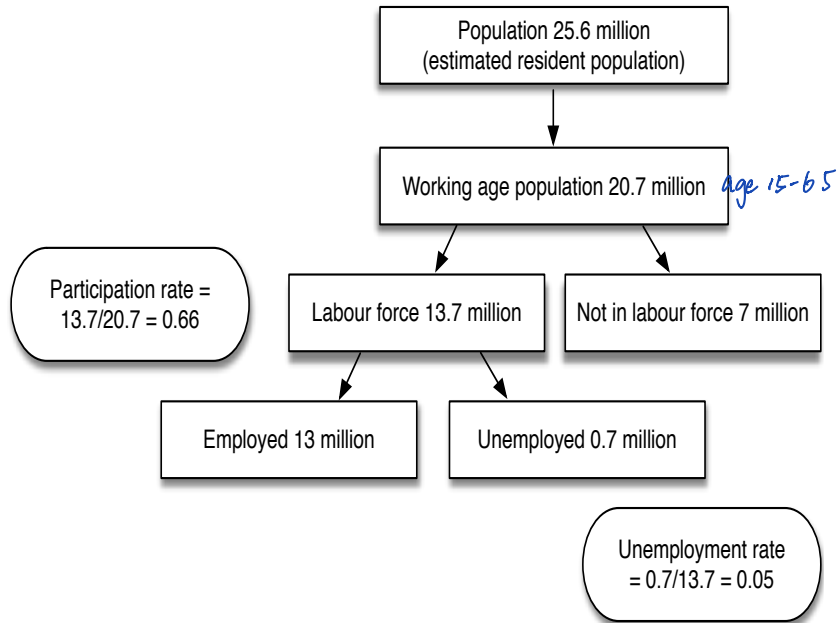
- The *unemployment rate* is the fraction of the labour force that is not employed

$$\text{unemployment rate} \quad = \quad \frac{U}{E + U} = \frac{U}{L}$$

Labour Force Survey

- How old are you?

  - if aged 15-64, you are in the working age population

- Are you working? (this week)

  - if *yes*, you are employed, in E

  - if *no*, are you actively looking for a job? (this month)

    * if *yes*, you are unemployed, in U

    * if *no*, you are not in the labour force, in N

Labour Market Status

```
          ┌─────────────────────────────┐
          │   Population 25.6 million    │
          │ (estimated resident population) │
          └─────────────────────────────┘
                        │
                        ▼
          ┌─────────────────────────────────────┐
          │ Working age population 20.7 million  │  age 15-65
          └─────────────────────────────────────┘
                    │             │
         ┌──────────┘             └──────────┐
         ▼                                   ▼
┌──────────────────────┐         ┌─────────────────────────────┐
│ Labour force 13.7 million │    │ Not in labour force 7 million │
└──────────────────────┘         └─────────────────────────────┘
      │          │
┌─────┘          └─────┐
▼                      ▼
┌──────────────────┐  ┌────────────────────┐
│ Employed 13 million │ │ Unemployed 0.7 million │
└──────────────────┘  └────────────────────┘
```

Participation rate = 13.7/20.7 = 0.66

Unemployment rate = 0.7/13.7 = 0.05

The Data in January 2021

- The data (in millions)

$$
\begin{aligned}
L &= 13.817 \\
E &= 12.94 \\
U &= 0.878 \\
N + L &= 20.902
\end{aligned}
$$

- Unemployment rate

$$0.88/13.82 = 6.4\%$$

- Participation rate

$$13.82/20.9 = 66.1$$

youth unemployment
discouraged worker effect

Recent Trends in Participation

Employment and Participation Rates

a lot of people engage in labour market
the labour market functioned well
enough to absorb the labour

Source: ABS

Employme

* Seasonally adjusted
Sources: ABS; RBA

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Labour Underutilisation Rate

