Investing in Complex Systems – Regulated Infrastructure

ACCC / AER Regulatory Conference 2013

Presentation by Dr Ross Barry, First Principles

26 July 2013

Question 1

Which of the following factors <u>contributed</u> to the 2008 Global Financial Crisis?

A. The Thatcher-Reagan era (1980's) of sweeping deregulation /economic rationalism

B. The Clinton Administration's policy goal (1990's) for every American to own their own home

C. The Fed's decision in 1998 to rescue Wall St banks from the collapse of LTCM

D. Introduction by David Li in 2001 of *Gaussian copula models*

Financial crises are highly path-dependent … history matters!

Question 2

Which of the following has the potential to materially impact markets?

A. The behaviour of authorities?

B. The behaviour of crowds?

C. The behaviour of networks?

It is our (adaptive) responses that elevates human socio-economic evolution to more than just natural selection

Question 3

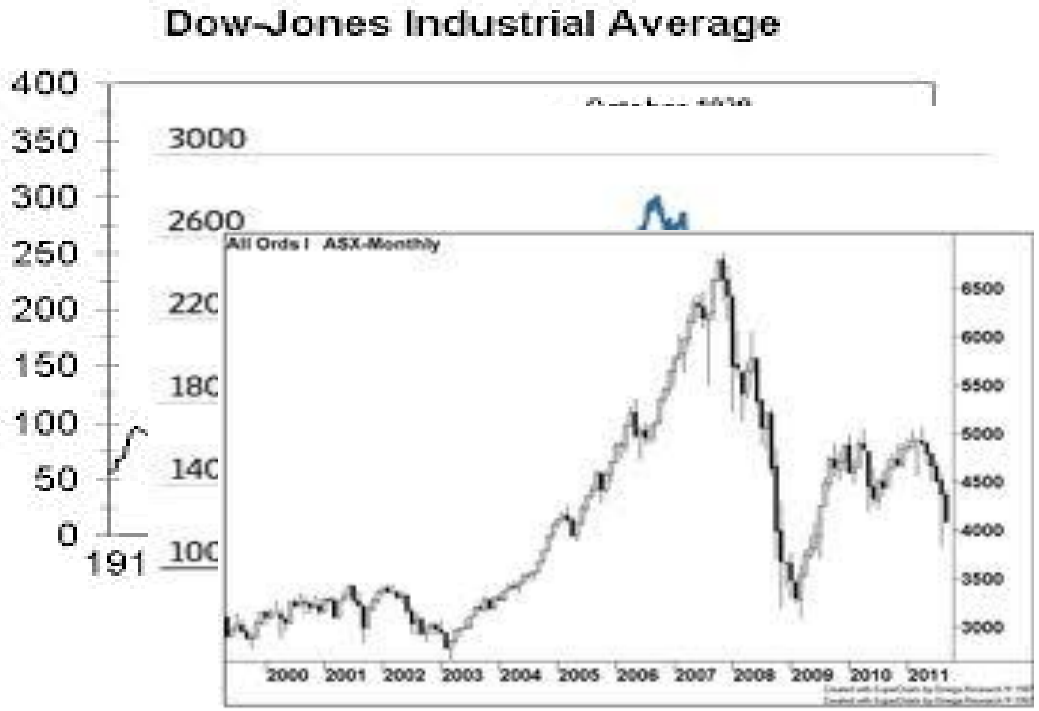
Which of the following do you observe in this pattern of share market prices?

