

Renmin University of China

School of Finance



Bubble or Burst

An Exercise in Forecasting

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Preliminary Remarks



- **"I hold that that man is in the right who is most in league with the future." Henrik Ibsen (1828-1906)**
- **"We live in a moment of history where change is so speeded up that we begin to see the present only when it is already disappearing." Ronald Laing (1927-1989)**
- **"The trouble with our times is that the future is not what it used to be." Paul Valery (1871-1945)**
- **"Life must be lived forwards, But can only be understood backwards." Søren Kierkegaard (1813-1855)**
- **"Research is to see what everybody else has seen, and to think what nobody else has thought." Albert Szent-Gyorgyi (1893-1886)**
- **"We are continually faced with a series of great opportunities brilliantly disguised as insoluble problems." John Gardner (1912-2002)**

Today's Agenda



- **Why is prediction so difficult?**
- **A short course in Uncertainty, Complexity, and Reality**
- **Lay down your First Principles - >95% confidence**
- **Make your Basic Assumptions - >80% confidence**
- **Gather Data and Analysis and Models**
- **Develop your own Scenario**

Prediction Difficulties



- The "Real World" is Complex AND Non-linear (9/11)
- Any model of the "Real World" must be highly dimensional
- The "Real World" is a times series with many lags
- Much behavior is to mitigate known future difficulties (y2k)
- The Scientific Method doesn't apply for two basic reasons:
 - controlling experiments is impossible (it's too complex)
 - repeating experiments is impossible (events don't repeat)
 - Reductionist approach impossible (subject is fractal)
- We really don't know much, not even which is trend or cycle!

Uncertainty, Complexity, and Reality



- **Uncertainty: (Enlightenment, 1927, Lorentz)**
- **Complexity: (Dimensionality, Recursion, Chaos)**
- **Reality:**
 - **Cycles appear where momentum causes excesses**
 - **Life-cycles occur where new things go to extinction**
 - **Trends appear often because a linear fit is so easy**

First Principles



- **No one can reliably predict the future in any detail.**
- **There will be good times and bad in the 21st Century.**
- **China's spectacular growth will come to an end.**
- **Chinese adapt to any adversity, no matter how severe.**
- **Time reduces uncertainty of events, monotonically.**
- **Economics goes in cycles, but not very neatly!**
- **Lau Tze shows the Way!**

Basic Assumptions



➤ Political and Social

- WTO will proceed for next 10 years
- China will not be in war nor uprising
- Inequality will become a top issue