Job Vacanci
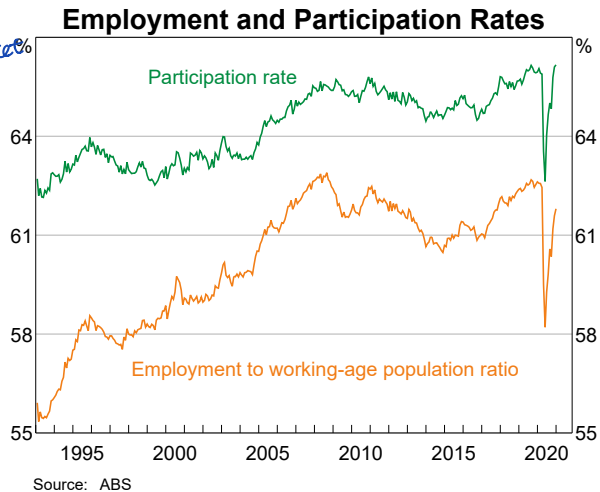
Hours

Employment and Hours Worked*
2008 average = 100

Employment

Total hours worked

Average hours worked → lower no. of hour
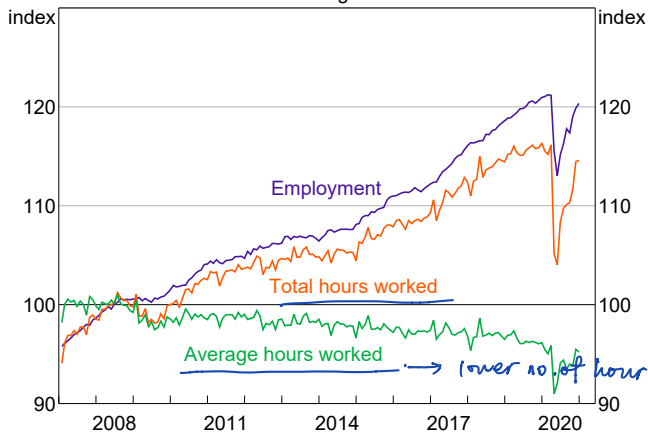
moving from full time work to part time work

*   Seasonally adjusted
Sources: ABS; RBA

pation Rates

population ratio

ion Rates

Job Vacancies and Advertisements

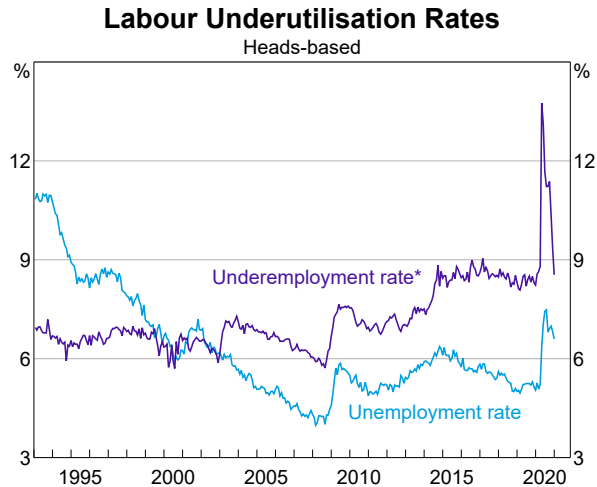# Full-Time / Part-Time
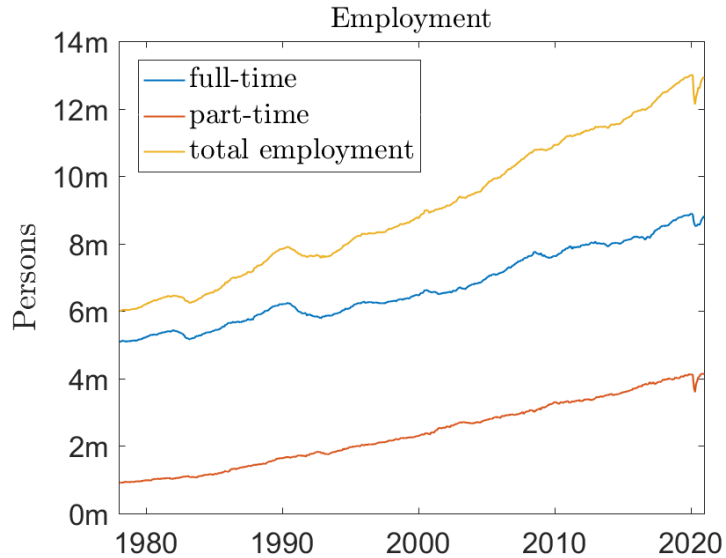
Employment

