The Short Run:
Business Cycles—Reality, Theory, Policy

T. Kam

File: 00-cycles_facts.tex

Australian National University

Outline of Talk

Learning Objectives

- Gap between actual GDP and potential GDP: key measure of the economy's performance in the *short run*.
- Economic Fluctuations or Business Cycles: meaning of *pro*-, *counter*-, and *a*-cyclicality.
- Costs of Business Cycles.
- Short-run relationship between inflation and unemployment.
- A simple interpretive framework: IS-PC-MP.

Learning Objectives

- Gap between actual GDP and potential GDP: key measure of the economy's performance in the *short run*.
- Economic Fluctuations or Business Cycles: meaning of *pro*-, *counter*-, and *a*-cyclicality.
- Costs of Business Cycles.
- Short-run relationship between inflation and unemployment.
- A simple interpretive framework: IS-PC-MP.

Learning Objectives

- Gap between actual GDP and potential GDP: key measure of the economy's performance in the *short run*.
- Economic Fluctuations or Business Cycles: meaning of *pro*-, *counter*-, and *a*-cyclicality.
- Costs of Business Cycles.
- Short-run relationship between inflation and unemployment.
- A simple interpretive framework: IS-PC-MP.

Learning Objectives

- Gap between actual GDP and potential GDP: key measure of the economy's performance in the *short run*.
- Economic Fluctuations or Business Cycles: meaning of *pro*-, *counter*-, and *a*-cyclicality.
- Costs of Business Cycles.
- Short-run relationship between inflation and unemployment.
- A simple interpretive framework: IS-PC-MP.

Learning Objectives

- Gap between actual GDP and potential GDP: key measure of the economy's performance in the *short run*.
- Economic Fluctuations or Business Cycles: meaning of *pro*-, *counter*-, and *a*-cyclicality.
- Costs of Business Cycles.
- Short-run relationship between inflation and unemployment.
- A simple interpretive framework: IS-PC-MP.

Empirical Regularities

Preliminaries

What are business cycles? Why do we care? How to Understand them as Policymakers?

- The textbook (Chapter 8) discusses a *definition* of business cycles. We'll talk about that here.
- I will take you through some of the *stylized facts* of business cycles (using the U.S. as case study).
- Then we also ask:
  - why are business cycles important?
  - what roles are there to play for macroeconomic policy?
- Economic way of thinking:
  - As usual, we will relate the *numbers* in the data ...
  - ... and think about how to understand them ...
  - ... or to make *policy experiments* ...
  - using a very simple *IS-MP-PC* model.

Preliminaries

What are business cycles? Why do we care? How to Understand them as Policymakers?

- The textbook (Chapter 8) discusses a *definition* of business cycles. We'll talk about that here.
- I will take you through some of the *stylized facts* of business cycles (using the U.S. as case study).
- Then we also ask:
  - why are business cycles important?
  - what roles are there to play for macroeconomic policy?
- Economic way of thinking:
  - As usual, we will relate the *numbers* in the data ...
  - ... and think about how to understand them ...
  - ... or to make *policy experiments* ...
  - using a very simple *IS-MP-PC* model.

Preliminaries

What are business cycles? Why do we care? How to Understand them as Policymakers?

- The textbook (Chapter 8) discusses a *definition* of business cycles. We'll talk about that here.
- I will take you through some of the *stylized facts* of business cycles (using the U.S. as case study).
- Then we also ask:
  - why are business cycles important?
  - what roles are there to play for macroeconomic policy?
- Economic way of thinking:
  - As usual, we will relate the *numbers* in the data ...
  - ... and think about how to understand them ...
  - ... or to make *policy experiments* ...
  - using a very simple *IS-MP-PC* model.

Preliminaries

What are business cycles? Why do we care? How to Understand them as Policymakers?

- The textbook (Chapter 8) discusses a *definition* of business cycles. We'll talk about that here.
- I will take you through some of the *stylized facts* of business cycles (using the U.S. as case study).
- Then we also ask:
  - why are business cycles important?
  - what roles are there to play for macroeconomic policy?
- Economic way of thinking:
  - As usual, we will relate the *numbers* in the data ...
  - ... and think about how to understand them ...
  - ... or to make *policy experiments* ...
  - using a very simple *IS-MP-PC* model.

Preliminaries

What are business cycles? Why do we care? How to Understand them as Policymakers?

- The textbook (Chapter 8) discusses a *definition* of business cycles. We'll talk about that here.
- I will take you through some of the *stylized facts* of business cycles (using the U.S. as case study).
- Then we also ask:
  - why are business cycles important?
  - what roles are there to play for macroeconomic policy?
- Economic way of thinking:
  - As usual, we will relate the *numbers* in the data ...
  - ... and think about how to understand them ...
  - ... or to make *policy experiments* ...
  - using a very simple *IS-MP-PC* model.

Preliminaries

What are business cycles? Why do we care? How to Understand them as Policymakers?

- The textbook (Chapter 8) discusses a *definition* of business cycles. We'll talk about that here.
- I will take you through some of the *stylized facts* of business cycles (using the U.S. as case study).
- Then we also ask:
  - why are business cycles important?
  - what roles are there to play for macroeconomic policy?
- Economic way of thinking:
  - As usual, we will relate the *numbers* in the data ...
  - ... and think about how to understand them ...
  - ... or to make *policy experiments* ...
  - using a very simple *IS-MP-PC* model.

Preliminaries

What are business cycles? Why do we care? How to Understand them as Policymakers?

- The textbook (Chapter 8) discusses a *definition* of business cycles. We'll talk about that here.
- I will take you through some of the *stylized facts* of business cycles (using the U.S. as case study).
- Then we also ask:
  - why are business cycles important?
  - what roles are there to play for macroeconomic policy?
- Economic way of thinking:
  - As usual, we will relate the *numbers* in the data ...
  - ... and think about how to understand them ...
  - ... or to make *policy experiments* ...
  - using a very simple *IS-MP-PC* model.

Preliminaries

What are business cycles? Why do we care? How to Understand them as Policymakers?

- The textbook (Chapter 8) discusses a *definition* of business cycles. We'll talk about that here.
- I will take you through some of the *stylized facts* of business cycles (using the U.S. as case study).
- Then we also ask:
  - why are business cycles important?
  - what roles are there to play for macroeconomic policy?
- Economic way of thinking:
  - As usual, we will relate the *numbers* in the data ...
  - ... and think about how to understand them ...
  - ... or to make *policy experiments* ...
  - using a very simple *IS-MP-PC* model.

Preliminaries

What are business cycles? Why do we care? How to Understand them as Policymakers?

- The textbook (Chapter 8) discusses a *definition* of business cycles. We'll talk about that here.
- I will take you through some of the *stylized facts* of business cycles (using the U.S. as case study).
- Then we also ask:
  - why are business cycles important?
  - what roles are there to play for macroeconomic policy?
- Economic way of thinking:
  - As usual, we will relate the *numbers* in the data ...
  - ... and think about how to understand them ...
  - ... or to make *policy experiments* ...
  - using a very simple *IS-MP-PC* model.

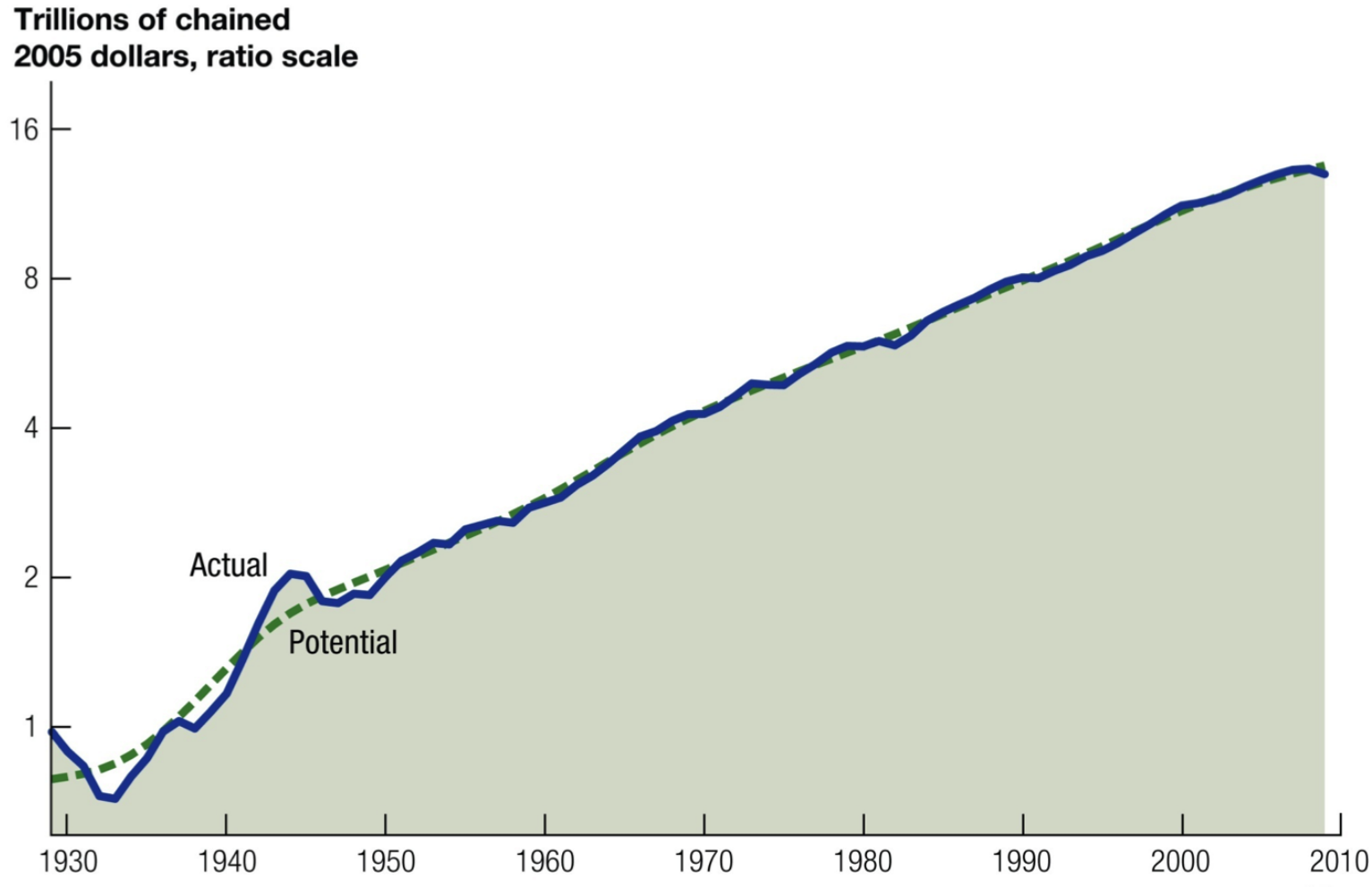
Preliminaries

What are business cycles? Why do we care? How to Understand them as Policymakers?

- The textbook (Chapter 8) discusses a *definition* of business cycles. We'll talk about that here.
- I will take you through some of the *stylized facts* of business cycles (using the U.S. as case study).
- Then we also ask:
  - why are business cycles important?
  - what roles are there to play for macroeconomic policy?
- Economic way of thinking:
  - As usual, we will relate the *numbers* in the data ...
  - ... and think about how to understand them ...
  - ... or to make *policy experiments ...*
  - using a very simple *IS-MP-PC* model.

