EC 861: Advanced Macroeconomics I
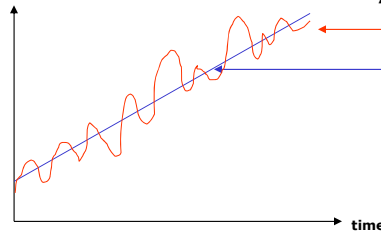
January 18, 2012

The Birth of Macroeconomics

- ❑ **"Macroeconomics" born as a field during and because of the Great Depression**
    - ❑ **Idea that government could/should regulate the periodic ups and downs of the economy rose to prominence**

- ❑ **John Maynard Keynes,** *The General Theory of Employment, Interest, and Money* **(1936)**
    - ❑ **Basic tenet: various "rigidities" in many markets lead to "disequilibria" that can last a long time**

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LONG-RUN GROWTH VS. BUSINESS CYCLES

❑ **Decompose time series into trends and cycles**

Actual GDP (or virtually any real economic series...)

Long-run trend of GDP

-- a linear trend very simple; but can also construct (more nuanced) nonlinear trends (i.e., HP-filtered trend)

time

❑ **Two clear patterns**
  - ❑ **Long-run growth**
  - ❑ **Frequent and sometimes big short-run fluctuations around long-run trend**
❑ **Are the short-run fluctuations tightly related to the long-run trend?**
  - ❑ **Conventional view has been "no"**

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  - ❑ **Conventional view has been "no"**
❑ **Under the "no" view, a separation of (sub-)fields**
  - ❑ **Studying the trend – "economic growth/development"**
  - ❑ **Studying the fluctuations – "business cycle analysis"**

BUSINESS CYCLES
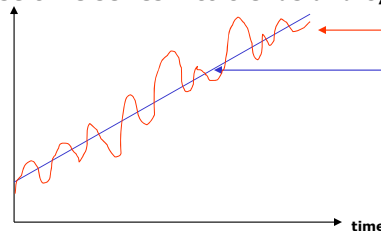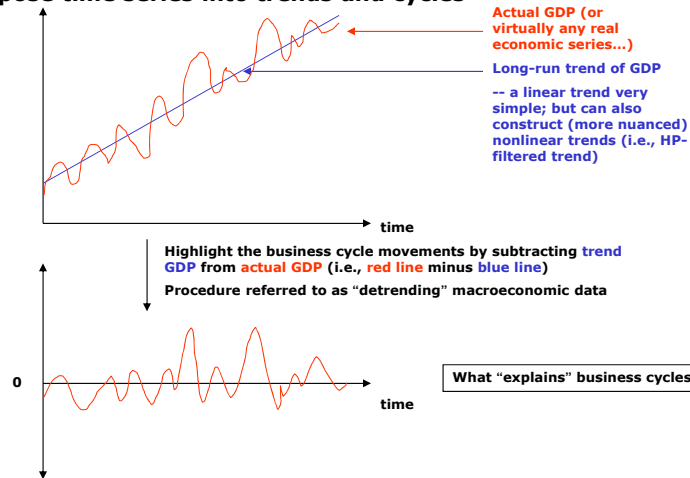
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Highlight the business cycle movements by subtracting **trend GDP** from **actual GDP** (i.e., **red line** minus **blue line**)

Procedure referred to as "detrending" macroeconomic data

0

time

What "explains" business cycles?

PRINCIPLES OF KEYNESIAN MACROECONOMICS

❑ **Basic Tenet: price rigidities/inflexibilities characterize many goods markets and factor markets**
  ❑ **"Sticky prices"**

❑ **(Many) other rigidities/inflexibilities affect markets' functioning as well...**

❑ **...but price (and wage) rigidities the central tenet**

❑ **(...with increasing attention on modeling financial frictions?...)**
  ❑ **More general discussion in Akerlof (2007 *AER*) essay**

❑ **Fiscal policy and (later) monetary policy viewed as being able to induce large shifts in supply and demand conditions in various markets**

❑ **A basis for policy activism: because of macroeconomic policy's ability to shift supply/demand conditions in the economy, when/if various types of shocks affect the economy, monetary and fiscal policy can and should step in to mitigate "recessions/depressions"**

THE RISE OF MACROECONOMICS

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  - ❑ **Phase II: The large-scale macroeconometric models**

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THE GLORY DAYS OF MACROECONOMICS

- ❑ **Large-scale "Keynesian macroeconometric" models prominent by the 1960's, led by**
  - ❑ **Kennedy's Council of Economic Advisers (Solow, Tobin, Samuelson)**
  - ❑ **MIT/Penn/Federal Reserve Board**
  - ❑ **ISLM and AS/AD model (Hicks, 1937) the conceptual core**

