

Resilience – what is it, do you have it, and do you even want it?

Farming for the Future

Carterton Events Centre, Carterton

8 March 2016

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Overview

1. Lesson from Taleb:

- Resilience is passé
- Alternative proposed based on *fragility and anti-fragility*

2. Lessons from the dairy industry

- Three examples of activities with unintended consequences of fragilisation
- Can farm systems be anti-fragile ?

Fragility and anti-fragility has the potential to substantially enhance the way we think about farm systems





Part 1: *Philosophical bit*

Lessons from Taleb - #1 - risk

- **Status quo: Better risk management leads to more ‘resilient systems’**
 - Risks assumed to be distributed normally so are predictable, so can be priced, so can be managed
 - Risk management is like insurance – it protects against ‘bad stuff’
- **Taleb taught us not to be ‘fooled by randomness’**
 - On closer inspection, many phenomena aren’t normally distributed after all
 - Thanks to non-normality, extreme events happen, and much more often than you expect yet still not predictable
 - Extreme events or ‘black swans’ ‘just are’; and can be either good or bad
- **Fundamentally different way to think about risk**



Lessons from Taleb - #2 - **systems**

'Fragile' and 'anti-fragile' systems

- What does it mean to be fragile?
- What is the antonym of 'fragile'?
- What does it mean to be 'anti-fragile'?
- What's a better label for 'resilience'?