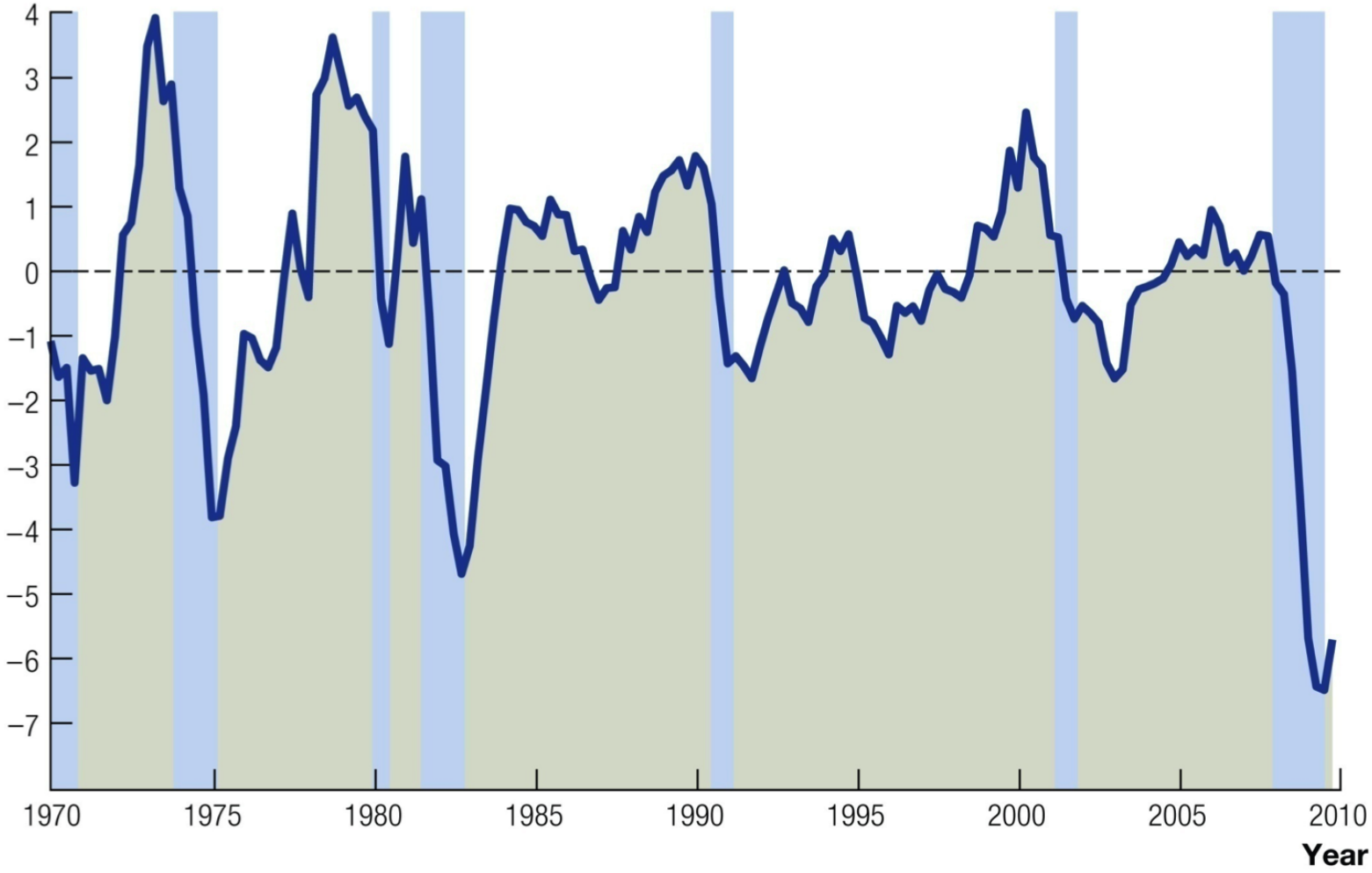
Motivation

What do we see out there?



Motivation

What do we see out there?

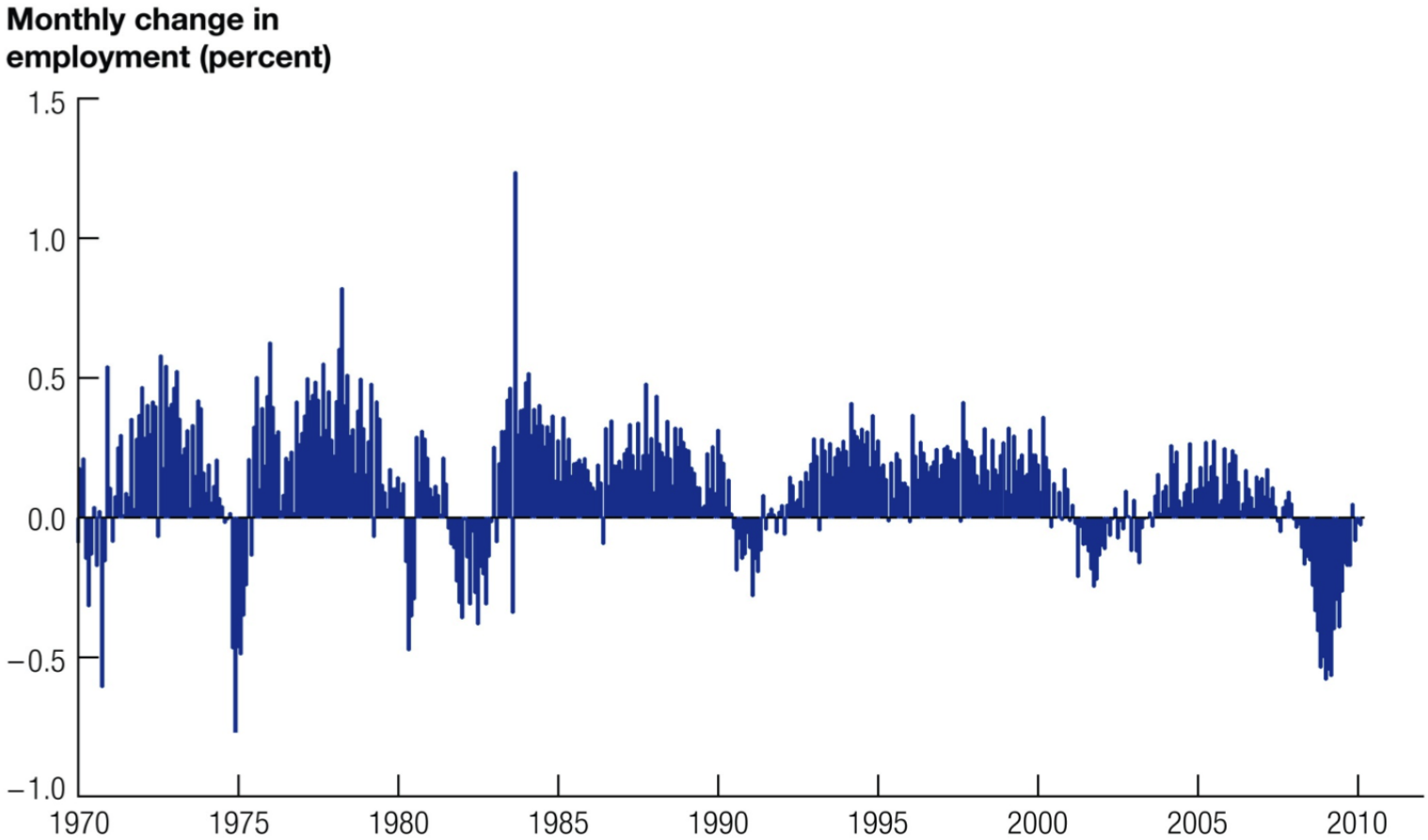


Annual percentage "output gap" (more later ...)

Australian National University

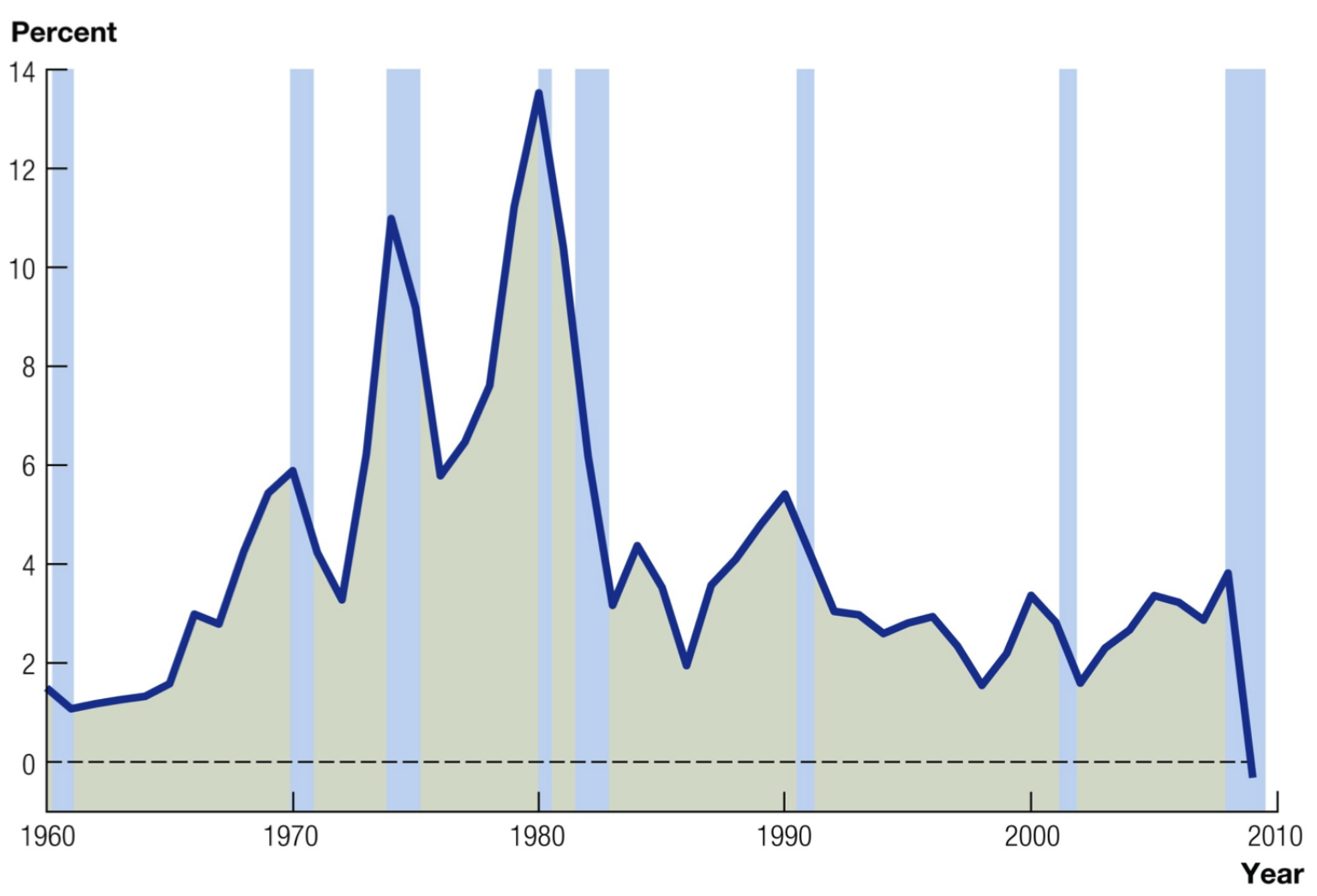
Motivation

What do we see out there?



Motivation

What do we see out there?



U.S. Inflation

Motivation

Useful statistical interpretations

Often looking at individual data series (e.g. unemployment or inflation) not informative enough.

- **Direction:** How do the data series "correlate"? i.e. how do they move together?
- Statistically, we can measure the strength and direction of these correlations.
- We use the terminology for two data series, say X and Y:
  - **procyclical :** on average moving together in the same direction
  - **acyclical :** on average zero co-movement
  - **countercyclical :** on average moving in opposite directions
- Let's look at some U.S. data as case study.

Motivation

Useful statistical interpretations

Often looking at individual data series (e.g. unemployment or inflation) not informative enough.

- **Direction:** How do the data series "correlate"? i.e. how do they move together?
- Statistically, we can measure the strength and direction of these correlations.
- We use the terminology for two data series, say X and Y:
  - **procyclical :** on average moving together in the same direction
  - **acyclical :** on average zero co-movement
  - **countercyclical :** on average moving in opposite directions
- Let's look at some U.S. data as case study.

Motivation

Useful statistical interpretations

Often looking at individual data series (e.g. unemployment or inflation) not informative enough.

- **Direction:** How do the data series "correlate"? i.e. how do they move together?
- Statistically, we can measure the strength and direction of these correlations.
- We use the terminology for two data series, say X and Y:
  - **procyclical :** on average moving together in the same direction
  - **acyclical :** on average zero co-movement
  - **countercyclical :** on average moving in opposite directions
- Let's look at some U.S. data as case study.

Motivation

Useful statistical interpretations

Often looking at individual data series (e.g. unemployment or inflation) not informative enough.

- **Direction:** How do the data series "correlate"? i.e. how do they move together?
- Statistically, we can measure the strength and direction of these correlations.
- We use the terminology for two data series, say X and Y:
  - **procyclical :** on average moving together in the same direction
  - **acyclical :** on average zero co-movement
  - **countercyclical :** on average moving in opposite directions
- Let's look at some U.S. data as case study.

Motivation

Useful statistical interpretations

Often looking at individual data series (e.g. unemployment or inflation) not informative enough.

- **Direction:** How do the data series "correlate"? i.e. how do they move together?
- Statistically, we can measure the strength and direction of these correlations.
- We use the terminology for two data series, say X and Y:
  - **procyclical :** on average moving together in the same direction
  - **acyclical :** on average zero co-movement
  - **countercyclical :** on average moving in opposite directions
- Let's look at some U.S. data as case study.

Motivation

Useful statistical interpretations

Often looking at individual data series (e.g. unemployment or inflation) not informative enough.

- **Direction:** How do the data series "correlate"? i.e. how do they move together?
- Statistically, we can measure the strength and direction of these correlations.
- We use the terminology for two data series, say X and Y:
  - **procyclical :** on average moving together in the same direction
  - **acyclical :** on average zero co-movement
  - **countercyclical :** on average moving in opposite directions
- Let's look at some U.S. data as case study.