➤ Monetary and Fiscal

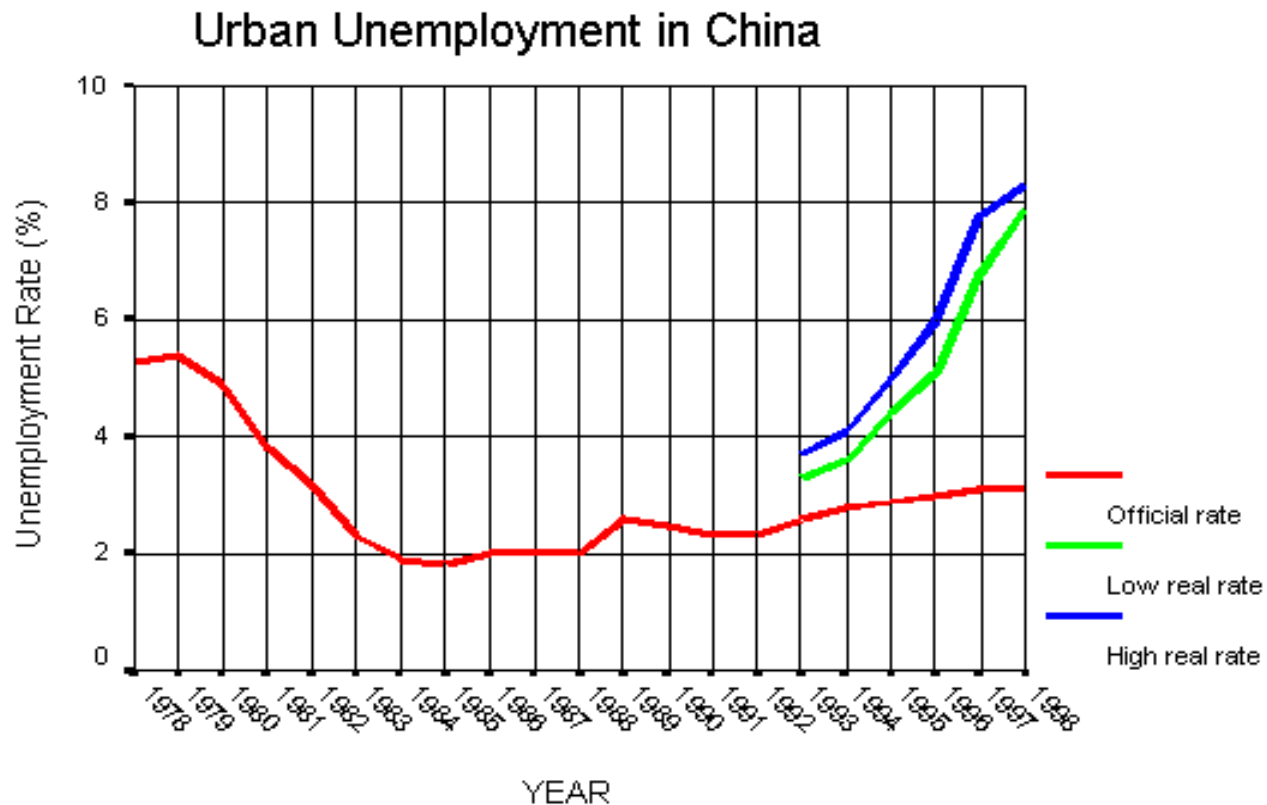
- RMB will remain around its current exchange level
- Chinese saving rate will continue high
- Bad debt problem will be resolved

➤ Economic

- China's dependency on exports will increase
- WTO will increase competitive pressures
- Growth will subside and expose weaknesses

