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Questions?

- If not understanding, ask now;
- for anything else, please wait till end.
Today’s Agenda

- The economy and markets are complex interactive systems, that
  - Exhibit cyclic behavior over time, due to their inherently self-correcting nature.
  - Contain considerable noise that often obscures the underlying cycles.
  - Are intractable, with millions of interactions, defying most modeling efforts.
  - Can become tractable if one focuses on RLS and lead/lag component behavior.

- All observed cycles are composites (aggregates) of multitudes of sub-cycles, a wide variety of which will be explored.
  - How they sum depends largely on their relative lead/lag behavior.
  - Converting raw data to ROC format removes most noise, allowing the underlying cycles to be observed, plus providing an alternate for conventional correlation which does not work with cyclic time-based data.
  - Long time frames are required to correctly visualize overall cyclic behavior, most of which reflect the overall business/economic/recession cycle.
  - The stock market does not follow a simplistic sine wave, nor do its components rotate uniformly as suggested in the literature.

- Learning to recognize, understand, and respond appropriately to cycles is essential to successful trading.
From Ellis, *Ahead of the Curve*
Uneven Labor Market Tightens Up in Some Sectors

Steady job growth is forcing employers in some sectors to raise wages to compete for scarce workers. There are pockets of tightening, but the effect is uneven. Some low-wage sectors, such as accommodation and retail, are seeing earnings growth decelerate.

Change from a year earlier in private employment (■) and average hourly earnings (→), three-month averages, seasonally adjusted.

Source: Labor Department

Andrew Van Dam/THE WALL STREET JOURNAL.
Some Cycle Types

- Business
- Financial / profitability / credit / productivity
- Technological / capital turnover rate
- Stock market
- Economic
- Sentiment / preferences / fads / media cycle / memory
- Cultural / generational
- Super cycles (e.g. Kondratieff)
Profitability Cycle

- National income: Corporate profits before tax (without IVA and CCAdj)
- Corporate Profits After Tax (without IVA and CCAdj)
- Corporate Profits After Tax with Inventory Valuation Adjustment (IVA) and Capital Consumption Adjustment (CCAdj)
Need to Filter Noise

Many cycles disappear into noise band
Feature Count

Alternate for correlation with cyclic data
Real GDP

3 MA Y/Y % Q Change

0 2 4 5 7 8 9 10 11 13 14 16 17 18 19 20

Recessions vs. Slowdowns in Real GDP

[from www.aheadofthecurve-thebook.com, Figure 4-1]
Positive correlation
(Moving in same direction)

Negative correlation
(Moving in opposite directions)
What can individuals hope to accomplish?

➢ **First: cut losses to minimum**
  - Primary focus should be on minimizing impact of major bear markets (biggest bang-for-buck)
  - Next should come major corrections
  - Minor corrections tend to be a crap shoot (fool’s errand for individuals)

➢ **Second: let winners run**
  - Let trend analysis be your guide, rather than reaching arbitrary price points.
... hope to accomplish

- **Third**: short term volatility usually hurts
  - Period and amplitude usually too small to be profitable
  - Individual investor not equipped to play computer games
  - Those who believe it to be possible simply do not understand statistics or random systems

- **Fourth**: in the long run, we are all dead! Focus on
  - making hay while the sun shines,
  - Sharply controlling losses,
  - the long term will take care of itself.
Handling Noise
Chaos (Randomness) References

- **Hidden Order**: How Adaptation Builds Complexity
  - By John H. Holland

- **How Nature Works**: The Science of Self-Organized Criticality
  - By Per Bak

- **The (Mis)Behavior of Markets**: A Fractal View of Risk, Ruin, and Reward
  - By Benoit Mandelbrot and Richard L. Hudson

- **Ubiquity**: Why Catastrophes Happen
  - By Mark Buchanan

- **The Origins of Order**: Self-Organization and Selection in Evolution
  - By Stuart A. Kauffman
The Flaw of Averages
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