Motivation

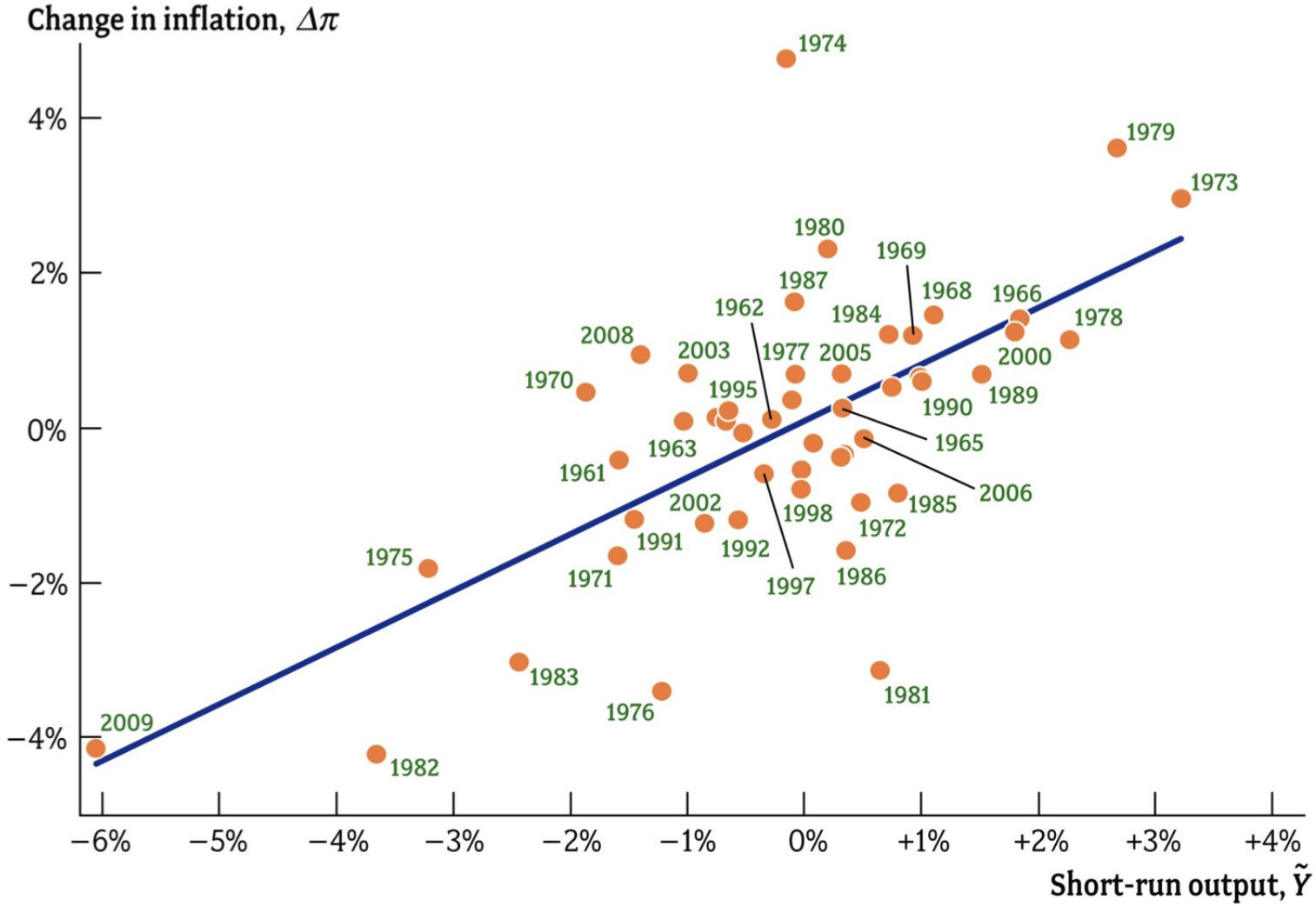
Useful statistical interpretations

Often looking at individual data series (e.g. unemployment or inflation) not informative enough.

- **Direction:** How do the data series "correlate"? i.e. how do they move together?
- Statistically, we can measure the strength and direction of these correlations.
- We use the terminology for two data series, say X and Y:
  - **procyclical :** on average moving together in the same direction
  - **acyclical :** on average zero co-movement
  - **countercyclical :** on average moving in opposite directions
- Let's look at some U.S. data as case study.

Motivation

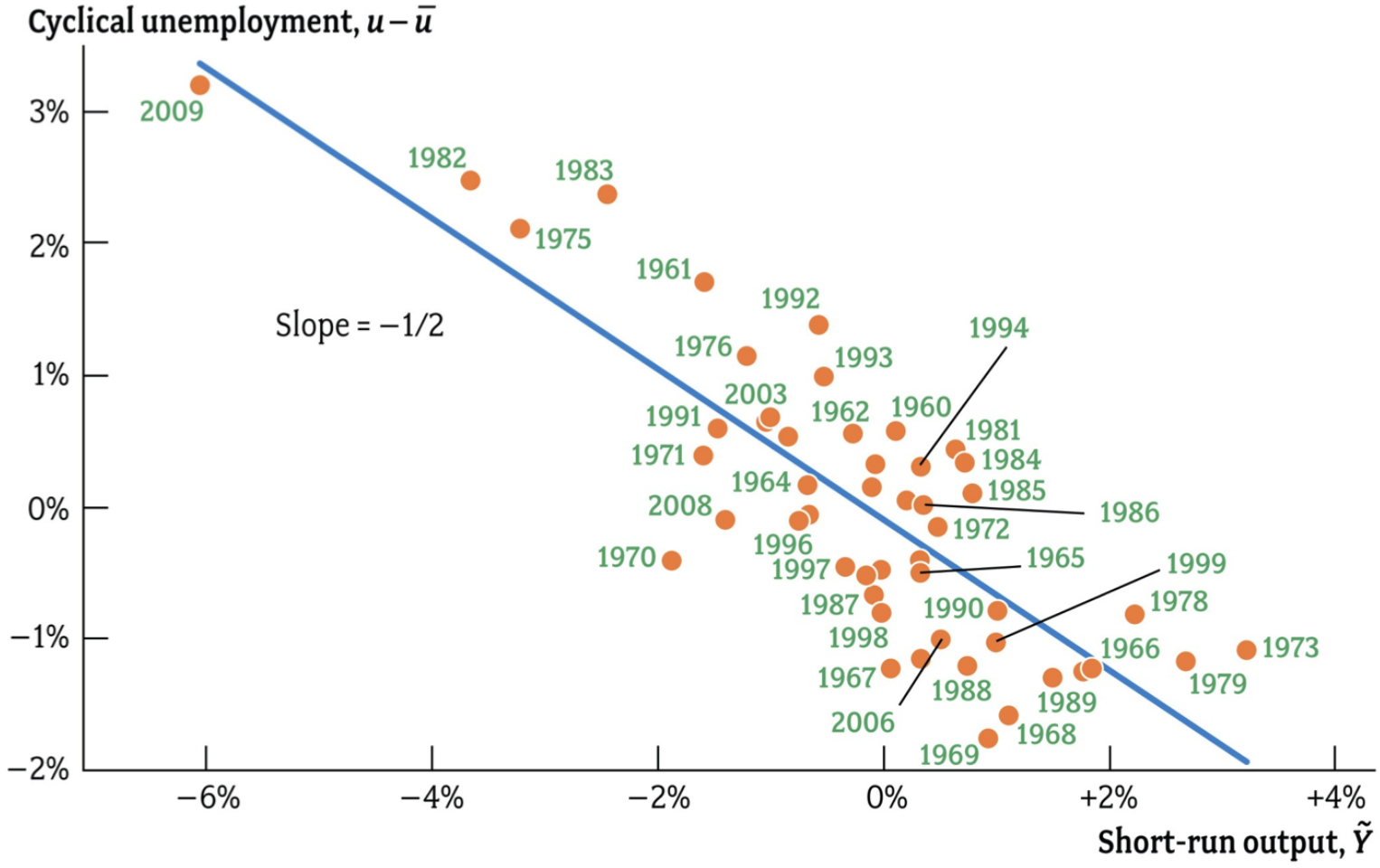
Case Study: What do we see out there?



Australian National University

Motivation

Case Study: What do we see out there?



Australian National University

Motivation

Case Study: We see some (short run) empirical regularities

1. Observed fluctuations in economic activity (output) around some long-run trend
2. Fluctuations in output appear as cycles of *peaks* and *troughs*: with irregular amplitudes and frequencies
3. Recessions typically associated with falls in inflation rate
   - **Procyclical inflation:** Positive correlation (meaning?) between inflation growth and short run output.
4. Expansions associated with lower unemployment
   - **Countercyclical unemployment**: Negative correlation (meaning?) between cyclical unemployment and short run output
5. 3 and 4 imply negative correlation between inflation (growth) and unemployment

Motivation

Case Study: We see some (short run) empirical regularities

1. Observed fluctuations in economic activity (output) around some long-run trend
2. Fluctuations in output appear as cycles of *peaks* and *troughs*: with irregular amplitudes and frequencies
3. Recessions typically associated with falls in inflation rate
   - **Procyclical inflation:** Positive correlation (meaning?) between inflation growth and short run output.
4. Expansions associated with lower unemployment
   - **Countercyclical unemployment**: Negative correlation (meaning?) between cyclical unemployment and short run output
5. 3 and 4 imply negative correlation between inflation (growth) and unemployment

Motivation

Case Study: We see some (short run) empirical regularities

1. Observed fluctuations in economic activity (output) around some long-run trend
2. Fluctuations in output appear as cycles of *peaks* and *troughs*: with irregular amplitudes and frequencies
3. Recessions typically associated with falls in inflation rate
   - **Procyclical inflation:** Positive correlation (meaning?) between inflation growth and short run output.
4. Expansions associated with lower unemployment
   - **Countercyclical unemployment**: Negative correlation (meaning?) between cyclical unemployment and short run output
5. 3 and 4 imply negative correlation between inflation (growth) and unemployment

Motivation

Case Study: We see some (short run) empirical regularities

1. Observed fluctuations in economic activity (output) around some long-run trend
2. Fluctuations in output appear as cycles of *peaks* and *troughs*: with irregular amplitudes and frequencies
3. Recessions typically associated with falls in inflation rate
   - **Procyclical inflation:** Positive correlation (meaning?) between inflation growth and short run output.
4. Expansions associated with lower unemployment
   - **Countercyclical unemployment**: Negative correlation (meaning?) between cyclical unemployment and short run output
5. 3 and 4 imply negative correlation between inflation (growth) and unemployment

Motivation

Case Study: We see some (short run) empirical regularities

1. Observed fluctuations in economic activity (output) around some long-run trend
2. Fluctuations in output appear as cycles of *peaks* and *troughs*: with irregular amplitudes and frequencies
3. Recessions typically associated with falls in inflation rate
   - **Procyclical inflation:** Positive correlation (meaning?) between inflation growth and short run output.
4. Expansions associated with lower unemployment
   - **Countercyclical unemployment**: Negative correlation (meaning?) between cyclical unemployment and short run output
5. 3 and 4 imply negative correlation between inflation (growth) and unemployment

Motivation

Case Study: We see some (short run) empirical regularities

1. Observed fluctuations in economic activity (output) around some long-run trend
2. Fluctuations in output appear as cycles of *peaks* and *troughs*: with irregular amplitudes and frequencies
3. Recessions typically associated with falls in inflation rate
   - **Procyclical inflation:** Positive correlation (meaning?) between inflation growth and short run output.
4. Expansions associated with lower unemployment
   - **Countercyclical unemployment**: Negative correlation (meaning?) between cyclical unemployment and short run output
5. 3 and 4 imply negative correlation between inflation (growth) and unemployment

Motivation

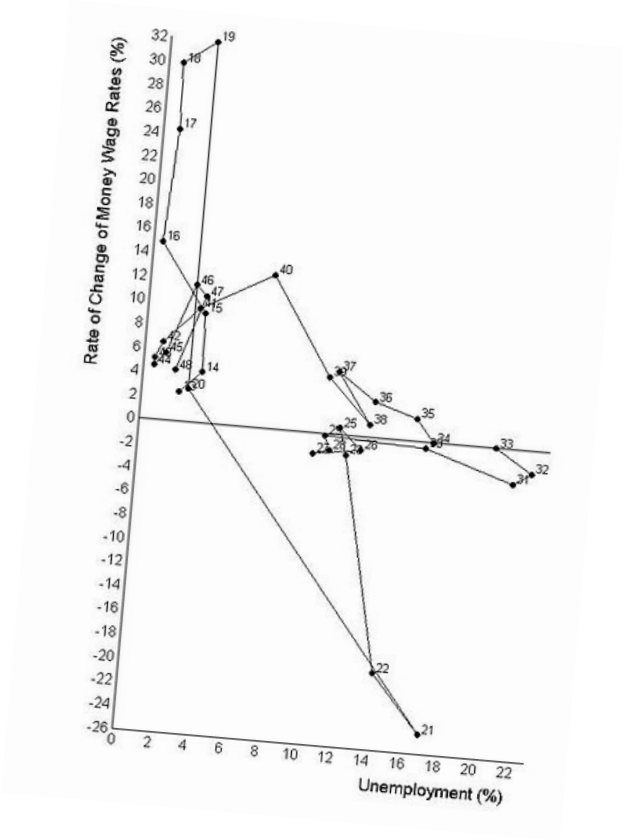
Case Study: We see some (short run) empirical regularities

1. Observed fluctuations in economic activity (output) around some long-run trend
2. Fluctuations in output appear as cycles of *peaks* and *troughs*: with irregular amplitudes and frequencies
3. Recessions typically associated with falls in inflation rate
   - **Procyclical inflation:** Positive correlation (meaning?) between inflation growth and short run output.
4. Expansions associated with lower unemployment
   - **Countercyclical unemployment**: Negative correlation (meaning?) between cyclical unemployment and short run output
5. 3 and 4 imply negative correlation between inflation (growth) and unemployment

Motivation

Did you know?