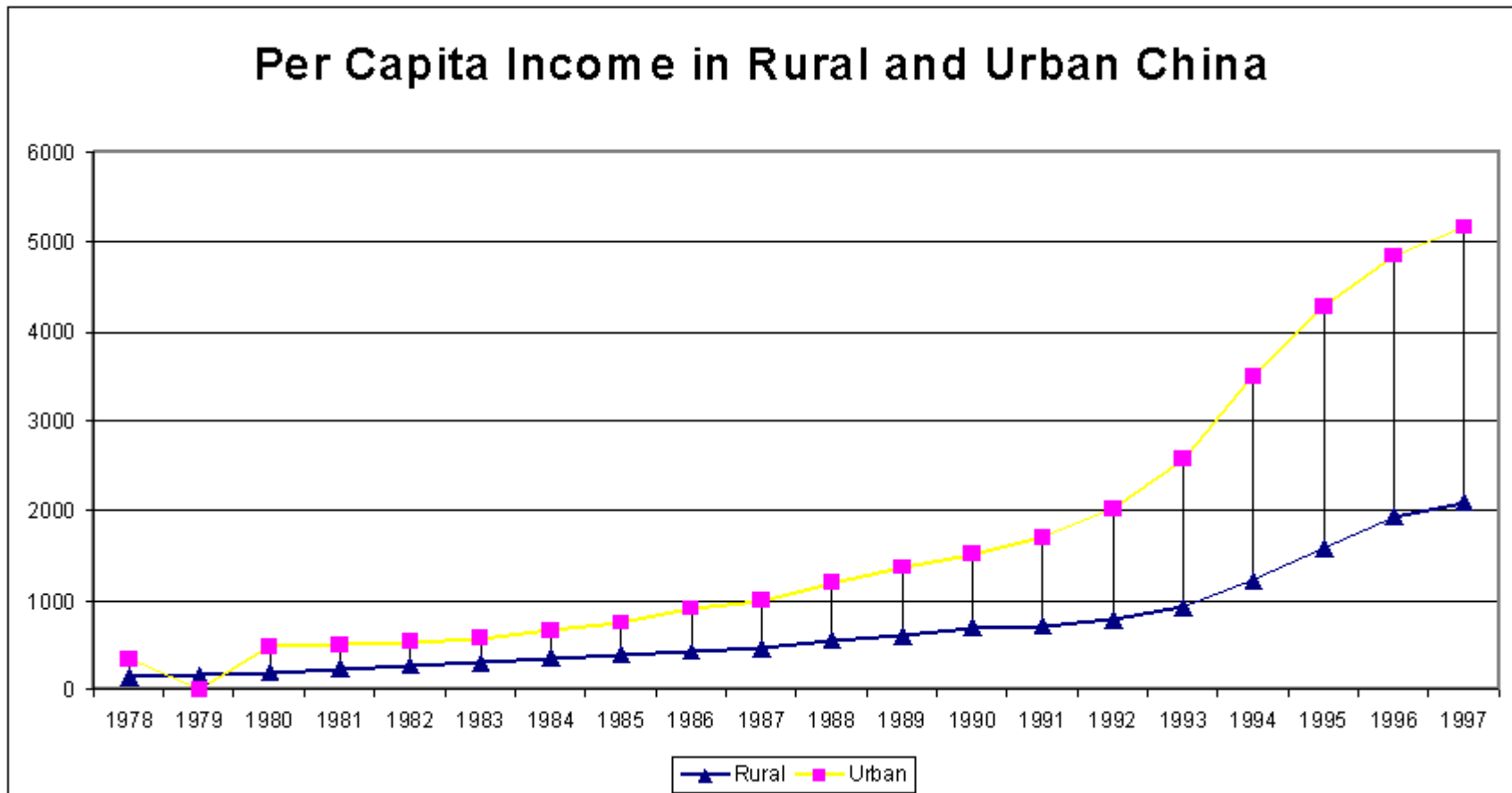
Data and Analysis and Models

➤ Data – Urban Unemployment increasing to 8% (1998)