A. Steady State

B. Speculative State

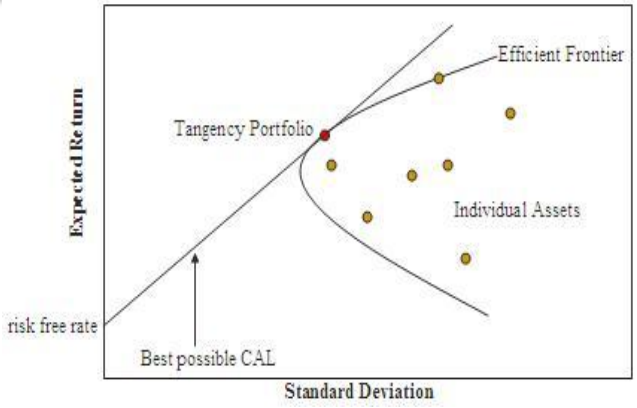
C. A Critical State of Instability

D. A Fallout & Restoration Stage



Asset prices are not stationary … they demonstrate a (recurring) build up of latent energy into a *critical state of instability*

The problem with the CAPM



- CAPM models of all forms …
  1. Make no reference to history
  2. Ignore the adaptive responses of human beings – authorities, networks & crowds
  3. Treat markets as stationary or time-invariant
- They do not even have real empirical support … beta is not rewarded!
- CAPM models characterize events and the inherent volatility of a system as normal "disturbances" around some mechanistic state of order or *equilibrium.*

Advocates fiddle with model specifications and key assumptions rather than acknowledge the model itself is an abstraction.

