

The measurement of macro-economic activity

Macroeconomic Policy API 5125

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Lecture 3

Objectives for this block of classes

as listed in the course outline

- 1 Macro-economic variables
- 2 National Income Accounting
- 3 Gross Domestic Product
- 4 Unemployment
- 5 Inflation

Today's class

- 1 The meaning and measurement of Unemployment and Inflation
- 2 Unemployment and other indicators of labour force status
- 3 Indices of inflation

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Trends and cycles in the Unemployment rate

in Canada and the United States



Source: FRED, <http://research.stlouisfed.org/fred2/series/UNRATE#>
 Statistics Canada, CANSIM, Table 282-0002 and 282-0086

Trends and cycles in the Unemployment rate

in Canada and the United States

- ① How can we explain the differences?
- ② What exactly do the numbers mean?
 - are they comparable?

A “census” versus a “survey”

the difference between them

Census

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

Sample Survey

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

A “census” versus a “survey”

the relationship between them

- 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

Survey “errors”

- 1 Sampling error
- 2 Non-sampling error

Survey “errors”

1. Sampling error

- The error that results from estimating a parameter by measuring a proportion of the population rather than the entire population
- We need to know what the extent of the sampling error, which is measured by the sampling “variance”
- For probability samples there are methods to calculate this
This is 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

Survey “errors”

2. Non-Sampling error

- 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

Target and survey populations

- 1 We are trying to estimate, in the unemployment rate, the under utilization of human resources in the Canadian population
- 2 Statistics Canada describes the population for the Labour Force Survey in this way:
 - <http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3701>

Labour Force Classifications

basic definitions

The survey is a monthly survey, and usually conducted during the week following the “reference” week, the week containing the 15th day of the month.

- Labour Force Survey concepts are measured according to respondent activity during the reference week

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

- ① employed
- ② unemployed
- ③ not in the labour force

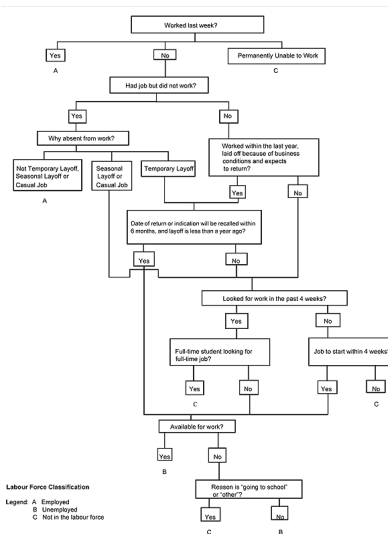
It is described in this way by Statistics Canada:

- <http://www.statcan.gc.ca/pub/71-543-g/2014001/part-partie2-eng.htm>

The Labour Force Survey

Labour Force Classifications

basic definitions



Labour Force Classifications

basic definitions

① Employed (E)

- did any work at all at a job or business, that is, paid work in the context of an employer-employee relationship, or self-employment
- had a job but were not at work due to factors such as own illness or disability, personal or family responsibilities, vacation, labour dispute or other reasons

② Unemployed (U)

- on temporary layoff during the reference week with an expectation of recall and were available for work
- or were without work, had looked for work in the past four weeks, and were available for work
- or had a new job to start within four weeks from reference week, and were available for work.

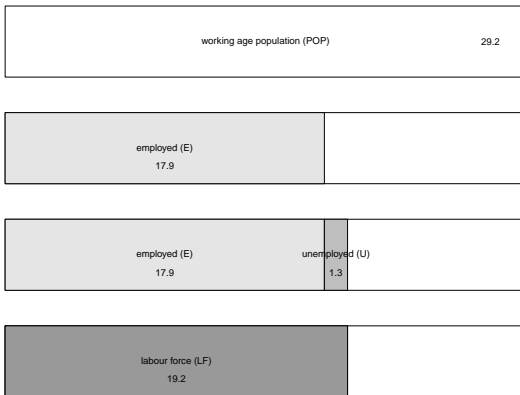
③ Not in the Labour Force (NILF)

- unwilling or unable to offer or supply labour services under conditions existing in their labour markets during the reference week
- that is, they were neither employed nor unemployed

Estimates and their standard errors

Estimates from the recent LFS

April 2015, expressed in millions



expressed in millions, for April 2015

Estimates from the recent LFS

uncertainty associated with the estimates

- 1 The Labour Force Survey is a survey, not a census
- 2 Estimates produced from it have an associated “sampling error”
 - this is measured by Statistics Canada
 - usually expressed as the “variance”, the “coefficient of variation”, and most commonly as the “standard error”
- 3 The estimates and the associated standard errors are readily available each month, as a release in *The Daily*
 - for August 2016 see:
<http://www.statcan.gc.ca/daily-quotidien/160909/t001a-eng.htm>