Full-Time / Part-Time by Gender

Full-Time Share
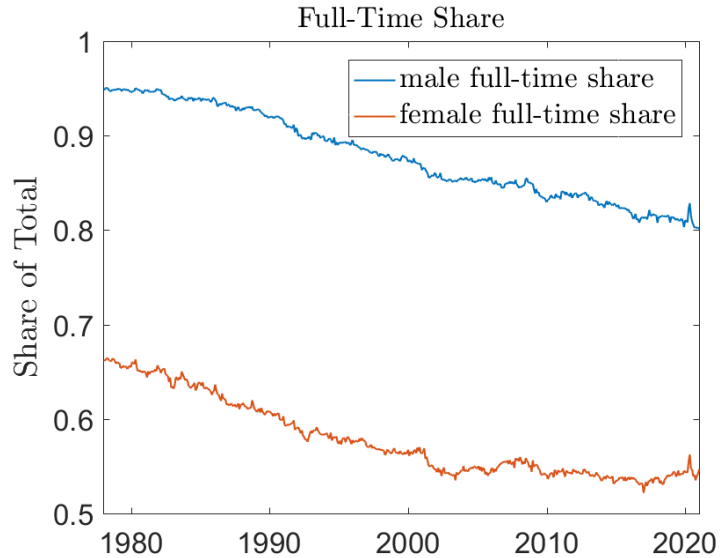
Full-Time / Part-Time

- Workers are surveyed about their *usual* hours and their *actual* hours in survey week

- *Full-time employment*, working 35 hours or more in usual week

- *Part-time employment*, working less than 35 hours in usual week

- *Underemployed*, either

    - part-time workers available for more hours *(for some reason cannot)*

    - full-time workers actually working part-time hours in survey week ('for economic reasons')

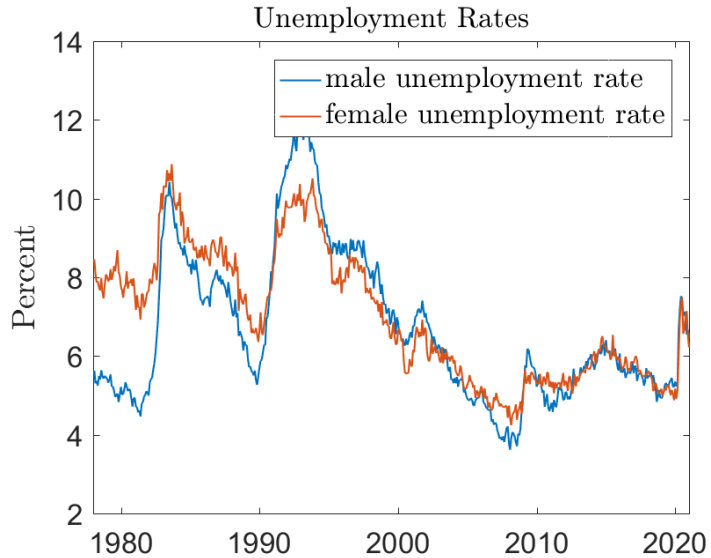- *Underutilisation*, sum of underemployment and unemployment
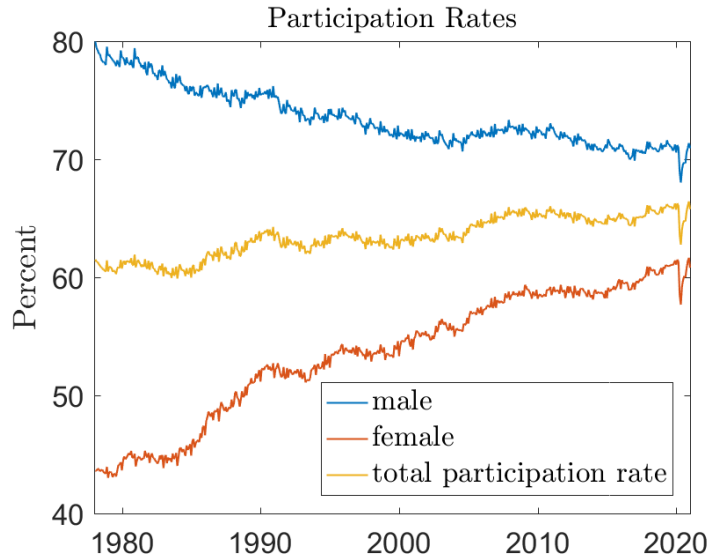
Unemployment and Underutilisation

Labour Underutilisation Rates
Heads-based

Underemployment rate*

Unemployment rate

* Full-time workers on reduced hours for economic reasons and
  part-time workers who would like, and are available, to work more hours
Source: ABS

Job Vacanc
Pe

Advertiseme
(NSC)