Rethinking 'risk' as 'exogenous shocks' that impact systems

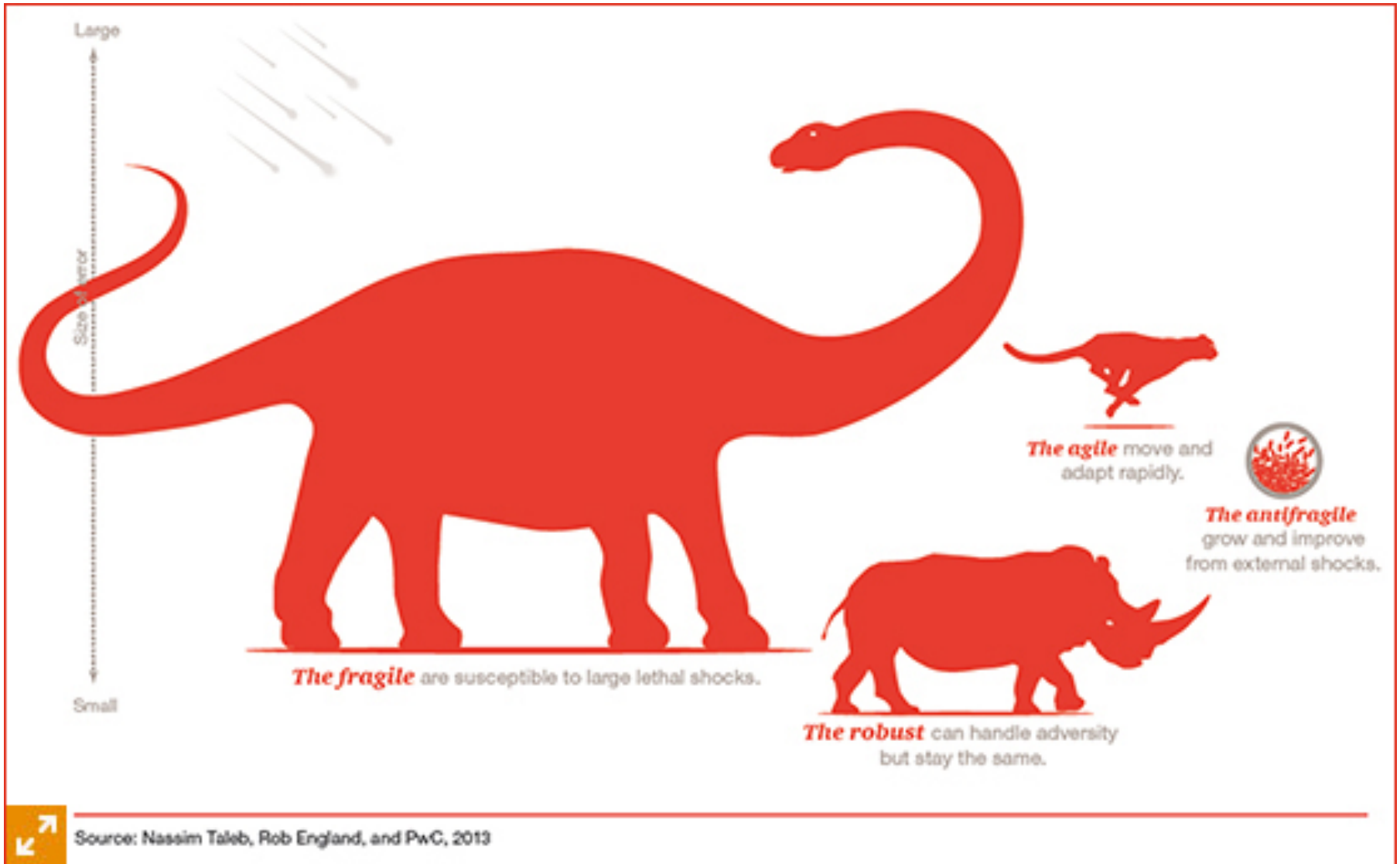
Fragile



Anti-Fragile



Organisational typology





Part 2: *Farm systems bit*

Dairy Industry as a case study in industry induced fragility

- **Production:** up ~65% since 2000
 - Intensive growth (bought in feed)
 - Extensive growth (expansion into non-traditional areas – typically with irrigation)
 - Bigger farms (esp. SI)
- **Debt fuelled:** up ~400% since 2000
 - One-thirds/two-thirds story
- **Cost structures:** low would be \$4 kgMS, but lots with costs upwards of \$6 and downwardly sticky



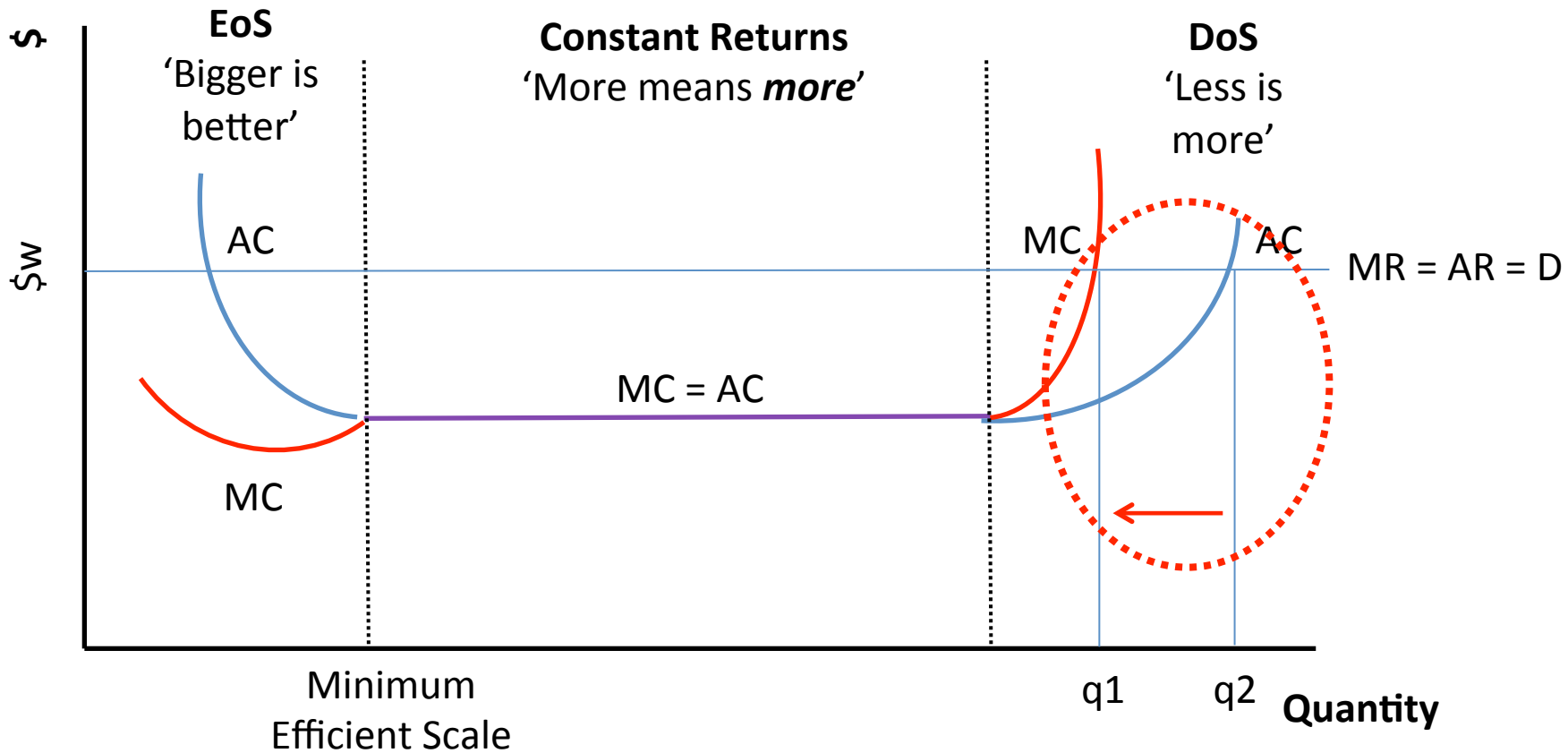
*I suspect this is
going to end
badly...*

