A (Brief and Partial) History of Macroeconomics

September 3, 2013

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**

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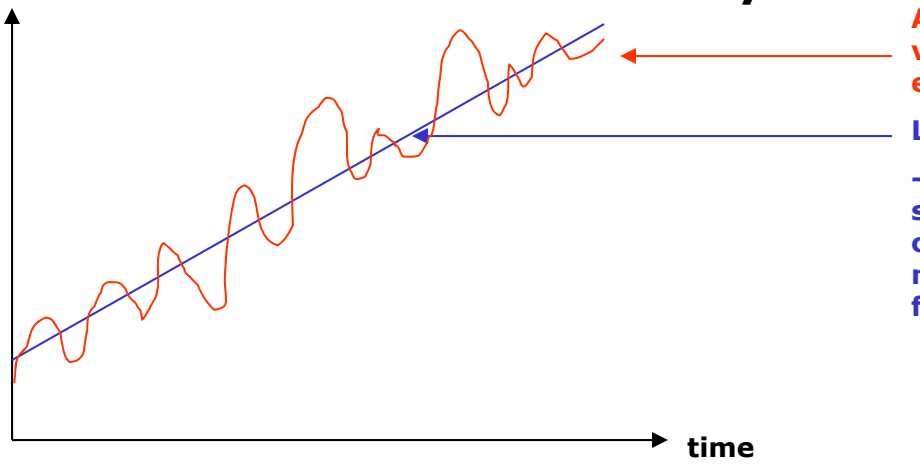
  - **Basic tenet: various "rigidities" in many markets lead to "disequilibria" that can last a long time**

- **Burns and Mitchell, *Measuring Business Cycles* (1946)**
  - **First systematic accounting of the co-movement of various aggregates**
    - **i.e., GDP, consumption, employment, inflation, unemployment rate, etc…**

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)

- 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"
  - But (very) recent work provocatively suggests answer may be "yes"
    - Linkage through R&D: R&D typically thought to be a driver of long-run growth…but perhaps cyclical fluctuations in R&D themselves have consequences for "business cycles" (much more research needed here…)

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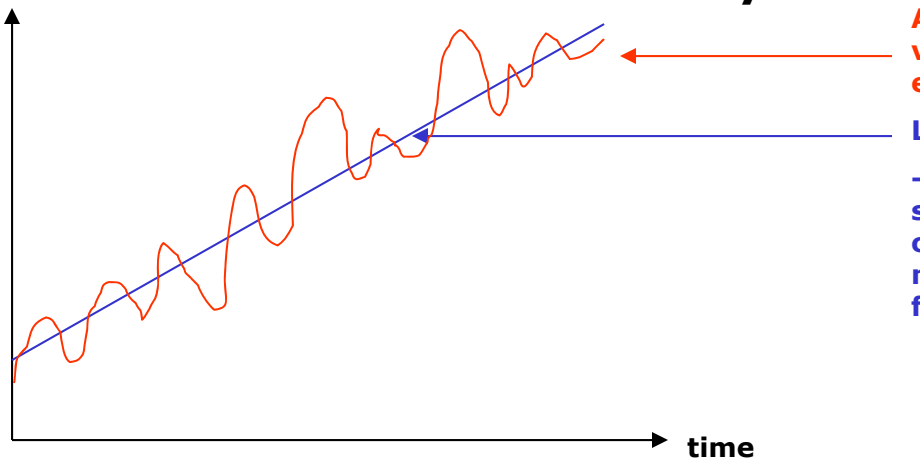