Advertiser
(ANZ sur

* This survey was suspen
Sources: ABS; ANZ; Nation

Unemployment by Gender

Unemployment Rates
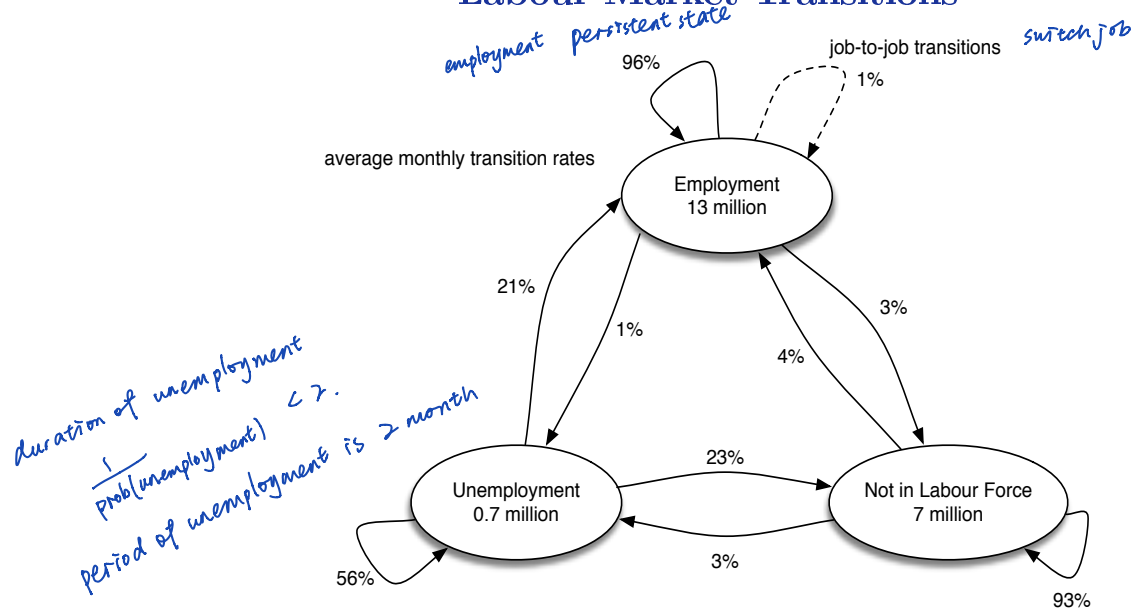
Participation by Gender

Participation Rates

Labour Market Transitions

- People transition between labour market states E, U, N

  - some employed people become unemployed, transition $E \to U$
  - some unemployed people become employed, transition $U \to E$

  - some people not in the labour force join the labor force $N \to E, U$
  - some people in the labour force leave the labour force $E, U \to N$

- What are the typical numbers of people changing their labour market status each month?

Labour Market Transitions

employment   persistent state

job-to-job transitions   switch job

96%

1%

average monthly transition rates

Employment
13 million

21%

1%

3%

4%

duration of unemployment

$\frac{1}{prob(unemployment)} < 2.$

period of unemployment is 2 month

Unemployment
0.7 million

23%

Not in Labour Force
7 million

56%

3%

93%

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Labour Market Transitions

- So in a typical month, about

  - 0.01×13 million $= 130$ thousand people transition $E \to U$

  - 0.21×0.7 million $= 147$ thousand people transition $U \to E$

  - 0.07×7 million $= 490$ thousand people transition $N \to U, E$

  - $(0.23 \times 0.7 \text{ million}) + (0.03 \times 13 \text{ million}) = 551$ thousand people transition $U, E \to N$

> netflow
> 17 thousand people
> from $U \to E$

- In short, there is considerable *churn* in the labour market

- Many people are changing labour market status every month

- *Gross* labour market flows larger than *net* labour market flows

Model of Labour Market Transitions

- Two states, E and U

- Employed workers *separate* at rate s, transition $E \to U$

- Unemployed workers *find* employment at rate f, transition $U \to E$

- Change in number of unemployed workers from period t to $t+1$

$$U_{t+1} - U_t = sE_t - fU_t$$

flow into unemployment

flow out of unemployment

Model of Labour Market Transitions

- Unemployment is stable ('in steady-state') when $U_{t+1} = U_t$

- That is, unemployment is stable when flows into unemployment equal flows out of unemployment

$$sE = fU$$

- Labour force is $L = U + E$ so this happens when unemployment rate is

$$u = \frac{U}{L} = \frac{s}{s+f}$$

↗ seperation rate

↖ job finding rate

↑ unemployment rate

$$\frac{U}{L} = \frac{U}{U+E} = \frac{U}{U + \frac{fU}{s}} = \frac{1}{1 + \frac{f}{s}} = \frac{s}{s+f}$$

Examples

- Steady state unemployment rate

$$u = \frac{s}{s+f}$$

- **Example:** separation rate $s = 0.03$ per month, job finding rate $f = 0.47$ per month implies steady state unemployment

$$u = \frac{0.03}{0.03 + 0.47} = 0.06, \qquad \text{or } 6\% \text{ per month}$$

- A fall in the job finding rate to $f = 0.22$ per month implies steady state unemployment

$$u = \frac{0.03}{0.03 + 0.22} = 0.12, \qquad \text{or } 12\% \text{ per month}$$

Job Creation and Job Destruction

- Does unemployment rise in recessions because firms fire workers or because firms stop hiring new workers?