Three examples of fragilisation

1. Chasing production via intensive and extensive growth yet failing to distinguish between average costs and marginal costs
2. Increasing fixed costs:
 - Debt fuelled Ponzi scheme in land prices
 - Sticky cost structures – especially in extensive dairy
3. Counterproductive decision making – e.g. Irrigation for ‘drought proofing’

Average costs v. Marginal costs

Scale economies and diseconomies



Chasing production given diminishing marginal returns

- Sold 290 tickets but 302 seat capacity
- So sell 12 more
- **But:** What if you sell 13 more tickets?
- Need another plane
- *So production past a 'tipping point' fragilises the system*



Fixed costs and sticky cost structure

- Irrigation means you can put cows in non-traditional dairy areas
- But irrigation now a fixed cost – not optional
- And shoulder periods need bought in feed
- Add debt servicing
- *Inflexible cost structures fragilise a system*



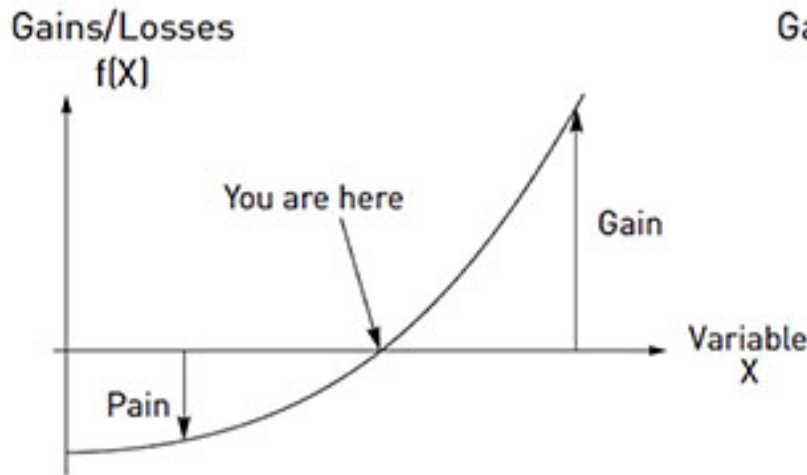
Drought proofing

- Water storage is like insurance – provides ‘cover’ when you need it – like in a drought
- But increases your cost structure – i.e. Need ~\$10 kgMS to make Ruataniwha water work
- *So ‘managing’ one source of variability merely exposes you to another – so fragilises the system*

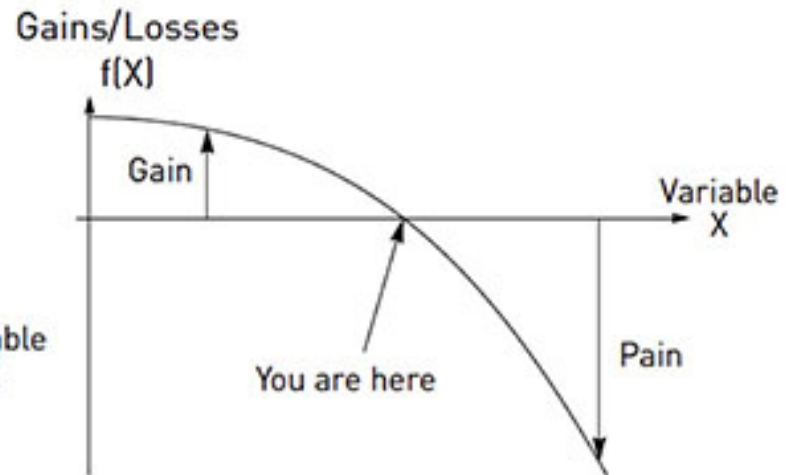


Can farm systems be anti-fragile?

- How are you placed regarding positive and negative shocks?



Positive asymmetric payoff
(antifragile)
anything that has more
upside than downside from
random events (variability)



Negative asymmetric payoff
(fragile)
anything that has more
downside than upside from
random events (variability)

Summary

- Fragility measures how a system responds to up and down side risk.
- Critically, as illustrated by the dairy examples, ill conceived actions can fragilise a system – even if the intention was the opposite
- Sometimes it's not what you do, but what you don't do that matters – basically avoiding activities that fragilise
- Challenge is to design farm systems that are exposed to positive shocks but largely ensue negative ones



Questions?