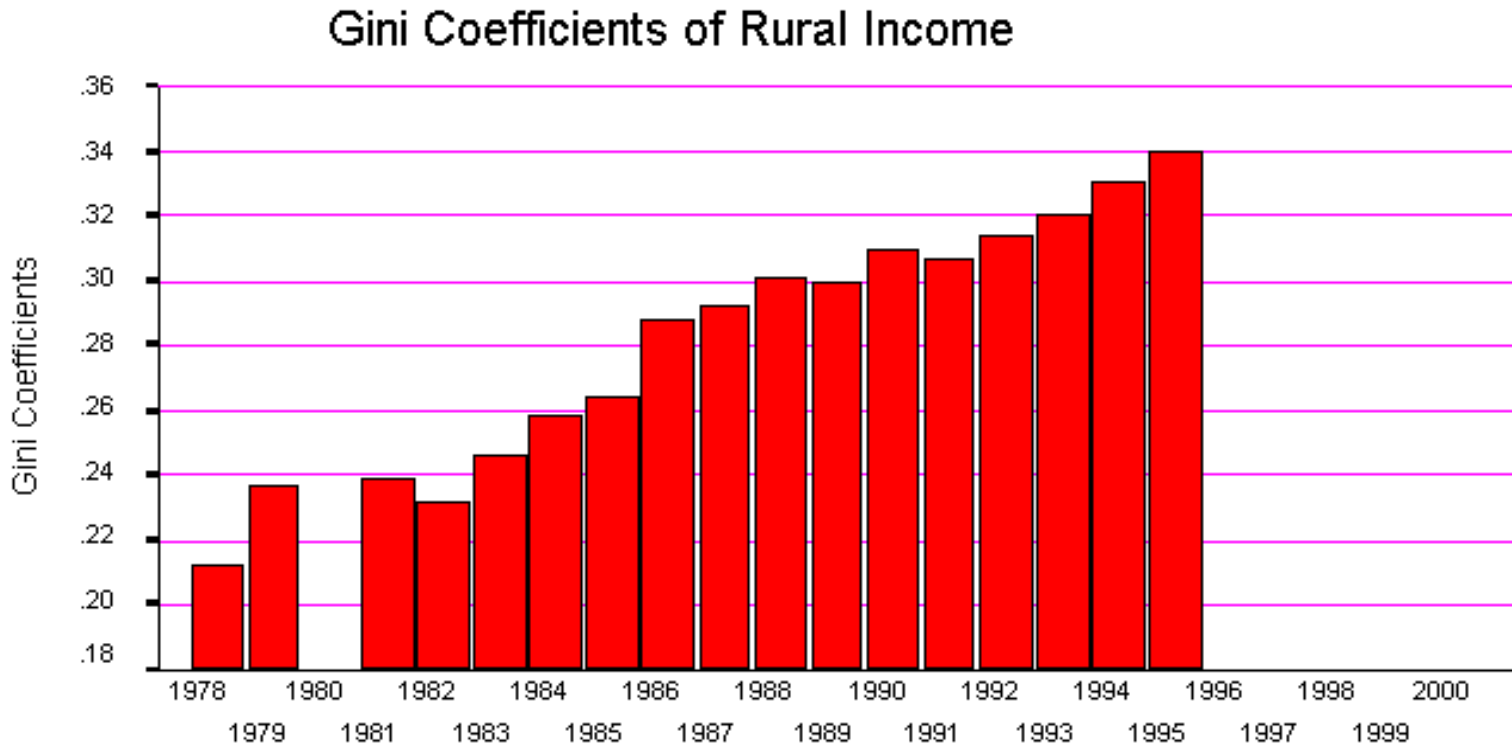
Data and Analysis and Models

➤ Data – Per capita income in RMB growing (1997)



Data and Analysis and Models

➤ Data – Urban Rural Income Disparity Increasing (1996)