- Both matter, but job creation by firms is extremely sensitive to the state of the business cycle

- Monitor job creation in real-time by looking at *vacancies*

  variation in job creation has big implication on job finding rate f

Vacancies

on Rates

Job Vacancies and Advertisements
Per cent of labour force

*   Seasonally adjusted
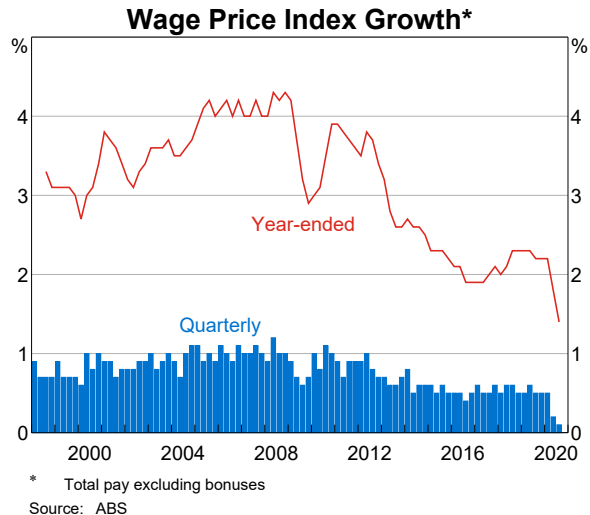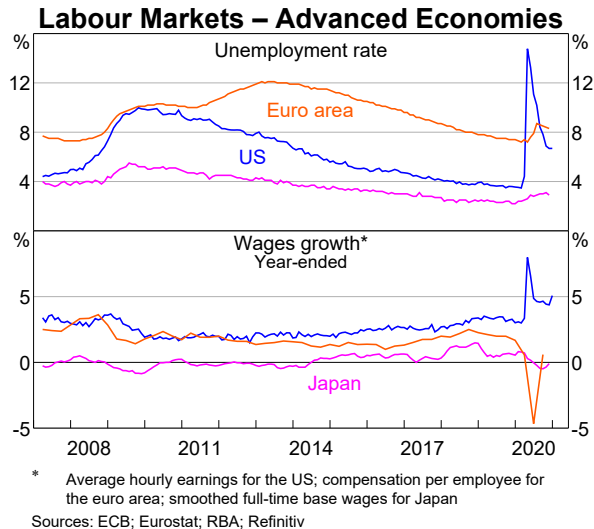Sources: ABS; RBA
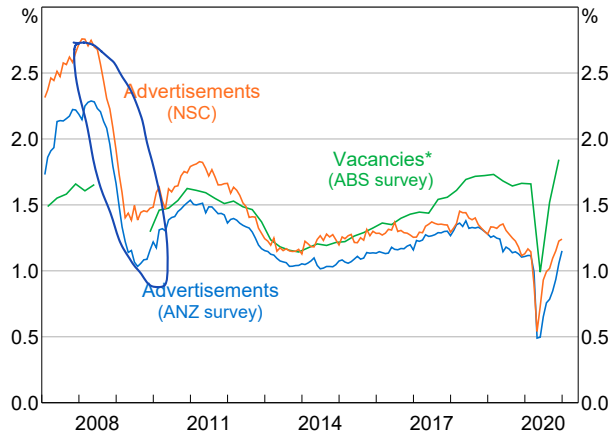
*   This survey was suspended between May 2008 and November 2009
Sources: ABS; ANZ; National Skills Commission (NSC); RBA

nic reasons and
lable, to work more hours

Australian Wage Growth

ction

Wage Price Index Growth*

Year-ended

Quarterly

*   Total pay excluding bonuses

Source: ABS

Unit Labour Costs Growth

Labour Markets – Advanced Economies

Unemployment rate

Euro area

US

Wages growth*
Year-ended

Japan

*   Average hourly earnings for the US; compensation per employee for
    the euro area; smoothed full-time base wages for Japan
Sources: ECB; Eurostat; RBA; Refinitiv

Infla

Indone

Malaysia

Sources: CEIC Data; RBA;

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Next Lecture

- Beginning of short-run macroeconomics

- Overview of short-run macroeconomics

  - trends vs. cycles

  - potential output and output gaps

  - Okun's law: unemployment and output gaps

- BOFAH chapter 6