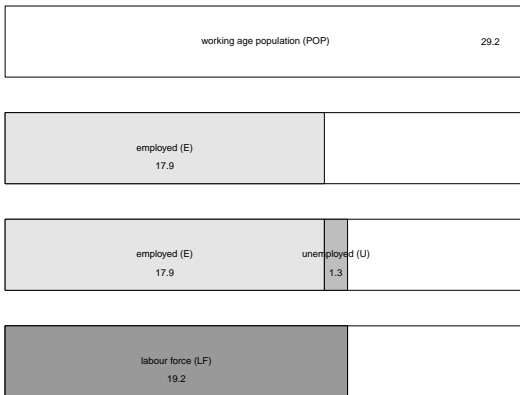
Labour Force Classifications

some more basic definitions

- 1 Employment Rate
- 2 Unemployment Rate
- 3 Participation Rate

Estimates from the recent LFS

April 2015, expressed in millions

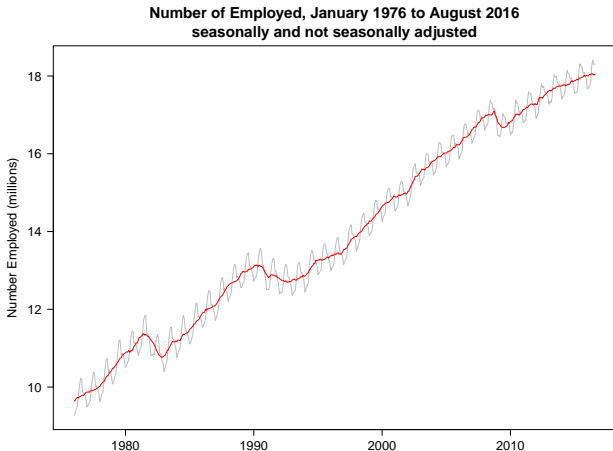


expressed in millions, for April 2015

Seasonal adjustment

Monthly data from the Labour Force Survey

raises the issue of seasonal adjustment

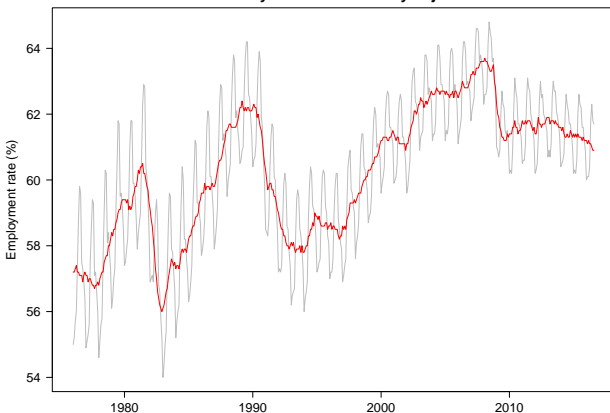


Seasonal adjustment

Monthly data from the Labour Force Survey

raises the issue of seasonal adjustment

Employment rate, January 1976 to August 2016
seasonally and not seasonally adjusted

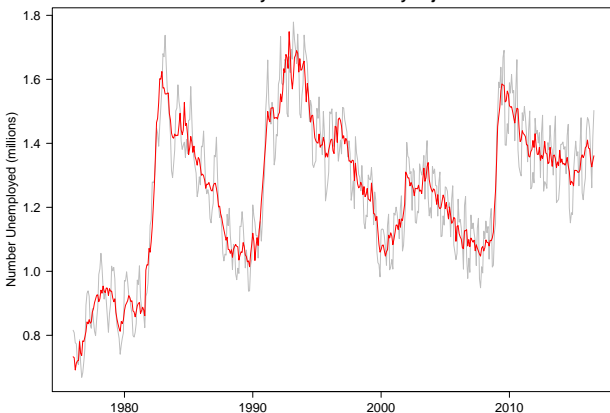


Seasonal adjustment

Monthly data from the Labour Force Survey

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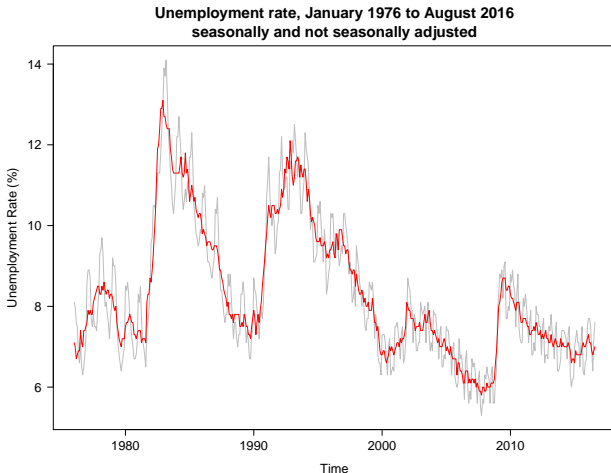
Number of Unemployed, January 1976 to August 2016
seasonally and not seasonally adjusted