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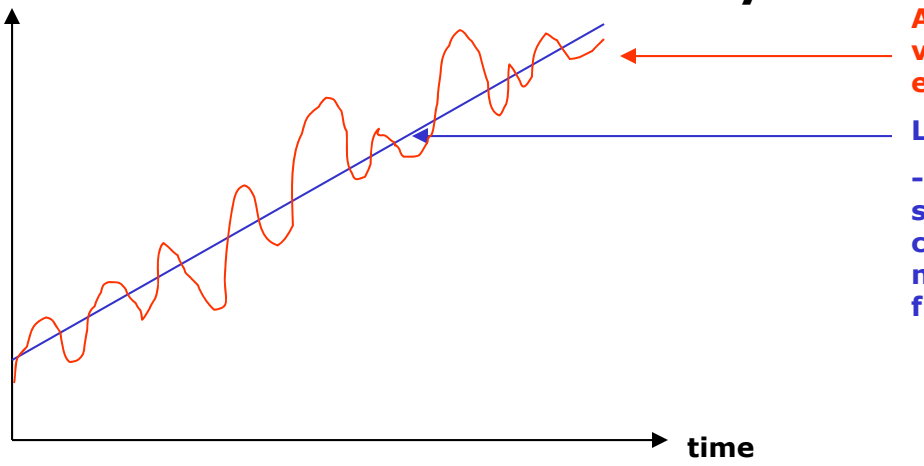
  - Conventional view has been "no"
- Under the "no" view, a separation of (sub-)fields
  - Studying the trend – "economic growth/development"
  - Studying the fluctuations – "business cycle analysis"

BUSINESS CYCLES

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



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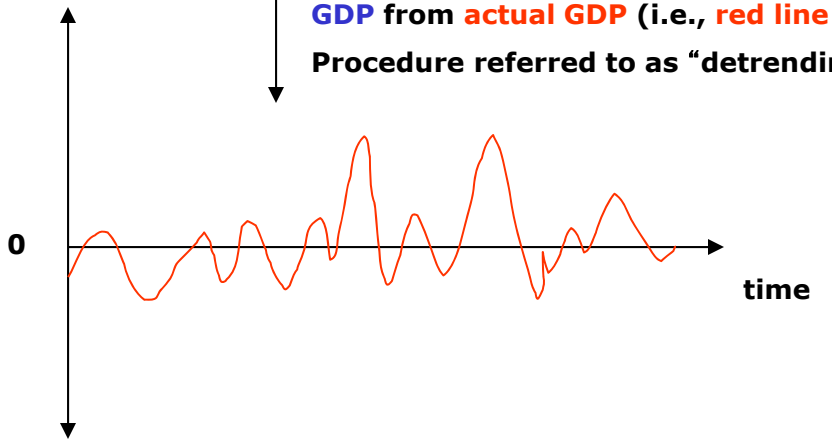
-- a linear trend very simple; but can also construct (more nuanced) nonlinear trends (i.e., HP-filtered trend)

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



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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  - **First systematic accounting of the co-movement of various aggregates**
    - **i.e., GDP, consumption, employment, inflation, unemployment rate, etc…**
- **How to "model" (i.e., conceptually/rigorously/mathematically think about) business cycles?**
  - **Phase II: The large-scale macroeconometric models**

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

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

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

$$\vdots$$

It's all about estimating the alphas…

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

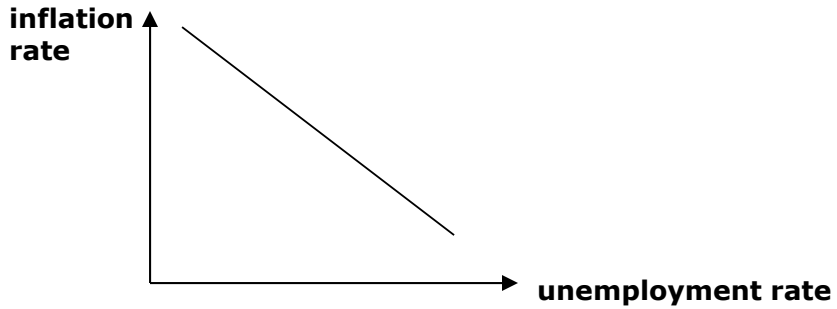
Dozens or hundreds of variables and equations, some of which describe how policy affects the economy