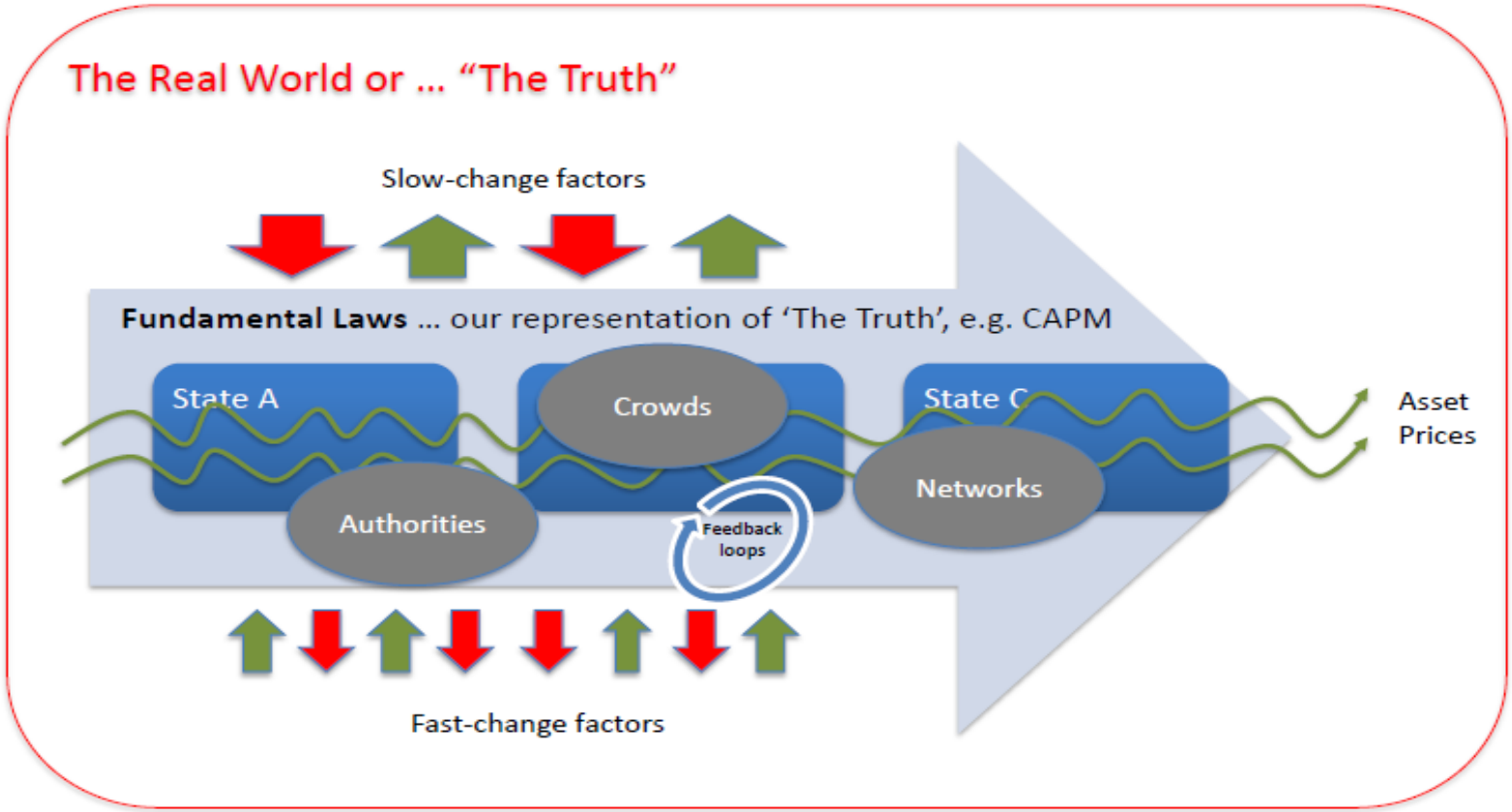
Complexity theory

Real world systems are …

1. Largely unpredictable and emergent
2. Highly granular with great connectivity between their many component parts
3. Path-dependent with “lock-in” effects from key events and “change factors”
4. Often dormant for some time and then suddenly become highly charged, leading to crises, which are …
5. Highly disproportionate to the size of the shock that (seem to) cause them.

Systems as large and as complex as the earth’s ecosystem, the stock market or a state’s electricity network can break down not only under the force of a mighty blow, but also at the drop of a pin.

A broader framework



Identifying and assessing the "right" fast- and slow-change variables may be key to regulatory review processes.

So what are investors looking for?

Allocation & Objectives

1. Portfolio allocations of 5-10% – strong home bias

2. Bias to “core assets” – regulated assets and/or natural monopolies acquired with long investment horizons (buy-and-hold)

3. Target ca.10% p.a. net of fees with low economic risk and correlation to listed equity markets – will accept lower returns for lower-risk assets

Key constraints:

A. Illiquidity – need to manage fund/option switching

B. A (global) scarcity of high quality assets available at attractive prices

Key challenges and complexities

Complexity 1. Risk is largely endogenous

- the primary risk is the regulator itself
- significant premiums to RAB and “gold-plating”
- asset owners gaming the system