General idea of Keynesian-inspired macroeconometric models

$$x_{1t} = \alpha_0 x_{2t} + \alpha_1 x_{3t} + \alpha_2 x_{3t} + ...$$

$$x_{2t} = \alpha_3 x_{1t} + \alpha_4 x_{3t} + \alpha_5 x_{4t} + ...$$

$$\vdots$$

$$x_{136t} = \alpha_{5987} x_{1t} + \alpha_{5988} x_{13t} + \alpha_{5989} x_{69t} + ...$$

Dozens or hundreds of variables and equations, some of which describe how policy affects the economy

Say x_3 and x_{13} are policy variables

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It's all about estimating the alphas...

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❑ **Statistical relationships between various macro variables**
❑ **Basic approach: estimate these equations and use them for policy advice**
   ❑ **In particular: estimate all the alpha coefficients using historical data and posit that this is _how_ the macroeconomy "works"**
❑ **An approach to macroeconomic policy-making embodied most succinctly in the view and promise of the Phillips Curve**

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THE PHILLIPS CURVE

❑ **A seemingly stable, predictable relationship between an economy's inflation rate and unemployment rate**

inflation rate

unemployment rate
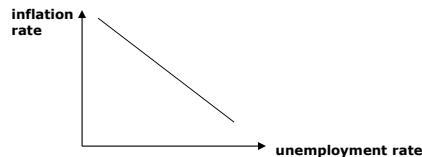
❑ **Came to be the centerpiece of the Keynesian macroeconometric agenda**

❑ **Came to be the centerpiece for policy advice...**
   ❑ **...for fiscal policy (given forceful voice during the Kennedy administration – CEA populated with future Nobel Laureates Robert Solow, James Tobin, Paul Samuelson...John Kenneth Galbraith a more muted enthusiast of this approach to policy formulation)**

   ❑ **...and eventually for monetary policy (rise of an activist Fed: raising/lowering interest rates to "fine tune" macroeconomic performance)**

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THE FALL OF MACROECONOMICS

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General idea of Keynesian-inspired macroeconometric models

One of these equations is the Phillips Curve

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Dozens or hundreds of variables and equations, some of which describe how policy affects the economy

Say x_3 and x_{13} are policy variables

❑ **Became widely used for policy-making...**
❑ **...until they stopped "working" in the 1970's**
  ❑ **Amidst a high-inflation environment (U.S. inflation between 15-20% in second half of 1970's), sparked by OPEC oil embargoes**

❑ **Lucas Critique (1976)**

THE LUCAS CRITIQUE

❑ **Crucial inconsistency in Keynesian macroeconometric approach**

This "problem" was always present, but didn't reveal itself until the 1970's

  ❑ **The estimated coefficients (the alpha's) themselves may change if policy (monetary and/or fiscal) changes!**
  ❑ **In which case the macroeconometric approach *cannot* usefully give policy advice – unless one "knows"/makes assumptions about how the alpha's themselves depend on policy...**

❑ **Discovered in the 1970's amidst world-wide macroeconomic turbulence induced (seemingly...) by the two oil crises**
  ❑ **The usual Phillips relation "stopped working" even as policy-makers tried harder than ever to exploit it**
  ❑ **Led to breakdown of existing macroeconomic theory and opened the door for a complete re-thinking of the basic tenets of macroeconomics**

❑ **Keynesian macroeconometric models are *not economic models***
  ❑ **Merely a statistical description of historical events**
  ❑ **Economics: the study of how incentives influence behavior of individuals/market participants**
  ❑ **A damning criticism of the entire macroeconomics profession...**

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  - ❑ **Phase II: The large-scale macroeconometric models**
    - ❑ **Death knell spelled by the devastating Lucas Critique**

THE REBIRTH OF MACROECONOMICS

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  ❑ **Phase III: Microeconomic foundations and DGE modeling**

THE REBIRTH OF MACROECONOMICS

❑ **Kydland and Prescott (1982), Long and Plosser (1983)**
  ❑ **A dynamic general equilibrium (DGE) view of business cycles**
  ❑ **A "real" business cycle (RBC)**
    ❑ **TFP shocks the driving force, not policy shocks**
    ❑ **Business cycles are efficient and "natural"...**
    ❑ **...so macroeconomic policy aimed at stabilizing cycles is unimportant/misguided**

❑ **An economic theory, not a statistical theory**
  ❑ **Building blocks**
    ❑ **Consumer preferences (utility functions)**
    ❑ **Production technology (the microeconomics of how firms produce goods)**
    ❑ **Interactions through markets (goods, labor, and financial markets)**