Historically, negative correlation between inflation (growth) and unemployment over short run frequencies known as the (empirical) *Phillips Curve.*



Australian National University

Motivation

Why care about the short run?

- Economic fluctuations entail social costs:
  - Major short run recessions (Great Depression 1929-1939, Asian Fiancial Crisis 1997-2001, Great Recession 2008-2009)
    - unemployment
    - bankruptcies
    - reduced consumption and investment opportunities
- If economic fluctuations costly in consumption terms, there might be a role for government policy to minimize cycles.

Motivation

Why care about the short run?

- Economic fluctuations entail social costs:
  - Major short run recessions (Great Depression 1929-1939, Asian Fiancial Crisis 1997-2001, Great Recession 2008-2009)
    - ⋆ unemployment
    - ⋆ bankruptcies
    - ⋆ reduced consumption and investment opportunities
- If economic fluctuations costly in consumption terms, there might be a role for government policy to minimize cycles.

Motivation

Why care about the short run?

- Economic fluctuations entail social costs:
  - Major short run recessions (Great Depression 1929-1939, Asian Fiancial Crisis 1997-2001, Great Recession 2008-2009)
    - ★ unemployment
    - ★ bankruptcies
    - ★ reduced consumption and investment opportunities
- If economic fluctuations costly in consumption terms, there might be a role for government policy to minimize cycles.

Motivation

Why care about the short run?

- Economic fluctuations entail social costs:
  - Major short run recessions (Great Depression 1929-1939, Asian Fiancial Crisis 1997-2001, Great Recession 2008-2009)
    - unemployment
    - bankruptcies
    - reduced consumption and investment opportunities
- If economic fluctuations costly in consumption terms, there might be a role for government policy to minimize cycles.

Motivation

Why care about the short run?

- Economic fluctuations entail social costs:
  - Major short run recessions (Great Depression 1929-1939, Asian Fiancial Crisis 1997-2001, Great Recession 2008-2009)
    - unemployment
    - bankruptcies
    - reduced consumption and investment opportunities
- If economic fluctuations costly in consumption terms, there might be a role for government policy to minimize cycles.

Motivation

Why care about the short run?

- Economic fluctuations entail social costs:
  - Major short run recessions (Great Depression 1929-1939, Asian Fiancial Crisis 1997-2001, Great Recession 2008-2009)
    - ⋆ unemployment
    - ⋆ bankruptcies
    - ⋆ reduced consumption and investment opportunities
- If economic fluctuations costly in consumption terms, there might be a role for government policy to minimize cycles.

Motivation

Ancient account of business-cycle policy

Then Pharaoh said to Joseph, "In my dream I was standing on the bank of the Nile, when out of the river there came up seven cows, fat and sleek, and they grazed among the reeds. After them, seven other cows came up—scrawny and very ugly and lean.

I had never seen such ugly cows in all the land of Egypt. The lean, ugly cows ate up the seven fat cows that came up first. But even after they ate them, no one could tell that they had done so; they looked just as ugly as before. Then I woke up. ...

Genesis 41:17-21.

Motivation

Ancient account of business-cycle policy

Then Joseph said to Pharaoh, ... [L]et Pharaoh appoint commissioners over the land to take a fifth of the harvest of Egypt during the seven years of abundance.

They should collect all the food of these good years that are coming and store up the grain under the authority of Pharaoh, to be kept in the cities for food. This food should be held in reserve for the country, to be used during the seven years of famine that will come upon Egypt, so that the country may not be ruined by the famine."

Genesis 41:25, 33-36.

Motivation

Modern business-cycle policies

- In modern decentralized market economies, policymakers cannot directly command people to store value for the future and/or bad states of the economy.
- But macro-policymakers can *indirectly* effect policy through market (relative) prices, or regulations, to manipulate desired allocation of resources:
  - monetary policy:
  - fiscal policy:

Motivation

Modern business-cycle policies

- In modern decentralized market economies, policymakers cannot directly command people to store value for the future and/or bad states of the economy.
- But macro-policymakers can *indirectly* effect policy through market (relative) prices, or regulations, to manipulate desired allocation of resources:
  - monetary policy:
    - interest rate policy instrument and inflation targets
    - bank balance sheet regulations
    - open market operations
  - fiscal policy:
    - taxation and/or government spending
    - debt

Motivation

Modern business-cycle policies

- In modern decentralized market economies, policymakers cannot directly command people to store value for the future and/or bad states of the economy.
- But macro-policymakers can *indirectly* effect policy through market (relative) prices, or regulations, to manipulate desired allocation of resources:
  - monetary policy:
    - ⋆ interest rate policy instrument and inflation targets
    - ⋆ bank balance sheet regulations
    - ⋆ open market operations
  - fiscal policy:
    - ⋆ taxation and/or government spending
    - ⋆ debt

Motivation

Modern business-cycle policies

- In modern decentralized market economies, policymakers cannot directly command people to store value for the future and/or bad states of the economy.
- But macro-policymakers can *indirectly* effect policy through market (relative) prices, or regulations, to manipulate desired allocation of resources:
  - monetary policy:
    - ⋆ interest rate policy instrument and inflation targets
    - ⋆ bank balance sheet regulations
    - ⋆ open market operations
  - fiscal policy:
    - ⋆ taxation and/or government spending
    - ⋆ debt

Motivation

Modern business-cycle policies

- In modern decentralized market economies, policymakers cannot directly command people to store value for the future and/or bad states of the economy.
- But macro-policymakers can *indirectly* effect policy through market (relative) prices, or regulations, to manipulate desired allocation of resources:
  - monetary policy:
    - ⋆ interest rate policy instrument and inflation targets
    - ⋆ bank balance sheet regulations
    - ⋆ open market operations
  - fiscal policy:
    - ⋆ taxation and/or government spending
    - ⋆ debt

Motivation

Modern business-cycle policies

- In modern decentralized market economies, policymakers cannot directly command people to store value for the future and/or bad states of the economy.
- But macro-policymakers can *indirectly* effect policy through market (relative) prices, or regulations, to manipulate desired allocation of resources:
  - monetary policy:
    - ★ interest rate policy instrument and inflation targets
    - ★ bank balance sheet regulations
    - ★ open market operations
  - fiscal policy:
    - ★ taxation and/or government spending
    - ★ debt

Motivation

Modern business-cycle policies

- In modern decentralized market economies, policymakers cannot directly command people to store value for the future and/or bad states of the economy.
- But macro-policymakers can *indirectly* effect policy through market (relative) prices, or regulations, to manipulate desired allocation of resources:
  - monetary policy:
    - ⋆ interest rate policy instrument and inflation targets
    - ⋆ bank balance sheet regulations
    - ⋆ open market operations
  - fiscal policy:
    - ⋆ taxation and/or government spending
    - ⋆ debt

Motivation

Modern business-cycle policies

- In modern decentralized market economies, policymakers cannot directly command people to store value for the future and/or bad states of the economy.
- But macro-policymakers can *indirectly* effect policy through market (relative) prices, or regulations, to manipulate desired allocation of resources:
  - monetary policy:
    - ⋆ interest rate policy instrument and inflation targets
    - ⋆ bank balance sheet regulations
    - ⋆ open market operations
  - fiscal policy:
    - ⋆ taxation and/or government spending
    - ⋆ debt

Motivation

Modern business-cycle policies

- In modern decentralized market economies, policymakers cannot directly command people to store value for the future and/or bad states of the economy.
- But macro-policymakers can *indirectly* effect policy through market (relative) prices, or regulations, to manipulate desired allocation of resources:
  - monetary policy:
    - ★ interest rate policy instrument and inflation targets
    - ★ bank balance sheet regulations
    - ★ open market operations
  - fiscal policy:
    - ★ taxation and/or government spending
    - ★ debt

Motivation

Why is understanding short run important?

- Good policies for managing short run economic fluctuations may be needed.
- Good policies require good understand of how short run may behave under alternative policy scenarios.
- Good understanding of short run behavior requires an empirically plausible, and theoretically coherent framework of thinking.
- That's why we also need models for the short run!
  - but this is the controversial bit.
  - policymakers and economists cannot agree on what is a good short run model.
- We'll study a (reduced) version of a short run model that is dominating mainstream macro-policy thinking.

Motivation

Why is understanding short run important?

- Good policies for managing short run economic fluctuations may be needed.
- Good policies require good understand of how short run may behave under alternative policy scenarios.
- Good understanding of short run behavior requires an empirically plausible, and theoretically coherent framework of thinking.
- That's why we also need models for the short run!
  - but this is the controversial bit.
  - policymakers and economists cannot agree on what is a good short run model.
- We'll study a (reduced) version of a short run model that is dominating mainstream macro-policy thinking.

Motivation

Why is understanding short run important?

- Good policies for managing short run economic fluctuations may be needed.
- Good policies require good understand of how short run may behave under alternative policy scenarios.
- Good understanding of short run behavior requires an empirically plausible, and theoretically coherent framework of thinking.
- That's why we also need models for the short run!
  - but this is the controversial bit.
  - policymakers and economists cannot agree on what is a good short run model.
- We'll study a (reduced) version of a short run model that is dominating mainstream macro-policy thinking.

Motivation

Why is understanding short run important?

- Good policies for managing short run economic fluctuations may be needed.
- Good policies require good understand of how short run may behave under alternative policy scenarios.
- Good understanding of short run behavior requires an empirically plausible, and theoretically coherent framework of thinking.
- That's why we also need models for the short run!
  - but this is the controversial bit.
  - policymakers and economists cannot agree on what is a good short run model.
- We'll study a (reduced) version of a short run model that is dominating mainstream macro-policy thinking.

Motivation

Why is understanding short run important?

- Good policies for managing short run economic fluctuations may be needed.
- Good policies require good understand of how short run may behave under alternative policy scenarios.
- Good understanding of short run behavior requires an empirically plausible, and theoretically coherent framework of thinking.
- That's why we also need models for the short run!
  - but this is the controversial bit.
  - policymakers and economists cannot agree on what is a good short run model.
- We'll study a (reduced) version of a short run model that is dominating mainstream macro-policy thinking.

Motivation

Why is understanding short run important?

- Good policies for managing short run economic fluctuations may be needed.
- Good policies require good understand of how short run may behave under alternative policy scenarios.
- Good understanding of short run behavior requires an empirically plausible, and theoretically coherent framework of thinking.
- That's why we also need models for the short run!
  - but this is the controversial bit.
  - policymakers and economists cannot agree on what is a good short run model.
- We'll study a (reduced) version of a short run model that is dominating mainstream macro-policy thinking.

Motivation

Why is understanding short run important?

- Good policies for managing short run economic fluctuations may be needed.
- Good policies require good understand of how short run may behave under alternative policy scenarios.
- Good understanding of short run behavior requires an empirically plausible, and theoretically coherent framework of thinking.
- That's why we also need models for the short run!
  - but this is the controversial bit.
  - policymakers and economists cannot agree on what is a good short run model.
- We'll study a (reduced) version of a short run model that is dominating mainstream macro-policy thinking.

Measuring Cycles

Measurement

Terminology

- *Potential output*
  - The amount the economy would produce if all inputs were utilized at their long-run sustainable levels
  - in a model setting, we could interpret the potential output as what a growth model would produce

Measurement

Terminology

- *Potential output*
  - The amount the economy would produce if all inputs were utilized at their long-run sustainable levels
  - in a model setting, we could interpret the potential output as what a growth model would produce

Measurement

Terminology

- *Potential output*
  - The amount the economy would produce if all inputs were utilized at their long-run sustainable levels
  - in a model setting, we could interpret the potential output as what a growth model would produce

Theory Ahead of Measurement

Why: Long-run vs. short-run distinction?

- The long-run model as a concept for studying how the economy behaves *on average* over long periods of time.
- At any given time, the economy is unlikely to exactly equal the long-run average.
  - In time spans that are more immediate to us (monthly/quarterly/annual), we experience *fluctuations in economic activity*.
  - Current output may deviate from potential output because of economic shocks and behavioural responses to these shocks.

Theory Ahead of Measurement

Why: Long-run vs. short-run distinction?