Complexity 2. Regulatory risk is non-linear

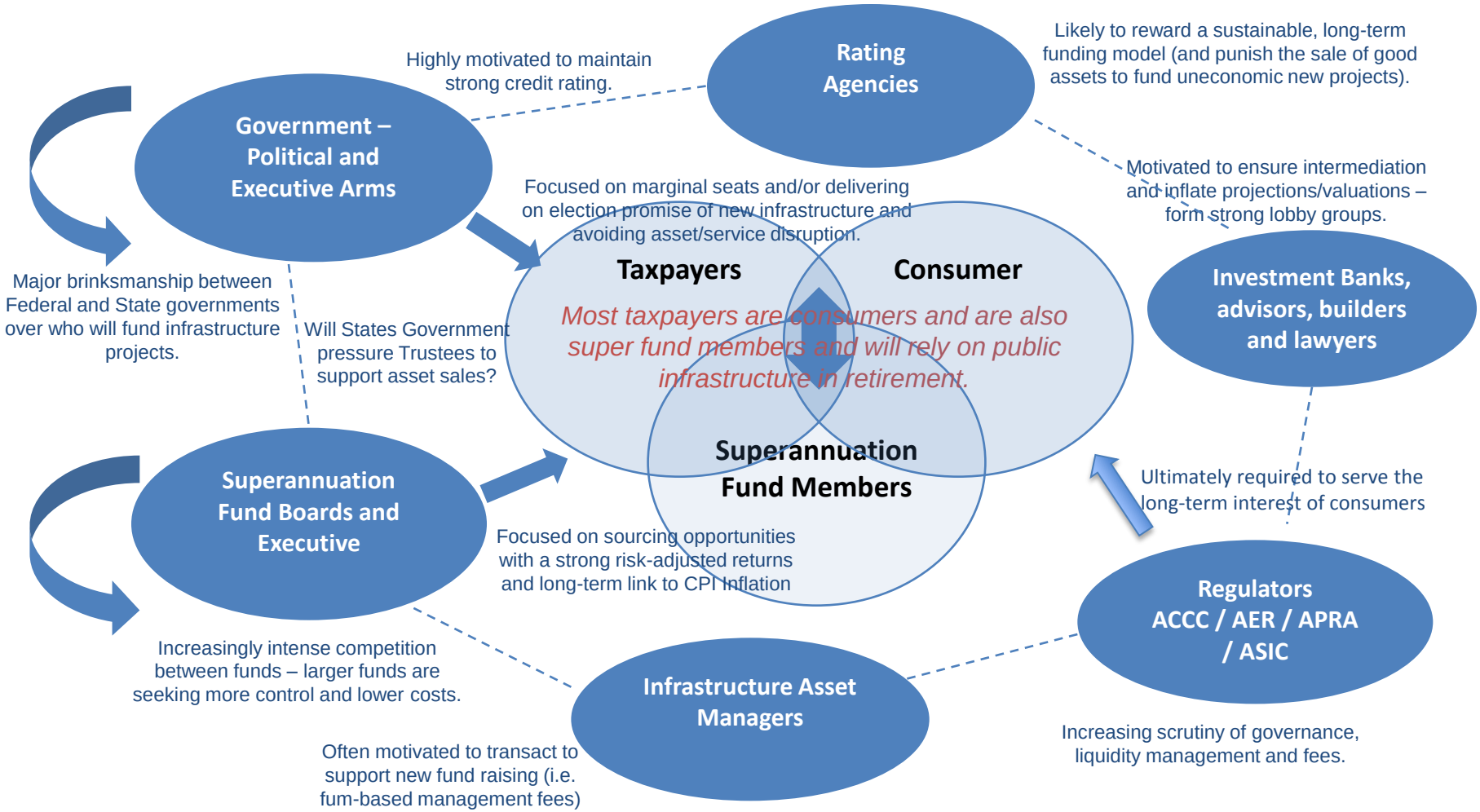
- inevitably shifts in favour of consumers
- inflexion points of price and demand elasticity

Complexity 3. Perverse competition for assets

- Intermediation and agency risks
- Foreign investors
- Unsuccessful bid costs

Asset are always acquired by the investor most willing to discount risk and take on the highest level of debt … poised for crisis.

Towards a solution … finding alignment



Area for future research … risk buffers

- Lower longer-term "baseline" regulatory settings based on long-term consumer interest
- Additional revenues or capital 'reserve' set aside based on a higher shadow WACC
  - to co-fund new capex;
  - to support asset owners in the event of distress; or
  - write off (effectively return to consumers)

  AER may develop broad-based market/consumer review processes to support
- Lower baseline regulatory risk and 'remedies' address endogenous risk and non-linearity and reduce scope for gaming (consistent with CAPM, i.e. lower beta)
- Scope to share unused reserves over time with asset owners for 'good behaviour'

Area for future research … a “social contract”

- Collaboration between asset owners, government and regulators
- Formation of a large pooled superannuation fund (open to all funds)
- Mutually agreed objectives – risk and return + social and fiscal sustainability
- Direct access to government pipeline of asset sales and new projects avoids agency risk, over-pricing and financial engineering
- Government co-investment may give an effective Federal-State co-funding model

Recognizes consumers are also taxpayers and superannuation fund members