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    ❑ **Interactions through markets (goods, labor, and financial markets)**
      ❑ **Labor markets are best described by supply and demand?**
      ❑ **Or by frictional markets (i.e., some frictions impede the meetings of buyers and sellers of labor)? e.g., geographical frictions? skills frictions? etc.**
  ❑ **The "alpha's" are functions of policy variables (if policy variables present in the model)…**
  ❑ **…thus immune to Lucas Critique (?…)**
  ❑ **Foundation is the Solow neoclassical growth model**

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PRINCIPLES OF RBC MACROECONOMICS

❑ **Basic Tenets**
  ❑ **Markets operate perfectly competitively (a metaphor)**
  ❑ **Price rigidities/inflexibilities are _not_ very important – conceptual break from Keynesian principles**
  ❑ **Model the economic interactions, not merely the statistical relationships – methodological break from Keynesian principles**

❑ **Which types of events are important shifters of economic activity?**
  ❑ **TFP shifts (not policy – another conceptual break from Keynesianism)**
    What's "left over" after accounting for what we can account for

❑ **How to measure TFP? As a residual, using the Cobb-Douglas production function** $\text{output}_t = A_t f(k_t, n_t) = A_t k_t^{\alpha} n_t^{1-\alpha}$

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EXAMPLE

	Period	Output	Capital	Labor	TFP	
Suppose alpha = 0.5 for simplicity	**2006**	**12.0**	**16**	**9**	**1.0**	**Productivity improved between 2006 and 2007**
(U.S. economy: alpha ≈ 0.40)	**2007**	**14.4**	**16**	**9**	**1.2**	**Productivity stagnated between 2007 and 2008**
	2008	**19.2**	**16**	**16**	**1.2**	
	2009	**17.6**	**16**	**16**	**1.1**	**Productivity declined between 2008 and 2009**

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TFP SHOCKS

❑ **Shocks to TFP are persistent**
  ❑ **Once A_t rises unexpectedly, TFP tends to stay elevated for multiple periods**
  ❑ **Example: If $A_{2000} > A_{1999}$, then A_{2001} is likely to be higher than A_{1999} as well, but not as large as A_{2000}**

  ❑ **A slowly-dampening time-profile of TFP**

Detrended TFP series (i.e., actual TFP displays long-run growth)

steady-state TFP

time

Gradual return to steady-state

The period of the shock

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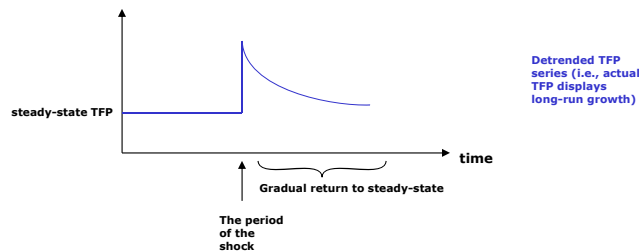
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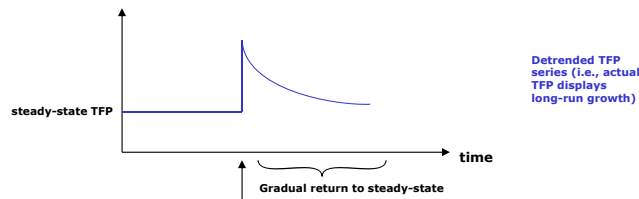
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- ❑ **RBC view**
    - ❑ **Persistent TFP shocks the driver of business cycles**
    - ❑ **NOT policy shocks**

Over two-thirds of business-cycle fluctuations driven by TFP shocks

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WHERE IS MACROECONOMICS TODAY?

- ❑ **Keynesian Macroeconomics**
    - ❑ **Ideology:** Price rigidities/"sticky prices"
    - ❑ **Policy stance:** policy (fiscal and monetary) of crucial importance for macroeconomic performance
    - ❑ **Methodology:** econometric/statistical modeling

- ❑ **RBC Macroeconomics**
    - ❑ **Ideology:** Prices are not rigid or "sticky"
    - ❑ **Policy stance:** policy (neither fiscal nor monetary) not important for macroeconomic performance
    - ❑ **Methodology:** dynamic general equilibrium modeling

- ❑ **New Keynesian Macroeconomics**
    - ❑ **Ideology:** Price rigidities/"sticky prices"
    - ❑ **Policy stance:** policy (fiscal and monetary) of crucial importance for macroeconomic performance
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  - ❑ **Ideology:** **Price rigidities/"sticky prices"**
  - ❑ **Policy stance:** **policy (fiscal and monetary) of crucial importance for macroeconomic performance**   **The enduring imprint of the RBC revolution**
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