- The long-run model as a concept for studying how the economy behaves *on average* over long periods of time.
- At any given time, the economy is unlikely to exactly equal the long-run average.
  - In time spans that are more immediate to us (monthly/quarterly/annual), we experience *fluctuations in economic activity*.
  - Current output may deviate from potential output because of economic shocks and behavioural responses to these shocks.

Theory Ahead of Measurement

Why: Long-run vs. short-run distinction?

- The long-run model as a concept for studying how the economy behaves *on average* over long periods of time.
- At any given time, the economy is unlikely to exactly equal the long-run average.
  - In time spans that are more immediate to us (monthly/quarterly/annual), we experience *fluctuations in economic activity*.
  - Current output may deviate from potential output because of economic shocks and behavioural responses to these shocks.

Theory Ahead of Measurement

Why: Long-run vs. short-run distinction?

- The long-run model as a concept for studying how the economy behaves *on average* over long periods of time.
- At any given time, the economy is unlikely to exactly equal the long-run average.
  - In time spans that are more immediate to us (monthly/quarterly/annual), we experience *fluctuations in economic activity*.
  - Current output may deviate from potential output because of economic shocks and behavioural responses to these shocks.

Theory Ahead of Measurement

How: Long-run vs. short-run distinction?

- The long-run model:
  - Determines potential output (e.g. **growth models**) and long-run inflation (e.g. **quantity theory** and **neoclassical dichotomy**).
- The short-run model:
  - Determines "current" output and inflation.

Theory Ahead of Measurement

How: Long-run vs. short-run distinction?

- The long-run model:
  - Determines potential output (e.g. **growth models**) and long-run inflation (e.g. **quantity theory** and **neoclassical dichotomy**).
- The short-run model:
  - Determines "current" output and inflation.

Theory Ahead of Measurement

How: Long-run vs. short-run distinction?

- The long-run model:
  - Determines potential output (e.g. **growth models**) and long-run inflation (e.g. **quantity theory** and **neoclassical dichotomy**).
- The short-run model:
  - Determines "current" output and inflation.

Theory Ahead of Measurement

How: Long-run vs. short-run distinction?

- The long-run model:
  - Determines potential output (e.g. **growth models**) and long-run inflation (e.g. **quantity theory** and **neoclassical dichotomy**).
- The short-run model:
  - Determines "current" output and inflation.

Theory Ahead of Measurement

Thing to watch out for

- In the short-run model
  - The current level of output and the current inflation rate are endogenous.
  - Current output may deviate from potential output because of economic shocks.
  - We assume that the long run is a given.
    - Potential output and the long-run inflation rate are exogenous
    - Note: we had separately studied this long part earlier
    - (horses for courses!)

Theory Ahead of Measurement

Thing to watch out for

- In the short-run model
  - The current level of output and the current inflation rate are endogenous.
  - Current output may deviate from potential output because of economic shocks.
  - We assume that the long run is a given.
    - Potential output and the long-run inflation rate are exogenous
    - Note: we had separately studied this long part earlier
    - (horses for courses!)

Theory Ahead of Measurement

Thing to watch out for

- In the short-run model
  - The current level of output and the current inflation rate are endogenous.
  - Current output may deviate from potential output because of economic shocks.
  - We assume that the long run is a given.
    - Potential output and the long-run inflation rate are exogenous
    - Note: we had separately studied this long part earlier
    - (horses for courses!)

Theory Ahead of Measurement

Thing to watch out for

- In the short-run model
  - The current level of output and the current inflation rate are endogenous.
  - Current output may deviate from potential output because of economic shocks.
  - We assume that the long run is a given.
    - ⋆ Potential output and the long-run inflation rate are exogenous
    - ⋆ Note: we had separately studied this long part earlier
    - ⋆ (horses for courses!)

Theory Ahead of Measurement

Thing to watch out for

- In the short-run model
  - The current level of output and the current inflation rate are endogenous.
  - Current output may deviate from potential output because of economic shocks.
  - We assume that the long run is a given.
    - Potential output and the long-run inflation rate are exogenous
    - Note: we had separately studied this long part earlier
    - (horses for courses!)

Theory Ahead of Measurement

Thing to watch out for

- In the short-run model
  - The current level of output and the current inflation rate are endogenous.
  - Current output may deviate from potential output because of economic shocks.
  - We assume that the long run is a given.
    - Potential output and the long-run inflation rate are exogenous
    - Note: we had separately studied this long part earlier
    - (horses for courses!)

Theory Ahead of Measurement

Thing to watch out for

- In the short-run model
  - The current level of output and the current inflation rate are endogenous.
  - Current output may deviate from potential output because of economic shocks.
  - We assume that the long run is a given.
    - ★ Potential output and the long-run inflation rate are exogenous
    - ★ Note: we had separately studied this long part earlier
    - ★ (horses for courses!)

Measurement

Conceptual: Trend and Cycle decomposition

Observable level of output (e.g. real GDP) is equal to a *long-run trend* plus *short-run output level*:

$$\underbrace{Y_t}_{\text{Observed}} = \underbrace{\bar{Y}_t}_{\text{Trend}} + \underbrace{Y_t^c}_{\text{Cycle}}$$

- The long-run trend is *potential output*, $\bar{Y}_t$
- The *short-run output level* Y_t^c ("cycle") is what we are interested in now.

Measurement

Conceptual: Trend and Cycle decomposition

Observable level of output (e.g. real GDP) is equal to a *long-run trend* plus *short-run output level*:

$$\underbrace{Y_t}_{\text{Observed}} = \underbrace{\bar{Y}_t}_{\text{Trend}} + \underbrace{Y_t^c}_{\text{Cycle}}$$

- The long-run trend is *potential output*, $\bar{Y}_t$
- The *short-run output level* Y_t^c ("cycle") is what we are interested in now.

Measurement

Conceptual: Trend and Cycle decomposition

We define *economic fluctuations* $\tilde{Y}_t$ as the percentage change of deviations in "cycle", Y_t^c, from potential GDP, $\bar{Y}_t$. That is,

$$\tilde{Y}_t := \frac{Y_t^c}{\bar{Y}_t} = \frac{Y_t - \bar{Y}_t}{\bar{Y}_t},$$

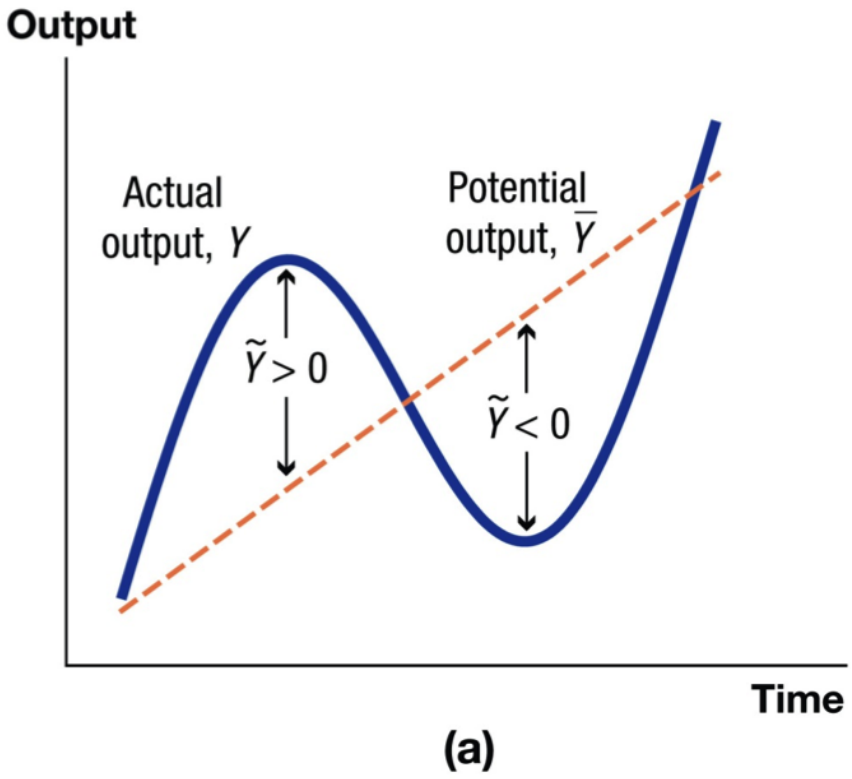
in decimals, or $\tilde{Y}_t \times 100\%$ in percentage terms.

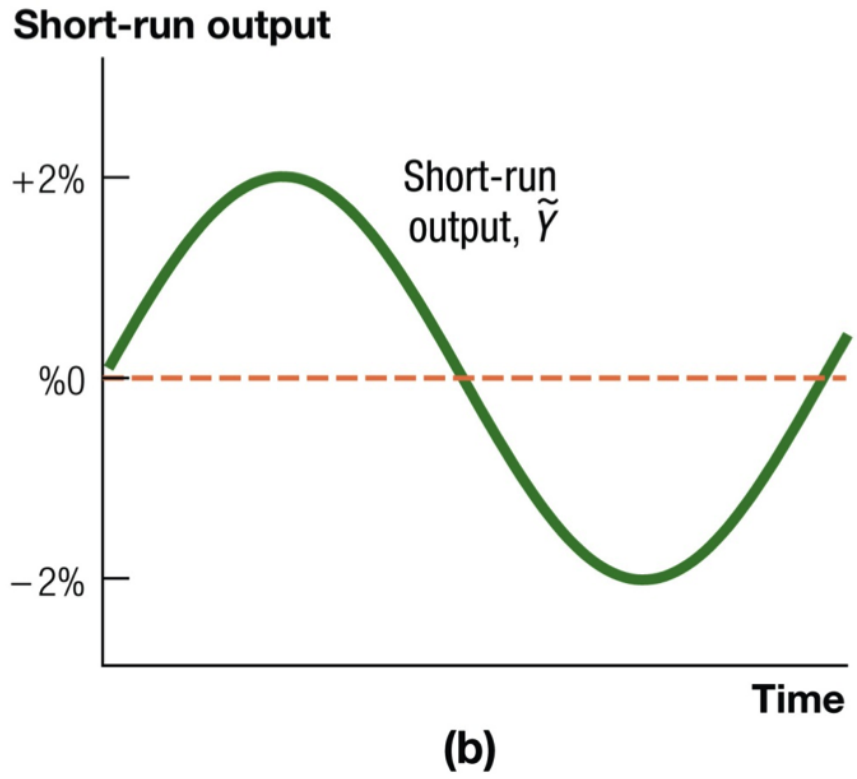
Note:

- Sometimes, this is called both *economic fluctuation* and *short run output.*

Measurement

Conceptual: Trend and Cycle decomposition

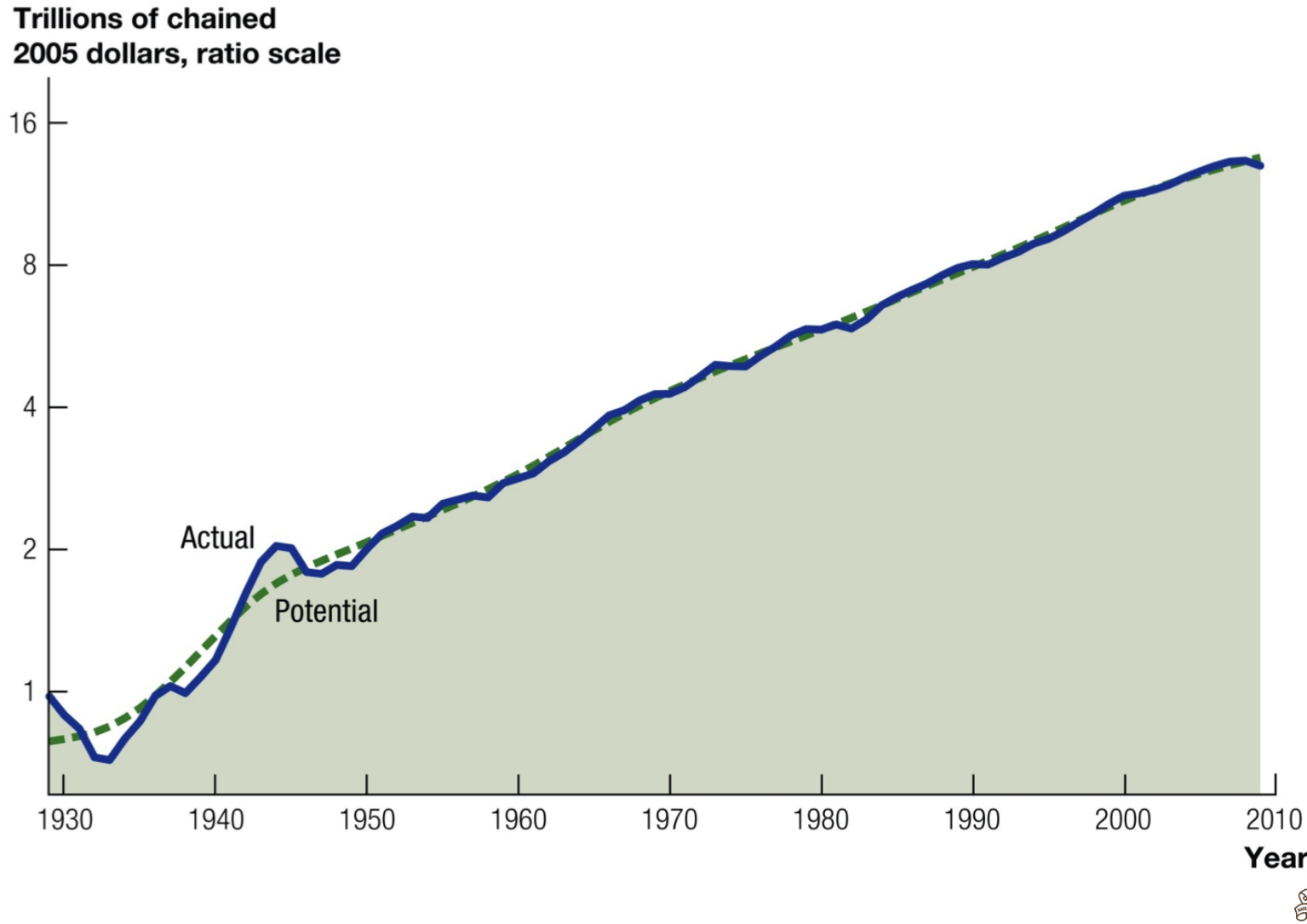




Australian National University

Measurement

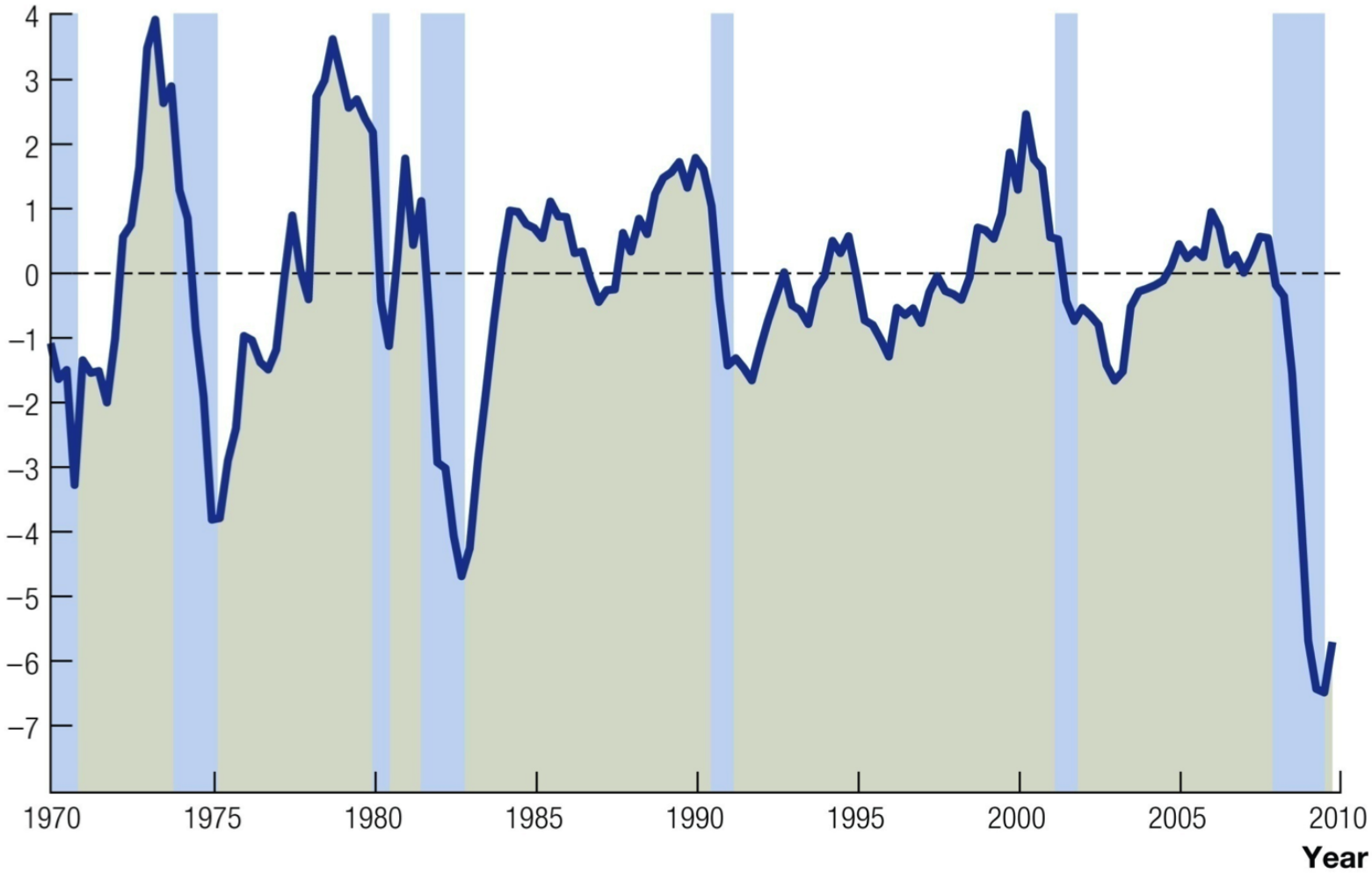
Practical: Trend and Cycle decomposition



Australian National University

Measurement

Practical: Trend and Cycle decomposition



Australian National University

Measurement

Practical: Trend and Cycle decomposition

- Short run output fluctuation ($\tilde{Y}$) is percentage gap between actual/observed and potential output.
  - Is positive when the economy is booming.
  - Is negative when the economy is slumping.
- Recession (Expansion):
  - A period when actual output falls below (rises above) potential.
  - Short-run output fluctuation becomes negative (positive).

Measurement

Practical: Trend and Cycle decomposition

- Short run output fluctuation ($\tilde{Y}$) is percentage gap between actual/observed and potential output.
  - Is positive when the economy is booming.
  - Is negative when the economy is slumping.
- Recession (Expansion):
  - A period when actual output falls below (rises above) potential.
  - Short-run output fluctuation becomes negative (positive).

Measurement

Practical: Trend and Cycle decomposition

- Short run output fluctuation ($\tilde{Y}$) is percentage gap between actual/observed and potential output.
  - Is positive when the economy is booming.
  - Is negative when the economy is slumping.
- Recession (Expansion):
  - A period when actual output falls below (rises above) potential.
  - Short-run output fluctuation becomes negative (positive).

Measurement

Practical: Trend and Cycle decomposition

- Short run output fluctuation ($\tilde{Y}$) is percentage gap between actual/observed and potential output.
  - Is positive when the economy is booming.
  - Is negative when the economy is slumping.
- Recession (Expansion):
  - A period when actual output falls below (rises above) potential.
  - Short-run output fluctuation becomes negative (positive).

Measurement

Practical: Trend and Cycle decomposition

- Short run output fluctuation ($\tilde{Y}$) is percentage gap between actual/observed and potential output.
  - Is positive when the economy is booming.
  - Is negative when the economy is slumping.
- Recession (Expansion):
  - A period when actual output falls below (rises above) potential.
  - Short-run output fluctuation becomes negative (positive).

Measurement

Practical: Trend and Cycle decomposition

- Short run output fluctuation ($\tilde{Y}$) is percentage gap between actual/observed and potential output.
  - Is positive when the economy is booming.
  - Is negative when the economy is slumping.
- Recession (Expansion):
  - A period when actual output falls below (rises above) potential.
  - Short-run output fluctuation becomes negative (positive).

A Short Run Model: Preview

Short Run Model

Preview

Short-run model features:

- Open economy exists where global booms and recessions impact the local economy (shut this down initially).
- The economy will exhibit long-run growth and short run fluctuations.
- Central Bank manages monetary policy and/or Government manages fiscal policy to smooth fluctuations.

Short Run Model

Preview

Short-run model features:

- Open economy exists where global booms and recessions impact the local economy (shut this down initially).
- The economy will exhibit long-run growth and short run fluctuations.
- Central Bank manages monetary policy and/or Government manages fiscal policy to smooth fluctuations.

Short Run Model

Preview

Short-run model features:

- Open economy exists where global booms and recessions impact the local economy (shut this down initially).
- The economy will exhibit long-run growth and short run fluctuations.
- Central Bank manages monetary policy and/or Government manages fiscal policy to smooth fluctuations.

Short Run Model

Preview

Short-run model based on three premises

1. *The economy is constantly being hit by shocks*:
   - Shocks: factors that cause fluctuations in output or inflation.
2. *Monetary and fiscal policies affect output*:
   - Policymakers may be able to neutralize shocks to the economy.
3. *There is a dynamic trade-off between output and inflation*:
   - The Phillips curve is the dynamic trade-off between output and inflation.

Short Run Model

Preview

Short-run model based on three premises

1. *The economy is constantly being hit by shocks*:
   - Shocks: factors that cause fluctuations in output or inflation.
2. *Monetary and fiscal policies affect output*:
   - Policymakers may be able to neutralize shocks to the economy.
3. *There is a dynamic trade-off between output and inflation*:
   - The Phillips curve is the dynamic trade-off between output and inflation.

Short Run Model

Preview

Short-run model based on three premises

1. *The economy is constantly being hit by shocks*:
   - Shocks: factors that cause fluctuations in output or inflation.
2. *Monetary and fiscal policies affect output*:
   - Policymakers may be able to neutralize shocks to the economy.
3. *There is a dynamic trade-off between output and inflation*:
   - The Phillips curve is the dynamic trade-off between output and inflation.

Short Run Model

Preview

Short-run model based on three premises

1. *The economy is constantly being hit by shocks*:
   - Shocks: factors that cause fluctuations in output or inflation.
2. *Monetary and fiscal policies affect output*:
   - Policymakers may be able to neutralize shocks to the economy.
3. *There is a dynamic trade-off between output and inflation*:
   - The Phillips curve is the dynamic trade-off between output and inflation.

Short Run Model

Preview

Short-run model based on three premises

1. *The economy is constantly being hit by shocks*:
   - Shocks: factors that cause fluctuations in output or inflation.
2. *Monetary and fiscal policies affect output*:
   - Policymakers may be able to neutralize shocks to the economy.
3. *There is a dynamic trade-off between output and inflation*:
   - The Phillips curve is the dynamic trade-off between output and inflation.

Short Run Model

Preview

Short-run model based on three premises

1. *The economy is constantly being hit by shocks*:
   - Shocks: factors that cause fluctuations in output or inflation.
2. *Monetary and fiscal policies affect output*:
   - Policymakers may be able to neutralize shocks to the economy.
3. *There is a dynamic trade-off between output and inflation*:
   - The Phillips curve is the dynamic trade-off between output and inflation.

Short Run Model

Preview

Basic short run model will have three components:

1. An aggregate supply relation:
   - a.k.a. a **Phillips curve** model
2. An aggregate demand relation:
   - a.k.a. an **IS curve**
3. A description of monetary policy:
   - a.k.a. a **MP curve**

Short Run Model

Preview

Basic short run model will have three components:

1. An aggregate supply relation:
   - a.k.a. a **Phillips curve** model
2. An aggregate demand relation:
   - a.k.a. an **IS curve**
3. A description of monetary policy:
   - a.k.a. a **MP curve**

Short Run Model

Preview

Basic short run model will have three components:

1. An aggregate supply relation:
   - a.k.a. a **Phillips curve** model
2. An aggregate demand relation:
   - a.k.a. an **IS curve**
3. A description of monetary policy:
   - a.k.a. a **MP curve**

Short Run Model

Preview

Basic short run model will have three components:

1. An aggregate supply relation:
   - a.k.a. a **Phillips curve** model
2. An aggregate demand relation:
   - a.k.a. an **IS curve**
3. A description of monetary policy:
   - a.k.a. a **MP curve**

Short Run Model

Preview

Basic short run model will have three components:

1. An aggregate supply relation:
   - a.k.a. a **Phillips curve** model
2. An aggregate demand relation:
   - a.k.a. an **IS curve**
3. A description of monetary policy:
   - a.k.a. a **MP curve**

Short Run Model

Preview

Basic short run model will have three components:

1. An aggregate supply relation:
   - a.k.a. a **Phillips curve** model
2. An aggregate demand relation:
   - a.k.a. an **IS curve**
3. A description of monetary policy:
   - a.k.a. a **MP curve**

Short Run Model

Preview

1. **Phillips curve**: a model that links producers/firms *supply behaviour* to an aggregate relation between output and change in inflation.
2. **IS curve**: a model that links consumers/firms/government *expenditure behaviour* to an aggregate relation between output and real interest rate.
   - (in this version, we'll shut out open economy and international exchange rate issues for now.)
3. **MP curve**:
   - behavioural description of central bank policy
   - (we'll shut out the fiscal policy folks at Treasury/Parliament for now.)

