

Fires, Floods and Financial Meltdowns Black Swan Events and Property Asset Management

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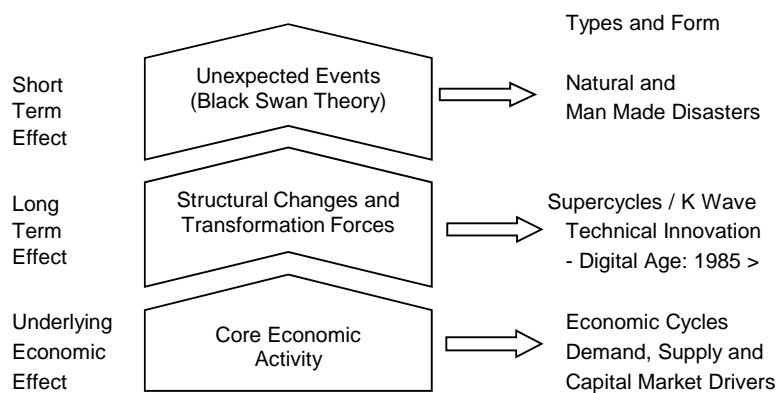
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Property Research

Can decision makers adapt to a world of “Black Swans” the seemingly improbable but highly consequential surprises that turn our familiar way of thinking upside down. Source: Posner 2010

Modelling the Economic Environment



Mispricing of Real Estate

Importantly, property pricing models depends on the quality of information available and the information processing undertaken.

For comparison evidence based valuation techniques this is particularly difficult for major commercial properties (for example, regional shopping centres etc) as transactions can be limited and there is scarce details covered by limited disclosure requirements.

Deconstructing the pooled risks can be difficult and new information can often polarises opinions.

In behavioral theory, there is a tendency to overestimate the probability of events vivid in our minds, than those as a distinct memory.

Source: Glaeser and Sunstein 2013

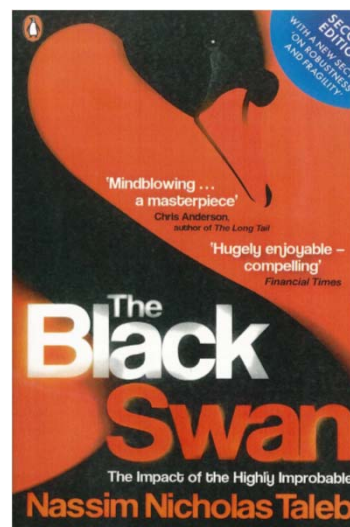
Black Swan Theory

The term “Black Swan Event” was developed by Taleb (2007). It describes for an event which is a surprise (to the observer) and has a major impact.

These events have the following three key attributes:

- Outlier, being outside the realm of regular expectations
- Carries an extreme impact
- Explanations for the occurrence are concocted after the fact, making it explainable and predictable.

Source: Taleb 2009



Black Swan Events: Types and Forms

Type	Form	Recent Examples	Impact	Category of Risk
Volcanic Activity	SA	Iceland (2010)	Local, Global (ash)	Environmental
Earthquake	SA	Christchurch, NZ (2011)	Local	Human / Physical
"	SA	Japanese Tsunami (2011)	Local	Human / Physical
Hurricane/ Cyclone	WR	Katrina, New Orleans (2005)	Local	Human / Physical
Famine	WR	Sudan and Ethiopia Famine (1998 +)	Local to National	Human
Floods	WR	Pakistan (2010)	Local to National	Human
Pandemic	IV	Haiti Cholera Outbreak (2010)	Local	Human
"	IV	AIDS (1981+)	Global	Human
"	IV	Bird Flu , Asia (2008+)	National to Global	Human
"	IV	SARS, Hong Kong (2002)	National to Global	Human

Key
SA= Seismic Activity, WR=Weather Related,
IV= Infectious Virus, MM= Man Made Disaster

