Business Cycles

- Synchronized periods of expansion and contraction (boom and bust)
  - Moving away from the Macroeconomic Long-run
    - If Prices don’t adjust (stuck), markets won’t clear
    - Creates an inefficiency
  - Cycles emerge from circular (regular) behavior
  - The Sine Wave

From Circles to Sine Waves
Nature is NOT Linear

From Micro to Macro

Solar System Travel through the Galaxy
Nature is NOT Linear

- Circular/cyclical patterns are EVERYwhere
  - Air temperatures over a year, and the 4 Seasons
  - Life cycle of yeast, products, human beings, etc. etc.
  - Heart beats, DNA Double Helix
  - Sunspots, Solar System Travel through the Galaxy
- Fractals (self-affine, at all scales), so why would an economy (a collection of natural beings) be any different?
  - If human action in markets is not exempt from cyclicality, are there consequences to dampening economic cycles?
    - Smoothing is not costless and likely undesirable
    - Forest fire analogy
    - The Virtues of bankruptcy

Cycles within Cycles
QTM, AD, & Business Cycles

- Using Quantity Theory of Money to derive AD curve
  - \( M \times V = P \times Y \)
  - Let, \( k = 1/V \) (velocity’s inverse) rearranging, gives
    \[ \frac{M}{P} = k \times Y \]
  - Real money balances \( M/P \) allocated between demand for money as such \([k]\), and “stuff” \([Y]\) (goods & services)
  - If we assume stable \([k]\) (or its inverse, stable “V”), then
    - @ lower Ps real money balances buy more stuff
    - @ higher Ps real money balances buy less stuff
    - That is, AD slopes down in \((Y, P)\) space

Aggregate Demand (AD)

- Changes in Price Levels \(\Rightarrow\) Changes in Qty Demanded
  - Lower Prices \(\Rightarrow\) a given qty of $ goes farther (stable V)
    - Movement ALONG the AD curve
    - Shows every combination of P & Y for a given \(M_s\)
  - Recall, \( Q_D = f(\text{Willingness,Ability}) \)
  - Changes to V or M \(\Rightarrow\) Changes in AD
    - Movement OF the AD
    - \( \uparrow k \) implies \( \downarrow \) willingness to spend
    - \( \uparrow M_s \Rightarrow \uparrow PY \) [nominal value of output]
      - Roughly analogous to an \( \uparrow \) in income \([Y]\) (i.e., \( \uparrow \) spending)
Aggregate Supply (AS)

- Slope of AS depends on time horizon
  - SR = Assumes prices are stuck ("sticky prices")
    - Implies SRAS is horizontal (i.e., $Y_{SR} = \text{insensitive to price } \Delta s$)
    - Further implication: $\Delta$ in AD met by $\Delta Y$ in short-run
      - Subtler implication: money is not neutral in SR
  - LR = Y determined by Production Function (exogenous)
    - LRAS is vertical (insensitive to price levels)
      - In LR, there is no “money illusion”
    - $\Delta AD$ met by $\Delta P$ in long-run
    - Transition from SR to LR $\Rightarrow$ AS elasticity changes
      - Counter-clockwise rotation of AS (gets steeper)

Shocks to AS

- Favorable Shocks to AS
  - Improved Technology (e.g., Internet)
  - Better specification/protection of Property & Contract (improved ability to trade and profit)
- Unfavorable Shocks to AS
  - Poor weather conditions/crop failures
  - Oil Price shock
  - Can Monetary Policy Offset Unfavorable Effects?
    - Depends if SRAS reduction is permanent or temporary
      - If permanent, LRAS shifts left, and Mon Pol $\Rightarrow$ perm. $\uparrow$Ps
Business Cycle Theories

<table>
<thead>
<tr>
<th>Theory</th>
<th>Cause</th>
<th>Recommended Cure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keynesian &amp; NeoClassicals</td>
<td>AD Shock</td>
<td>G-deficit (bust)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>G-surplus (boom)</td>
</tr>
<tr>
<td>Real Business Cycle (Prescott)</td>
<td>AS Shock (i.e., non-monetary) via innovation</td>
<td>R&amp;D stimulus, education</td>
</tr>
<tr>
<td>Austrian (Mises, Hayek)</td>
<td>Abnormally low interest rates ⇒ malinvestment</td>
<td>Allow market process to run its course</td>
</tr>
<tr>
<td>Credit/Debt Cycle (Minsky, Fisher)</td>
<td>Fluctuations in interest rates and availability of credit</td>
<td>Stable rates, constrained banking/credit sector</td>
</tr>
</tbody>
</table>

- All theories (exc. Austrian and perhaps Minsky) proceed from the idea that cycles are per se’ undesirable AND that we can & should attenuate their effects.
- Lucas (neo-classical) argues that BC welfare costs are small, and that cures are slow and ineffective. Therefore, should focus on growth instead.

Problems with Attenuation

- Lucas Critique
- Hayek’s Knowledge Problem
- “Smoothing” occurs via Monetary Policy mostly
  - Tries to match M₅ w/output ⇒ stable prices (or stable inflation, at least)
    - Useful information content in dynamic prices is clouded
  - Destabilizes interest rates
    - Making planning and temporal resource allocation more difficult
- Cycles are part of natural market dynamics
  - To every benefit, there is a cost (no free lunches)