Short Run Model

Preview

1. **Phillips curve**: a model that links producers/firms *supply behaviour* to an aggregate relation between output and change in inflation.
2. **IS curve**: a model that links consumers/firms/government *expenditure behaviour* to an aggregate relation between output and real interest rate.
   - (in this version, we'll shut out open economy and international exchange rate issues for now.)
3. **MP curve**:
   - behavioural description of central bank policy
   - (we'll shut out the fiscal policy folks at Treasury/Parliament for now.)

Short Run Model

Preview

1. **Phillips curve**: a model that links producers/firms *supply behaviour* to an aggregate relation between output and change in inflation.
2. **IS curve**: a model that links consumers/firms/government *expenditure behaviour* to an aggregate relation between output and real interest rate.
   - (in this version, we'll shut out open economy and international exchange rate issues for now.)
3. **MP curve**:
   - behavioural description of central bank policy
   - (we'll shut out the fiscal policy folks at Treasury/Parliament for now.)

Short Run Model

Preview

1. **Phillips curve**: a model that links producers/firms *supply behaviour* to an aggregate relation between output and change in inflation.
2. **IS curve**: a model that links consumers/firms/government *expenditure behaviour* to an aggregate relation between output and real interest rate.
   - (in this version, we'll shut out open economy and international exchange rate issues for now.)
3. **MP curve**:
   - behavioural description of central bank policy
   - (we'll shut out the fiscal policy folks at Treasury/Parliament for now.)

Short Run Model

Preview

1. **Phillips curve**: a model that links producers/firms *supply behaviour* to an aggregate relation between output and change in inflation.
2. **IS curve**: a model that links consumers/firms/government *expenditure behaviour* to an aggregate relation between output and real interest rate.
   - (in this version, we'll shut out open economy and international exchange rate issues for now.)
3. **MP curve**:
   - behavioural description of central bank policy
   - (we'll shut out the fiscal policy folks at Treasury/Parliament for now.)

Short Run Model

Preview

1. **Phillips curve**: a model that links producers/firms *supply behaviour* to an aggregate relation between output and change in inflation.
2. **IS curve**: a model that links consumers/firms/government *expenditure behaviour* to an aggregate relation between output and real interest rate.
   - (in this version, we'll shut out open economy and international exchange rate issues for now.)
3. **MP curve**:
   - behavioural description of central bank policy
   - (we'll shut out the fiscal policy folks at Treasury/Parliament for now.)

Short Run Model

Preview: other components

- **The IS curve**:
  - Shows how an economy's output in the short run depends negatively on the real interest rate.
  - Captures the aggregate demand side of model.
  - Real interest rate is relative price of consuming today versus tomorrow.
- **The MP curve**:
  - Shows how monetary policy affects the real interest rate.
  - This will be the policy rule describing behaviour of the central bank.

Short Run Model

Preview: other components

- **The IS curve**:
  - Shows how an economy's output in the short run depends negatively on the real interest rate.
  - Captures the aggregate demand side of model.
  - Real interest rate is relative price of consuming today versus tomorrow.
- **The MP curve**:
  - Shows how monetary policy affects the real interest rate.
  - This will be the policy rule describing behaviour of the central bank.

Short Run Model

Preview: other components

- **The IS curve**:
  - Shows how an economy's output in the short run depends negatively on the real interest rate.
  - Captures the aggregate demand side of model.
  - Real interest rate is relative price of consuming today versus tomorrow.
- **The MP curve**:
  - Shows how monetary policy affects the real interest rate.
  - This will be the policy rule describing behaviour of the central bank.

Short Run Model

Preview: other components

- **The IS curve**:
  - Shows how an economy's output in the short run depends negatively on the real interest rate.
  - Captures the aggregate demand side of model.
  - Real interest rate is relative price of consuming today versus tomorrow.
- **The MP curve**:
  - Shows how monetary policy affects the real interest rate.
  - This will be the policy rule describing behaviour of the central bank.

Short Run Model

Preview: other components

- **The IS curve**:
  - Shows how an economy's output in the short run depends negatively on the real interest rate.
  - Captures the aggregate demand side of model.
  - Real interest rate is relative price of consuming today versus tomorrow.
- **The MP curve**:
  - Shows how monetary policy affects the real interest rate.
  - This will be the policy rule describing behaviour of the central bank.

Short Run Model

Preview: other components

- **The IS curve**:
  - Shows how an economy's output in the short run depends negatively on the real interest rate.
  - Captures the aggregate demand side of model.
  - Real interest rate is relative price of consuming today versus tomorrow.
- **The MP curve**:
  - Shows how monetary policy affects the real interest rate.
  - This will be the policy rule describing behaviour of the central bank.

Short Run Model

Preview: other components

- **The IS curve**:
  - Shows how an economy's output in the short run depends negatively on the real interest rate.
  - Captures the aggregate demand side of model.
  - Real interest rate is relative price of consuming today versus tomorrow.
- **The MP curve**:
  - Shows how monetary policy affects the real interest rate.
  - This will be the policy rule describing behaviour of the central bank.

Short Run Model

Preview: the Phillips curve trade-off

Why is there a dynamic trade-off between output and inflation?

Intuition idea behind this trade-off:

- (Implicitly) Firms have some market power in setting the price of their goods.
- In a boom, when demand for their goods rise.
- To meet rising demand, firms increase production.
- But firms can also raise prices to meet rising production costs and exploit excess demand.
- Rising prices over time means positive inflation rates. May lead to rising inflation rates over time.

Short Run Model

Preview: the Phillips curve trade-off

Why is there a dynamic trade-off between output and inflation?

Intuition idea behind this trade-off:

- (Implicitly) Firms have some market power in setting the price of their goods.
- In a boom, when demand for their goods rise.
- To meet rising demand, firms increase production.
- But firms can also raise prices to meet rising production costs and exploit excess demand.
- Rising prices over time means positive inflation rates. May lead to rising inflation rates over time.

Short Run Model

Preview: the Phillips curve trade-off

Why is there a dynamic trade-off between output and inflation?

Intuition idea behind this trade-off:

- (Implicitly) Firms have some market power in setting the price of their goods.
- In a boom, when demand for their goods rise.
- To meet rising demand, firms increase production.
- But firms can also raise prices to meet rising production costs and exploit excess demand.
- Rising prices over time means positive inflation rates. May lead to rising inflation rates over time.

Short Run Model

Preview: the Phillips curve trade-off

Why is there a dynamic trade-off between output and inflation?

Intuition idea behind this trade-off:

- (Implicitly) Firms have some market power in setting the price of their goods.
- In a boom, when demand for their goods rise.
- To meet rising demand, firms increase production.
- But firms can also raise prices to meet rising production costs and exploit excess demand.
- Rising prices over time means positive inflation rates. May lead to rising inflation rates over time.

Short Run Model

Preview: the Phillips curve trade-off

Why is there a dynamic trade-off between output and inflation?

Intuition idea behind this trade-off:

- (Implicitly) Firms have some market power in setting the price of their goods.
- In a boom, when demand for their goods rise.
- To meet rising demand, firms increase production.
- But firms can also raise prices to meet rising production costs and exploit excess demand.
- Rising prices over time means positive inflation rates. May lead to rising inflation rates over time.

Short Run Model

What of unemployment?

- If we're interested in understanding how the short run fluctuations affect unemployment (recall what we saw in data), we can apply Okun's Law.
- Some definitions:
  - **Natural rate of unemployment**: The rate of unemployment that prevails in the long run
  - **Cyclical unemployment**: The difference between current unemployment and the natural rate of unemployment

Short Run Model

What of unemployment?

- If we're interested in understanding how the short run fluctuations affect unemployment (recall what we saw in data), we can apply Okun's Law.
- Some definitions:
  - **Natural rate of unemployment**: The rate of unemployment that prevails in the long run
  - **Cyclical unemployment:** The difference between current unemployment and the natural rate of unemployment

Short Run Model

What of unemployment?

- If we're interested in understanding how the short run fluctuations affect unemployment (recall what we saw in data), we can apply Okun's Law.
- Some definitions:
  - **Natural rate of unemployment**: The rate of unemployment that prevails in the long run
  - **Cyclical unemployment:** The difference between current unemployment and the natural rate of unemployment

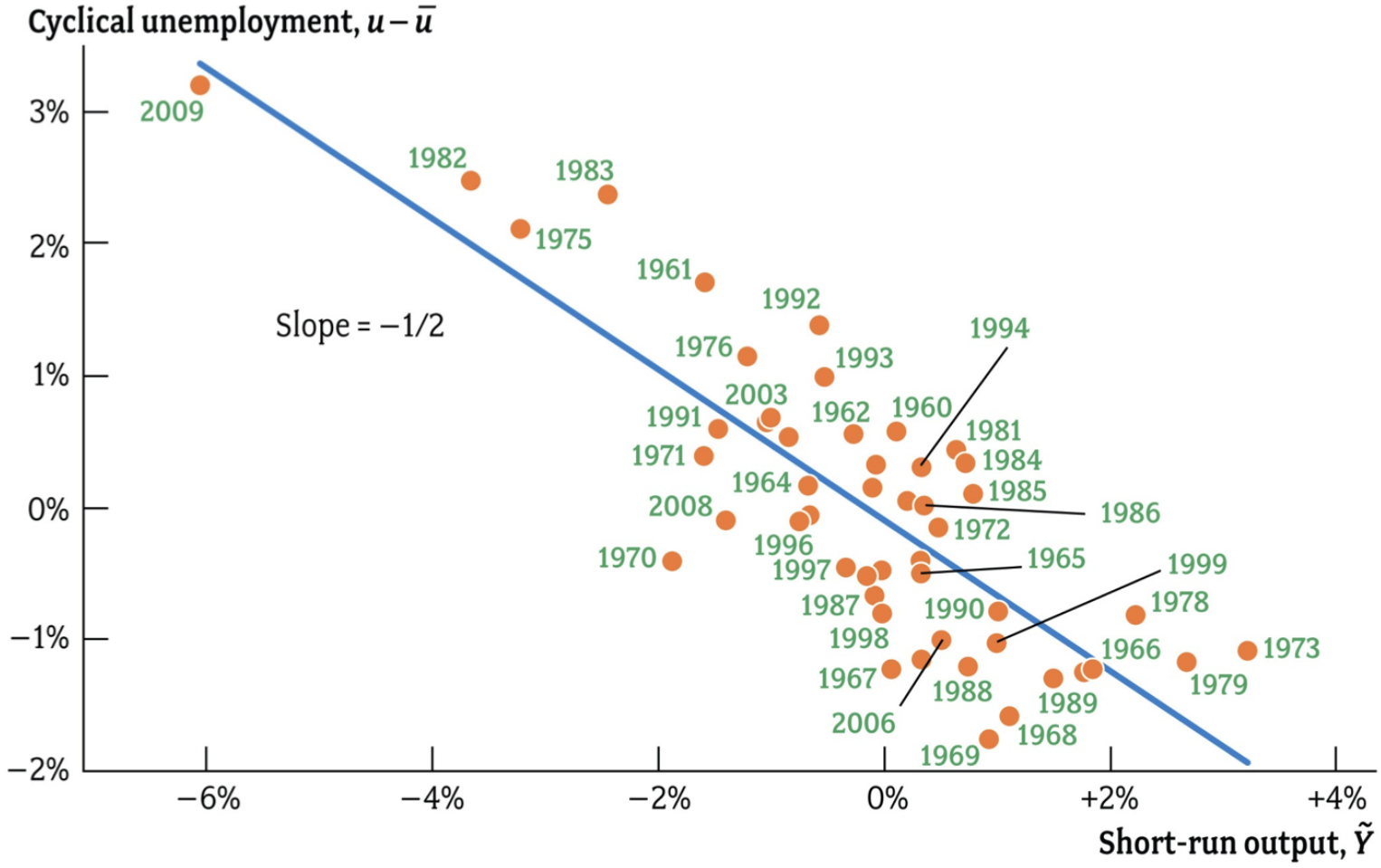
Short Run Model

What of unemployment?

- If we're interested in understanding how the short run fluctuations affect unemployment (recall what we saw in data), we can apply Okun's Law.
- Some definitions:
  - **Natural rate of unemployment**: The rate of unemployment that prevails in the long run
  - **Cyclical unemployment:** The difference between current unemployment and the natural rate of unemployment

Short Run Model

What of unemployment?



Remember this picture?

Australian National University

Short Run Model

What of unemployment?

Okun's Law says:

$$u_t - \bar{u}_t = -\frac{1}{2} \times \tilde{Y}_t.$$

- Cyclical unemployment $(u_t - \bar{u}_t)$: gap between current (u_t) and natural $(\bar{u}_t)$ unemployment rates.
- Short run output $(\tilde{Y}_t)$.

This is taken as an empirical Law and we *assume it* in the short run model.

Short Run Model

What of unemployment?

Okun's Law says:

$$u_t - \bar{u}_t = -\frac{1}{2} \times \tilde{Y}_t.$$

- Cyclical unemployment $(u_t - \bar{u}_t)$: gap between current (u_t) and natural $(\bar{u}_t)$ unemployment rates.
- Short run output $(\tilde{Y}_t)$.