Seasonal adjustment

Monthly data from the Labour Force Survey

raises the issue of seasonal adjustment



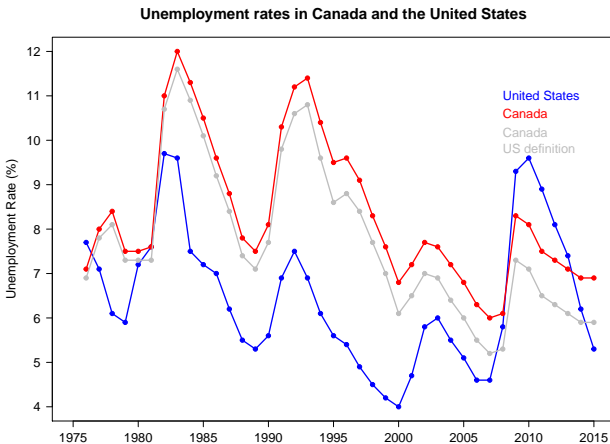
Is the unemployment rate a perfect measure of labour market slack?

- 1 Just how does the survey define job search activities?
- 2 Just how many hours of work are required to be considered employed?
- 3 Why did the unemployment rate continue to fall while the employment rate was flat?
- 4 How long are people unemployed?

Supplemental measure of unemployment

International comparisons

Is the unemployment rate defined in the same way in Canada and the US?

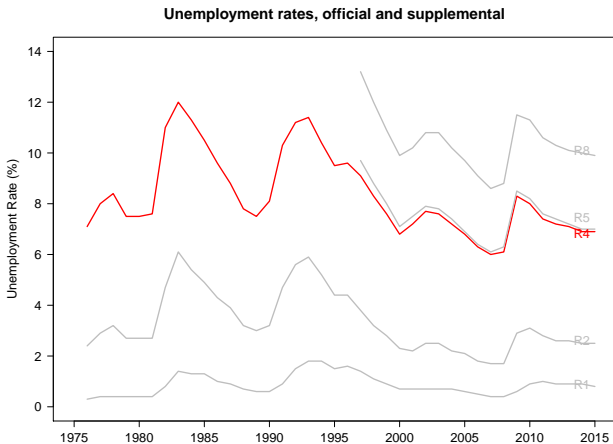


Source: FRED, <http://research.stlouisfed.org/fred2/series/UNRATE#>
 CANSIM, Table 282-0002 and 282-0086

Supplemental measure of unemployment

Supplemental measures of the unemployment rates

a total of eight measures of the unemployment are available

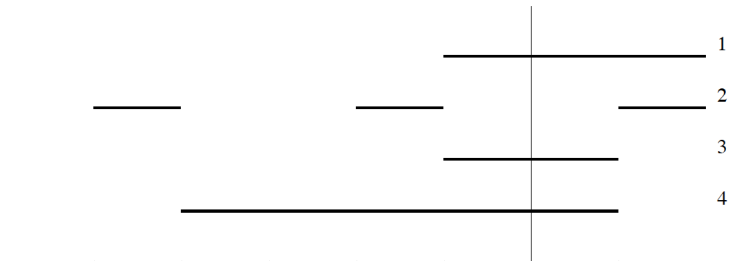


Source: CANSIM, Table 282-0086

Supplemental measure of unemployment

The duration of unemployment spells

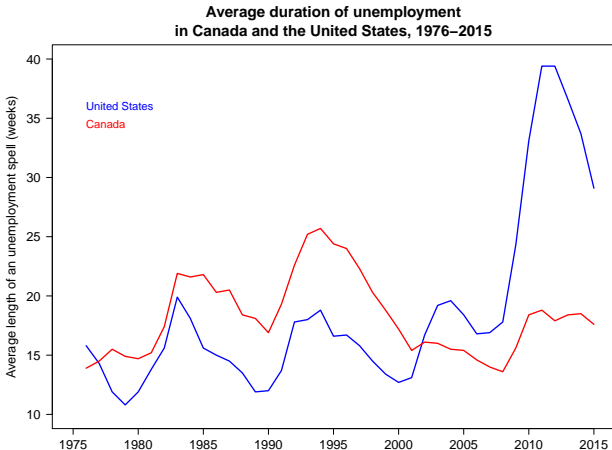
the average duration of “completed” spells is not available in the LFS



Supplemental measure of unemployment

The duration of unemployment spells

the average duration of “uncompleted” spells is much higher in the US than in Canada



Source: FRED, <http://research.stlouisfed.org/fred2/series/UEMPMEAN#>
Statistics Canada CANSIM table 282-00048

-  Robert H. Frank, Ben S. Bernanke, Lars Osberg, Melvin Cross, Brian MacLean
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-  Tim Harford
The Undercover Economist strikes back: How to Run or Ruin an Economy
New York: Riverhead Books, Penguin, 2013. Chapter 8.
-  Miles Corak and Andrew Heisz
The Duration of Unemployment: A User's Guide
Ottawa: Statistics Canada, Analytical Studies Research Paper, 1995.