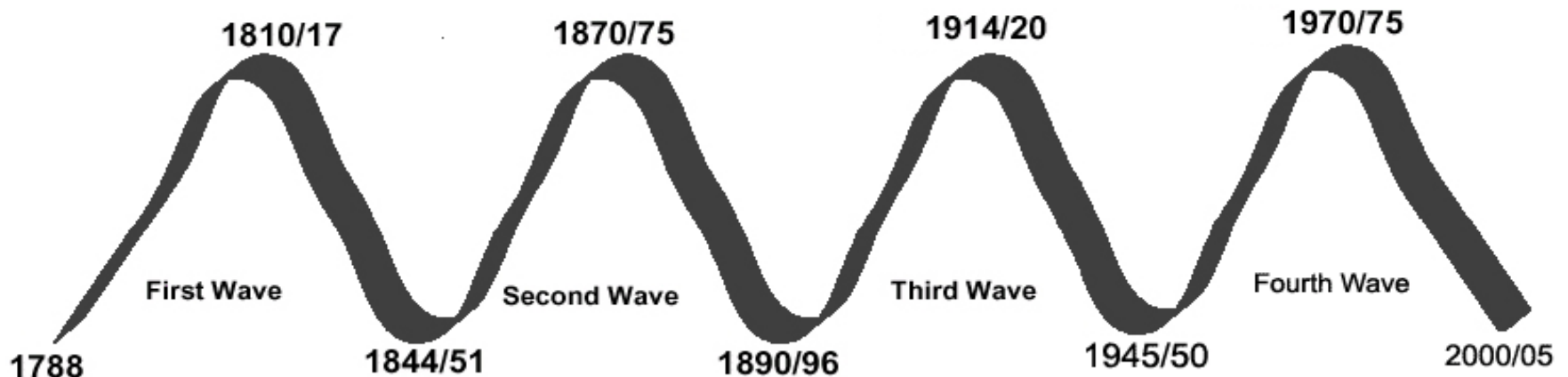


$$Gini = \frac{1}{2 n^2 \bar{y}} \sum_{i=1}^n \sum_{j=1}^n |y_i - y_j|$$

Data and Analysis and Models

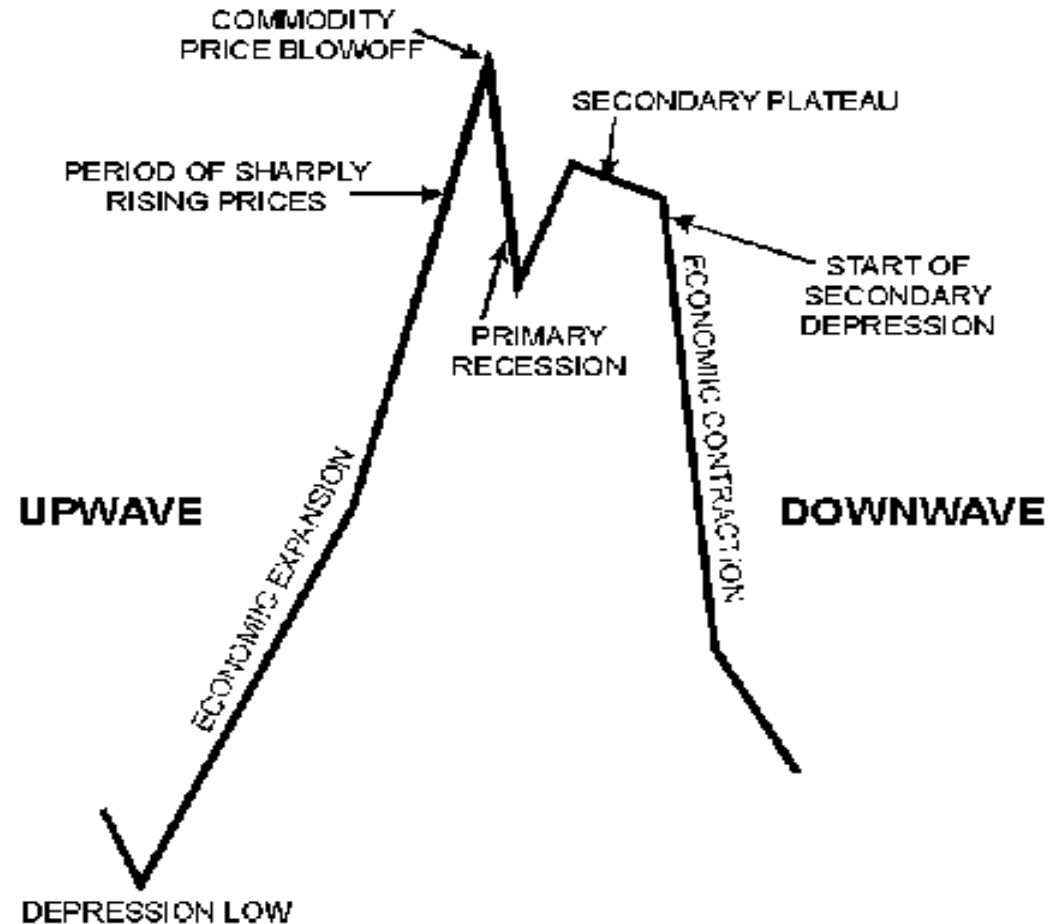
➤ Model – Kondratieff Long Wave Economic Model

