

The Measurement of Macro-economic Activity

Business cycles and the unemployment rate

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Block 3

Economics for Everyone

Lecture 10

Motivation

Objectives for this block of classes

1. The measurement of macro-economic indicators
 - Gross Domestic Product
 - Unemployment, Inflation
2. A model of macro-economic activity
 - The Keynesian short run model
 - The “classical” model
3. Macro-economic public policy
 - fiscal policy
 - monetary policy

GDP and unemployment

The Business Cycle

GDP often dips below and recovers from its full potential

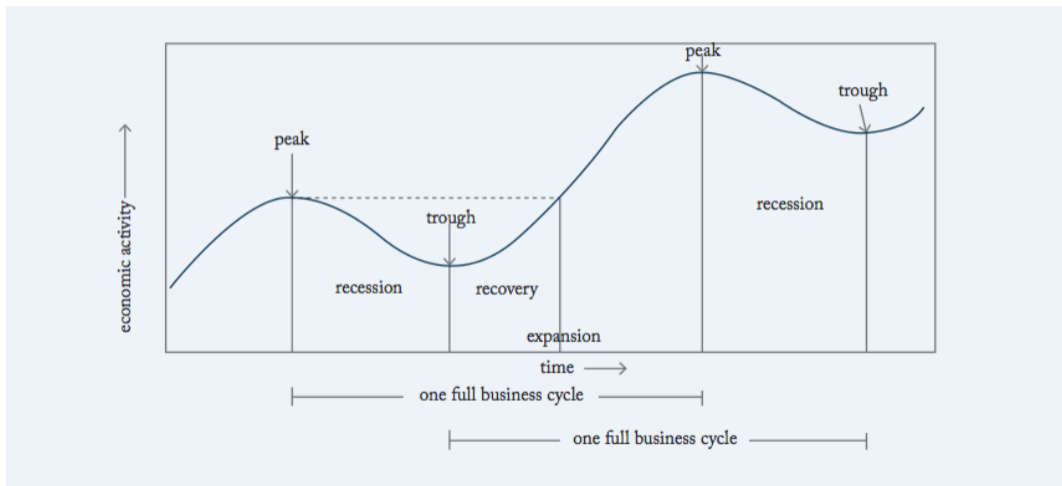


Figure 1: The anatomy of business cycles

The Business Cycle and the unemployment rate

Look for trends and cycles in the unemployment rate

- theoretical concepts not in the statistics
 - frictional unemployment
 - structural unemployment
 - involuntary unemployment

You should get to know FRED if you want ready access to all sorts of US economic data

- <https://fred.stlouisfed.org/>

The Business Cycle and the unemployment rate

“Okun’s law” links changes in GDP and the unemployment rate

Statistical estimates

The answer I have to offer is simple and direct. In the postwar period, on the average, each extra percentage point in the unemployment rate above four percent has been associated with about a three percent decrement in real GNP.

put forward by Arthur Okun of the Brookings Institution in 1962

- not really a law, more like a rule of thumb
- relates the percentage gap in GDP from its potential to the change in the unemployment rate
- the Okun’s law coefficient is generally taken to be somewhere between 2 and 3

Read [the post on my website](#) for some background on Okun’s law and its use

Statistical backdrop

The Current Population Survey

conducted by the Bureau of Labor Statistics

- a monthly survey of about 60,000 American households
- asked questions about labor market activity during a particular week of the month
- results reported on the first Friday of the next month
 - March 2020 saw the largest one month increase in the unemployment rate since 1975, jumping by 0.9 percentage points to 4.4%
 - but this was eclipsed in April 2020 when it jumped all the way to 14.7%
 - it has fallen since, and most recently, as of March 2022, the unemployment rate stands at 3.6%. This is historically low, before the pandemic in February 2020 it was 3.5% but the last time it was this low was in the early 1950s.
- what do these numbers mean? do they fully capture the under-utilization of human potential

Statistical backdrop

The difference between a survey and a census

1. Census

- collects information from all “units” in the population
- can be time consuming and costly
- no sampling error

2. Sample Survey

- collects information from a fraction of “units” in the population
- can be faster and less costly
- subject to sampling error

Statistical backdrop

The relationship between a census and a survey

1. A census is used to create a “sampling frame” or to obtain benchmark information
2. The survey frame
 - target population is the population for which the information is required
 - survey population is the population actually covered by the survey
 - ideally this would be the same as the target population
 - the results of the survey apply to this population only
3. The target and survey populations may differ
 - cost of data collection in isolated places
4. The survey (or sampling) frame is the means of accessing the units of the population, it identifies the survey population

Statistical backdrop

survey “errors”

1. Sampling errors
2. Non-sampling errors

Statistical backdrop

survey “errors”

1. Sampling errors

- the error that results from estimating a parameter by measuring a proportion of the population rather than the entire population
- we need to know the extent of the sampling error, which is measured by the sampling “variance”
- for probability samples there are methods to calculate this, and why we study statistical theory
- factors affecting the sampling variance include:
 - variability of the characteristic of interest
 - size of the sample
 - response rate
 - sample design

Statistical backdrop

survey “errors”

1. Sampling errors
2. Non-sampling errors
 - the error not related to the processing of the population
 - these are errors that are “systematic” and can arise during the course of the survey apart from the sampling
 - “random” errors cancel out if the sample is large enough
 - “systematic” errors go in the same direction, and accumulate
 - lead to biased statistics
 - not corrected by increases in the sample size, and represent a major concern
 - coverage errors, measurement errors, non response errors, processing errors