This is taken as an empirical Law and we *assume it* in the short run model.

Short Run Model

Checkpoint!

- Our short run model will deal with:
  - shocks to the economy;
  - role(s) of monetary and/or fiscal policy; and
  - a trade-off for policy makers in terms of inflation versus output.
  - a link between output and real interest rate.
- Empirically we saw that inflation tends to rise (fall) when there is an economic expansion (contraction) in short run output relative to its potential.
  - This fact will be incorporated into our short-run Phillips curve model.
  - Phillips curve model rationalizes this inflation/output trade-off.
- Okun's Law gives us a link between output and (cyclical) unemployment.

Short Run Model

Checkpoint!

- Our short run model will deal with:
  - shocks to the economy;
  - role(s) of monetary and/or fiscal policy; and
  - a trade-off for policy makers in terms of inflation versus output.
  - a link between output and real interest rate.
- Empirically we saw that inflation tends to rise (fall) when there is an economic expansion (contraction) in short run output relative to its potential.
  - This fact will be incorporated into our short-run Phillips curve model.
  - Phillips curve model rationalizes this inflation/output trade-off.
- Okun's Law gives us a link between output and (cyclical) unemployment.

Short Run Model

Checkpoint!

- Our short run model will deal with:
  - shocks to the economy;
  - role(s) of monetary and/or fiscal policy; and
  - a trade-off for policy makers in terms of inflation versus output.
  - a link between output and real interest rate.
- Empirically we saw that inflation tends to rise (fall) when there is an economic expansion (contraction) in short run output relative to its potential.
  - This fact will be incorporated into our short-run Phillips curve model.
  - Phillips curve model rationalizes this inflation/output trade-off.
- Okun's Law gives us a link between output and (cyclical) unemployment.

Short Run Model

Checkpoint!

- Our short run model will deal with:
  - shocks to the economy;
  - role(s) of monetary and/or fiscal policy; and
  - a trade-off for policy makers in terms of inflation versus output.
  - a link between output and real interest rate.
- Empirically we saw that inflation tends to rise (fall) when there is an economic expansion (contraction) in short run output relative to its potential.
  - This fact will be incorporated into our short-run Phillips curve model.
  - Phillips curve model rationalizes this inflation/output trade-off.
- Okun's Law gives us a link between output and (cyclical) unemployment.

Short Run Model

Checkpoint!

- Our short run model will deal with:
  - shocks to the economy;
  - role(s) of monetary and/or fiscal policy; and
  - a trade-off for policy makers in terms of inflation versus output.
  - a link between output and real interest rate.
- Empirically we saw that inflation tends to rise (fall) when there is an economic expansion (contraction) in short run output relative to its potential.
  - This fact will be incorporated into our short-run Phillips curve model.
  - Phillips curve model rationalizes this inflation/output trade-off.
- Okun's Law gives us a link between output and (cyclical) unemployment.

Short Run Model

Checkpoint!

- Our short run model will deal with:
  - shocks to the economy;
  - role(s) of monetary and/or fiscal policy; and
  - a trade-off for policy makers in terms of inflation versus output.
  - a link between output and real interest rate.
- Empirically we saw that inflation tends to rise (fall) when there is an economic expansion (contraction) in short run output relative to its potential.
  - This fact will be incorporated into our short-run Phillips curve model.
  - Phillips curve model rationalizes this inflation/output trade-off.
- Okun's Law gives us a link between output and (cyclical) unemployment.

Short Run Model

Checkpoint!

- Our short run model will deal with:
  - shocks to the economy;
  - role(s) of monetary and/or fiscal policy; and
  - a trade-off for policy makers in terms of inflation versus output.
  - a link between output and real interest rate.
- Empirically we saw that inflation tends to rise (fall) when there is an economic expansion (contraction) in short run output relative to its potential.
  - This fact will be incorporated into our short-run Phillips curve model.
  - Phillips curve model rationalizes this inflation/output trade-off.
- Okun's Law gives us a link between output and (cyclical) unemployment.

Short Run Model

Checkpoint!

- Our short run model will deal with:
  - shocks to the economy;
  - role(s) of monetary and/or fiscal policy; and
  - a trade-off for policy makers in terms of inflation versus output.
  - a link between output and real interest rate.
- Empirically we saw that inflation tends to rise (fall) when there is an economic expansion (contraction) in short run output relative to its potential.
  - This fact will be incorporated into our short-run Phillips curve model.
  - Phillips curve model rationalizes this inflation/output trade-off.
- Okun's Law gives us a link between output and (cyclical) unemployment.

Short Run Model

Checkpoint!

- Our short run model will deal with:
  - shocks to the economy;
  - role(s) of monetary and/or fiscal policy; and
  - a trade-off for policy makers in terms of inflation versus output.
  - a link between output and real interest rate.
- Empirically we saw that inflation tends to rise (fall) when there is an economic expansion (contraction) in short run output relative to its potential.
  - This fact will be incorporated into our short-run Phillips curve model.
  - Phillips curve model rationalizes this inflation/output trade-off.
- Okun's Law gives us a link between output and (cyclical) unemployment.

Short Run Model

Checkpoint!

- Our short run model will deal with:
  - shocks to the economy;
  - role(s) of monetary and/or fiscal policy; and
  - a trade-off for policy makers in terms of inflation versus output.
  - a link between output and real interest rate.
- Empirically we saw that inflation tends to rise (fall) when there is an economic expansion (contraction) in short run output relative to its potential.
  - This fact will be incorporated into our short-run Phillips curve model.
  - Phillips curve model rationalizes this inflation/output trade-off.
- Okun's Law gives us a link between output and (cyclical) unemployment.

Summary

- The long-run model(s) determines potential output and the long-run rate of inflation.
- The short-run model determines current output and current inflation.
- Short run output fluctuation is percentage difference between actual and potential output.
  - Is positive when the economy is booming.
  - Is negative when the economy is slumping.
- Recession: A period when actual output falls below potential. Short-run output fluctuation becomes negative.

Summary

- The long-run model(s) determines potential output and the long-run rate of inflation.
- The short-run model determines current output and current inflation.
- Short run output fluctuation is percentage difference between actual and potential output.
  - Is positive when the economy is booming.
  - Is negative when the economy is slumping.
- Recession: A period when actual output falls below potential. Short-run output fluctuation becomes negative.

Summary

- The long-run model(s) determines potential output and the long-run rate of inflation.
- The short-run model determines current output and current inflation.
- Short run output fluctuation is percentage difference between actual and potential output.
  - Is positive when the economy is booming.
  - Is negative when the economy is slumping.
- Recession: A period when actual output falls below potential. Short-run output fluctuation becomes negative.

Summary

- The long-run model(s) determines potential output and the long-run rate of inflation.
- The short-run model determines current output and current inflation.
- Short run output fluctuation is percentage difference between actual and potential output.
  - Is positive when the economy is booming.
  - Is negative when the economy is slumping.
- Recession: A period when actual output falls below potential. Short-run output fluctuation becomes negative.

Summary

- The long-run model(s) determines potential output and the long-run rate of inflation.
- The short-run model determines current output and current inflation.
- Short run output fluctuation is percentage difference between actual and potential output.
  - Is positive when the economy is booming.
  - Is negative when the economy is slumping.
- Recession: A period when actual output falls below potential. Short-run output fluctuation becomes negative.

Summary

- The long-run model(s) determines potential output and the long-run rate of inflation.
- The short-run model determines current output and current inflation.
- Short run output fluctuation is percentage difference between actual and potential output.
  - Is positive when the economy is booming.
  - Is negative when the economy is slumping.
- Recession: A period when actual output falls below potential. Short-run output fluctuation becomes negative.

Summary

- An important stylized fact of economic fluctuations is that the inflation rate usually falls (rises) during a recession (an expansion).
- The Phillips curve captures the dynamic trade-off between output and inflation.
  - A booming economy leads to rising inflation, and a slumping economy to declining inflation.

Summary

- An important stylized fact of economic fluctuations is that the inflation rate usually falls (rises) during a recession (an expansion).
- The Phillips curve captures the dynamic trade-off between output and inflation.
  - A booming economy leads to rising inflation, and a slumping economy to declining inflation.

Summary

- An important stylized fact of economic fluctuations is that the inflation rate usually falls (rises) during a recession (an expansion).
- The Phillips curve captures the dynamic trade-off between output and inflation.
  - A booming economy leads to rising inflation, and a slumping economy to declining inflation.

Summary

- Short-run model
  - Policymakers can mitigate shocks.
  - The Phillips curve models relation between inflation and short run output.
  - Monetary and fiscal policy can stabilize output and keep inflation low.
  - Difficulty: potential output is not readily observed, and the economy is always being hit by new shocks.

Summary

- Short-run model
  - Policymakers can mitigate shocks.
  - The Phillips curve models relation between inflation and short run output.
  - Monetary and fiscal policy can stabilize output and keep inflation low.
  - Difficulty: potential output is not readily observed, and the economy is always being hit by new shocks.

Summary

- Short-run model
  - Policymakers can mitigate shocks.
  - The Phillips curve models relation between inflation and short run output.
  - Monetary and fiscal policy can stabilize output and keep inflation low.
  - Difficulty: potential output is not readily observed, and the economy is always being hit by new shocks.

Summary

- Short-run model
  - Policymakers can mitigate shocks.
  - The Phillips curve models relation between inflation and short run output.
  - Monetary and fiscal policy can stabilize output and keep inflation low.
  - Difficulty: potential output is not readily observed, and the economy is always being hit by new shocks.

Summary

- Short-run model
  - Policymakers can mitigate shocks.
  - The Phillips curve models relation between inflation and short run output.
  - Monetary and fiscal policy can stabilize output and keep inflation low.
  - Difficulty: potential output is not readily observed, and the economy is always being hit by new shocks.

Summary

- Okun's law:
  - Allows us to go back and forth between short-run output and the unemployment rate.
  - A one percentage point decline in output below potential corresponds to a half percentage point increase in the unemployment rate.
- Later, we'll talk about the recent experience of the Great Recession in the U.S.

Summary

- Okun's law:
  - Allows us to go back and forth between short-run output and the unemployment rate.
  - A one percentage point decline in output below potential corresponds to a half percentage point increase in the unemployment rate.
- Later, we'll talk about the recent experience of the Great Recession in the U.S.

Summary

- Okun's law:
  - Allows us to go back and forth between short-run output and the unemployment rate.
  - A one percentage point decline in output below potential corresponds to a half percentage point increase in the unemployment rate.
- Later, we'll talk about the recent experience of the Great Recession in the U.S.

Summary

- Okun's law:
  - Allows us to go back and forth between short-run output and the unemployment rate.
  - A one percentage point decline in output below potential corresponds to a half percentage point increase in the unemployment rate.
- Later, we'll talk about the recent experience of the Great Recession in the U.S.

Conversation Pieces

... with your loved ones over dinner tonight

Key words:

- economic shocks
- Phillips curve, IS and MP
- recession and expansion
- economic or short-run fluctuations
- observed output; short run output; potential output
- Okun's law; inflation and unemployment
- cyclical unemployment; natural rate of unemployment.

Conversation Pieces

... with your loved ones over dinner tonight

Key words:

- economic shocks
- Phillips curve, IS and MP
- recession and expansion
- economic or short-run fluctuations
- observed output; short run output; potential output
- Okun's law; inflation and unemployment
- cyclical unemployment; natural rate of unemployment.

Conversation Pieces

... with your loved ones over dinner tonight

Key words:

- economic shocks
- Phillips curve, IS and MP
- recession and expansion
- economic or short-run fluctuations
- observed output; short run output; potential output
- Okun's law; inflation and unemployment
- cyclical unemployment; natural rate of unemployment.

Conversation Pieces

... with your loved ones over dinner tonight

Key words:

- economic shocks
- Phillips curve, IS and MP
- recession and expansion
- economic or short-run fluctuations
- observed output; short run output; potential output
- Okun's law; inflation and unemployment
- cyclical unemployment; natural rate of unemployment.

Conversation Pieces

... with your loved ones over dinner tonight

Key words:

- economic shocks
- Phillips curve, IS and MP
- recession and expansion
- economic or short-run fluctuations
- observed output; short run output; potential output
- Okun's law; inflation and unemployment
- cyclical unemployment; natural rate of unemployment.

Conversation Pieces

... with your loved ones over dinner tonight

Key words:

- economic shocks
- Phillips curve, IS and MP
- recession and expansion
- economic or short-run fluctuations
- observed output; short run output; potential output
- Okun's law; inflation and unemployment
- cyclical unemployment; natural rate of unemployment.

Conversation Pieces

... with your loved ones over dinner tonight

Key words:

- economic shocks
- Phillips curve, IS and MP
- recession and expansion
- economic or short-run fluctuations
- observed output; short run output; potential output
- Okun's law; inflation and unemployment
- cyclical unemployment; natural rate of unemployment.