Kondratieff's Long Wave Cycles



Data and Analysis and Models

IDEALIZED KONDRATIEFF WAVE



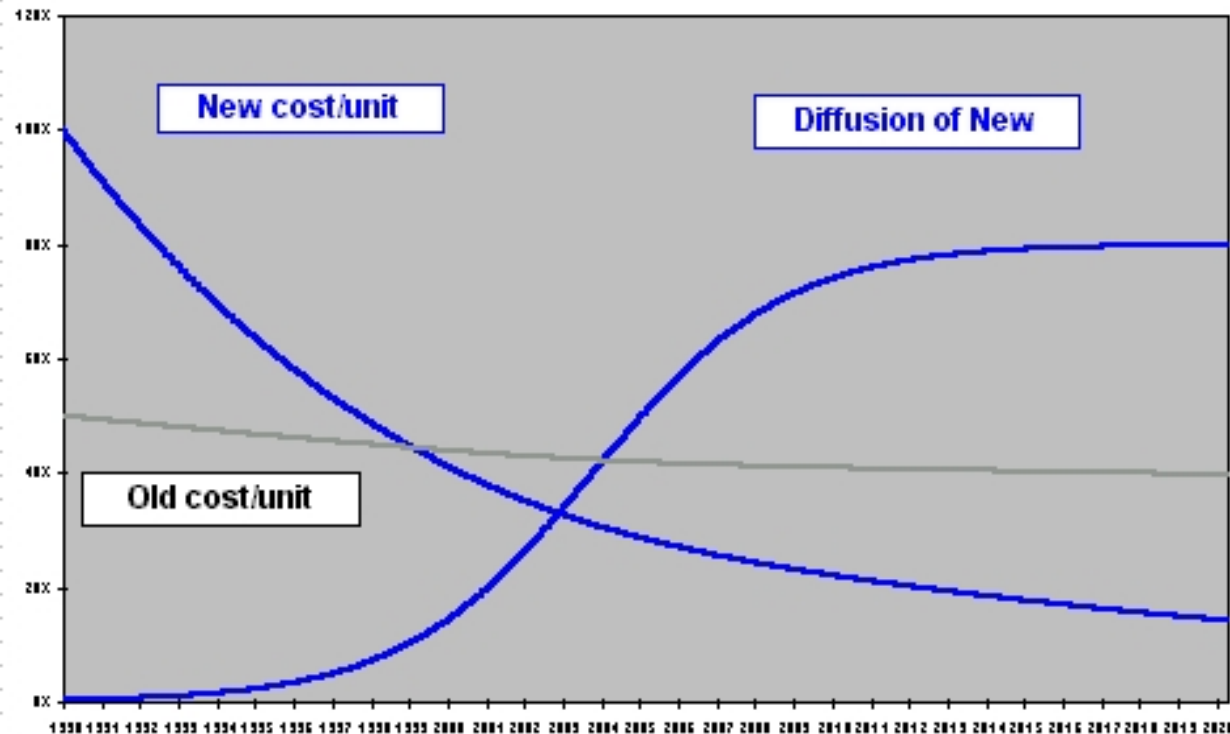
➤ **Where
are we
now?**

Data and Analysis and Models

- **Economic Expansion – the best of times (1950-1970)**
 - Investment begins, unemployment drops
 - Goods and services availability increases
 - Wages rise, buyers abundant, but prices do not rise
 - Money becomes plentiful, employment full, prices rise!
- **Plateau – (1970-1985)**
 - Products abundant, but buyers are not
 - Capacity increases, supply excessive, prices drop
 - Stock & bonds rise, costs drop, performance flattens
- **Economic Contraction – (1985-2005)**
 - Employment begins long and sustained contraction
 - Mergers & Acquisitions fuel growth, corporate debt increases
 - Investment contracts, ends with debt repudiation (defaults and crash)