Measuring unemployment

The Current Population Survey

conducted by the Bureau of Labor Statistics

Target and survey populations

1. The BLS is trying to estimate the unemployment rate (among other things)
 - a measure of the underutilization of human resources in the American population
 - more specifically in the “civilian noninstitutionalized population” which excludes
 - active duty members of Armed Forces
 - those living in institutions, prisons, jails, and other detention centers, and those living in residential care facilities
2. Concepts and definitions can be found here:
 - <https://www.bls.gov/cps/definitions.htm>

The Current Population Survey

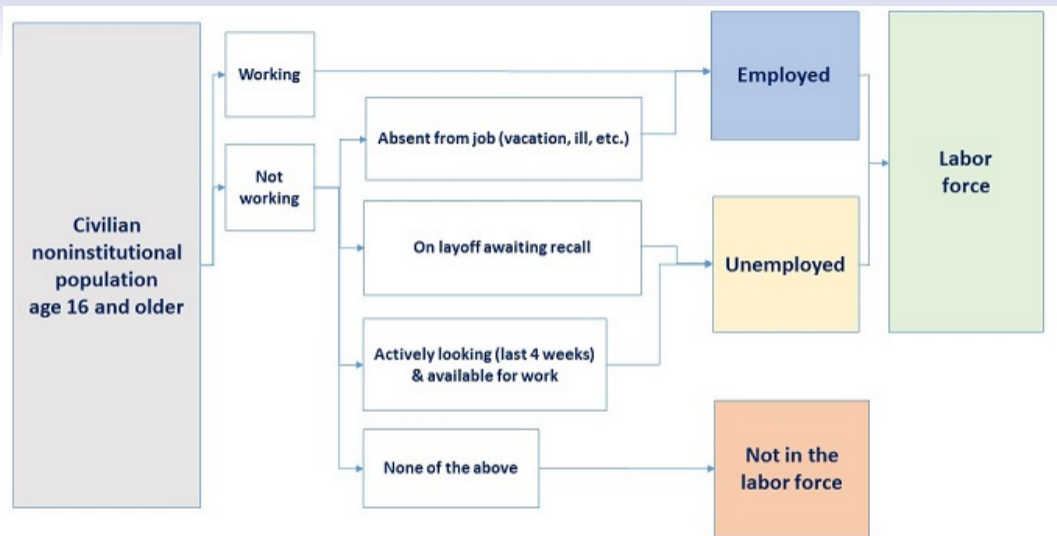
conducted by the Bureau of Labor Statistics

The survey is a monthly survey, and usually conducted during the week following the “reference” week, the week containing the 12th day of the month.

- Current Population Survey concepts are measured according to respondent activity during the reference week

The determination of labor force status involves placing each individual in the survey into one of three categories:

1. employed
2. unemployed
3. not in the labor force



Source: <https://www.bls.gov/cps/definitions.htm>

The Current Population Survey, Labor Force Concepts

1. **Employed (E)**

- worked at least one hour as a paid employee or in own business, profession, trade, or farm
- temporarily absent from their job, business, or farm
- worked without pay for a minimum of 15 hours in a business or farm owned by a family member

2. **Unemployed (U)**

- not employed during the survey reference week and available for work during the survey reference week
- made an active effort to find a job during the four-week period ending with the survey reference week, or temporarily laid off and expecting to be recalled to their job

3. **Not in the Labor Force (NILF)**

- neither employed or unemployed
- that is, unwilling or unable to offer or supply labour services under conditions existing in their labour markets during the reference week

The Current Population Survey

Estimates from March 2022

| | March 2022 | thousands | per cent | standard error |
|-------------------------------|------------|-----------|----------|----------------|
| Population (POP) | | 263,444 | | |
| Labor Force (LF=E+U) | | 164,409 | | 246 |
| Employed (E) | | 158,458 | | 265 |
| Unemployed (U) | | 5,952 | | 172 |
| Not in the labor force (NILF) | | 99,035 | | |

Source: [Bureau of Labor Statistics, News Release, April 1, 2022, Summary Table A](#). Seasonally adjusted data. Standard error is for the month to month change.

The Current Population Survey

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| Participation rate (LF/POP) | | | 62.4 | |
| Employment rate (E/POP) | | | 60.1 | |
| Unemployment rate (U/LF) | | | 3.6 | 0.12 |

Source: [Bureau of Labor Statistics, News Release, April 1, 2022, Summary Table A](#). Seasonally adjusted data. Standard error is for the month to month change.

Unemployment and labor market slack

Is the unemployment rate a full measure of the under-utilization of human resources?

1. Just how does the survey define job search activities?
2. Just how many hours of work are required to be considered employed?
3. How long are people unemployed?

The BLS actually publishes six “**alternative measures of labor underutilization**” and a host of detailed statistics on reasons for unemployment, duration of unemployment, hours of work, wages.

- U3 is the official unemployment rate, currently at 3.6%
- U6 is the broadest measure, currently at 6.9%

Making a prediction

Using Okun's law to "guess" the unemployment rate in April 2020

- what did the release of the CPS on Friday, May 8th, 2020 tell us?
 - the reference week is April 8th to 14th, capturing the economic consequences of the lockdown in a way that the previous month's release just hinted at
- how much did GDP fall?
 - some say by 10%, so if Okun's law is 2, this would imply a 5 percentage point increase in the unemployment rate, from 4.4% to 9.4%, and in fact it did rise significantly, but even higher than this prediction to 14.8%
 - obviously different forecasts of GDP or feelings about Okun's law matter
- what other statistics should we be watching to get a full picture?

Next class

Class on May 5th continues Block III

1. Next two lecture introduce and use the Keynesian model
 - what determines GDP and changes in GDP
 - what is the role for government policy
 - next class on May 5th will be held in person
2. Class assignments
 - book review due on May 12th
 - last assignment to be distributed on May 12th and due May 19th
3. Thank you for engaging in the course
 - the last voluntary “drop in” discussion session is on May 8th at 7:00pm via Zoom