Say x_3 and x_{13} are policy variables

- **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**

THE PHILLIPS CURVE

- A seemingly stable, predictable relationship between an economy's inflation rate and 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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Say x_3 and x_{13} are policy variables

- Became widely used for policy-making…

THE FALL OF MACROECONOMICS

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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**
  - **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…**

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

- **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
  - 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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      - **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**

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** $\text{output}_t = A_t f(k_t, n_t) = A_t k_t^{\alpha} n_t^{1-\alpha}$

EXAMPLE

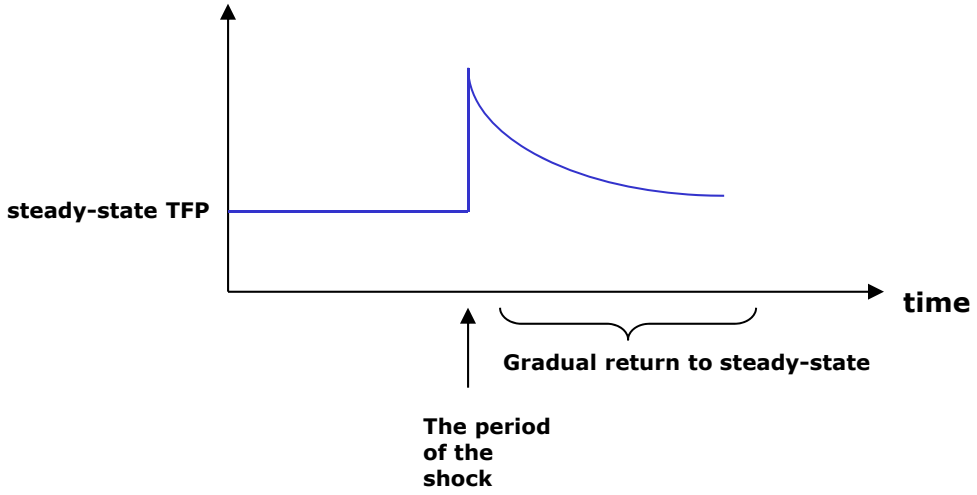
Suppose alpha = 0.5 for simplicity

(U.S. economy: alpha ≈ 0.40)

Period	Output	Capital	Labor	TFP	
2006	12.0	16	9	1.0	
2007	14.4	16	9	1.2	Productivity improved between 2006 and 2007
2008	19.2	16	16	1.2	Productivity stagnated between 2007 and 2008
2009	17.6	16	16	1.1	Productivity declined between 2008 and 2009

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**



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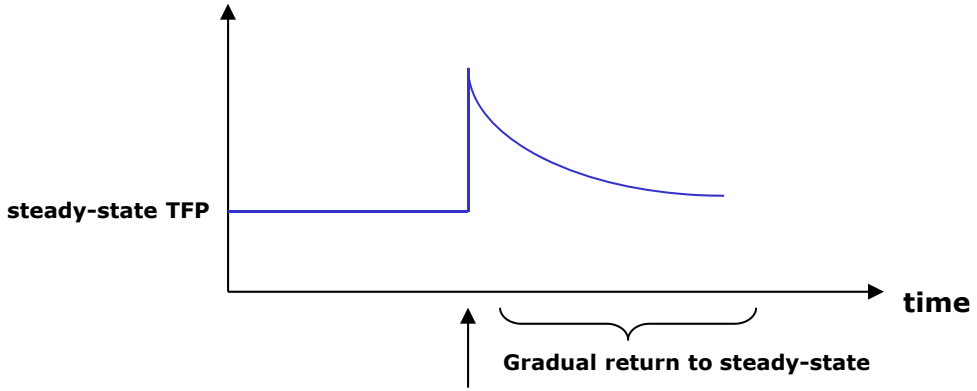

Detrended TFP series (i.e., actual TFP displays long-run growth)

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

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

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
  - **Methodology:** dynamic general equilibrium modeling

Empirical evidence still mixed on this

The enduring imprint of the RBC revolution