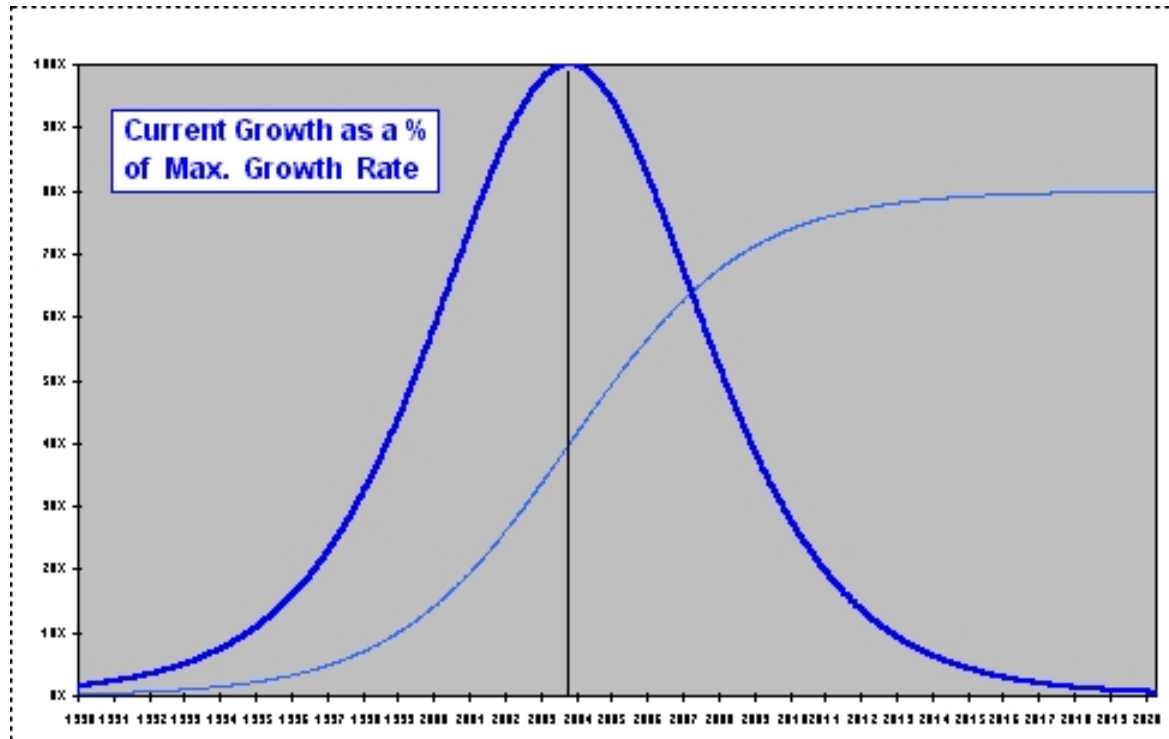
Data and Analysis and Models

- **Model – Fisher-Pry For Life Cycles (diffusion)**
 - **Where is Real-Estate Building in the Life Cycle?**



Data and Analysis and Models

➤ Model – Fisher-Pry For Life Cycles (diffusion)



Data and Analysis and Models

➤ Model – Fisher-Pry For Life Cycles (math)

$$\ln \left[\frac{f}{(1-f)} \right] = 2\alpha (t - t_0)$$

Where:

t = time, measured from the 50% instant of diffusion

f = the % of diffusion having already occurred at time t

α = 1/2 the duration from 10% diffusion to 90%

One Scenario



- **Beijing will do OK with WTO because every company operating in China will have a Beijing Representative Office.**
- **Beijing City Government will promote ChaoYang and Haidian Build-up for the Olympics and “Silicon Valley”**
- **Beijing citizens will do much better than elsewhere as the Central Government gets bigger**
- **Rural unemployment will create an abundance of construction labor that will build a large supply of housing**
- **Right now, much vacancy is hidden, and it is growing**
- **Supply will exceed demand in housing causing a burst in the Real Estate Bubble.**

Our Homework



- **If we could get the following data we could make a good prediction:**
 - **The building history (Beijing new housing is a diffusion case)**
 - **The true pricing and vacancy figures**
- **Test critical points early and often, use contingencies, and act prudently.**
- **Don't think of action as an event, but rather as a process**

Concluding Remarks



- Questions and Answers
- Thank you, again.

You can find a copy of this lecture (320 KB) on the Internet at:

<http://cha4cn.com/renda>