Black Swan Events: Types and Forms

Type	Form	Recent Examples	Impact	Category of Risk
Investment Strategies	MM	Mortgaged Backed Securities, USA (2008)	Global	Financial
Investment Strategies	MM	Long Term Capital Management (1998)	Global	Financial
Political	MM	Arab Spring Uprising (2010)	National	Human
Religious	MM	Wars/ Terrorism Afghanistan (2002+)	National to Global	Human
Technical	MM	Gulf of Mexico, Oil Rig Failure, BP (2010)	Local	Human / Environmental
Technical	MM	Chernobyl, Nuclear Disaster (1986)	Local to National	Human / Environmental
Technology	MM	Internet Bubble (2000-03)	Global	Financial
Computer	MM	Cyber Attack, Estonia (2007)	National to Global	Financial

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Black Swan Events Framework

In defining Black Swan categories:

Known Known events

- relevant information can be sourced for decision making purposes

Unknown Unknown events

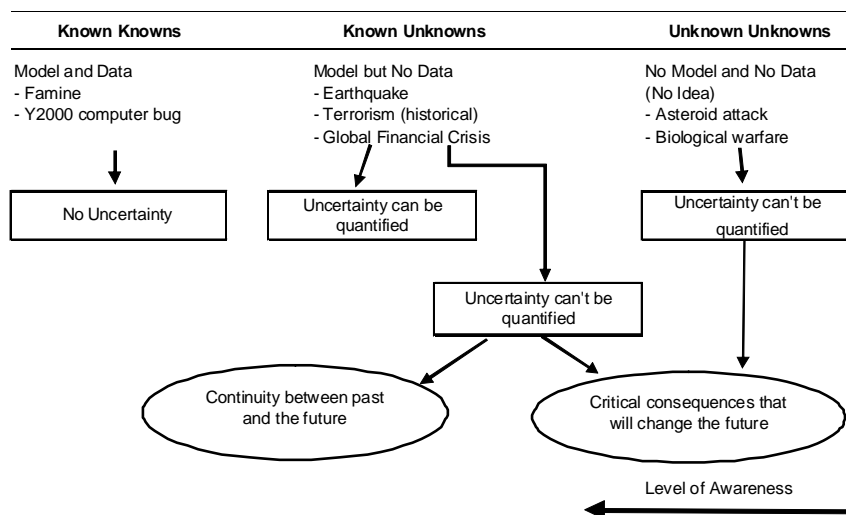
- difficult to even identify and therefore quantify

Known Unknown events

- where there is known information although there needs to be a development of probability theory as past events may be random and vary in magnitude

Source: Evans 2012

Black Swan Events Framework



Adapted: Casti 2011, Makridakis *et al* 2009

Black Swan Events: Known/Unknown

For Property Asset Managers, the impact of Black Swan Events can be twofold :

- specific location (for example, earthquakes, hurricanes) which can damage the physical building
- economic loss for the space occupier, as operational risk (for example, global financial crisis, cyber attacks) may spread across several unrelated locations at different timelines

The unpredictability of these Black Swan Events can have major ongoing implications and on the classical Gaussian bell curve produce the concerning “fat tail” distribution, where outlier risks - extreme events occur

Source: Posner 2010, Tableb 2009

Black Swan Predictions

In mapping locational risks, primary data for each type of Black Swan Event can be sourced and modelled, although this would be expensive and impracticable for specific research.

Peduzzi *et al* (2009) study covers the design of a Disaster Risk Index for the United Nations Development Programme.

Based on EM-DAT data, the index is focused on:

- Drought
- Earthquakes
- Tropical cyclones
- Floods

As 75% of the world's population lives in areas that have been affected by at least one of those events, which account for 94% of reported casualties for the 1980-2006 period.

Next Step

- Measuring Property Risk by Location

Linking in with Macquarie University research on the pricing of natural hazard risks for the insurance industry.

- Property and Extreme Financial Risk

Measuring extreme risk which is beyond traditional (standard deviation) risk management practices, being too narrow and constraining a definition.

- Quality of Forecasts During Periods of Uncertainty

Examine the accuracy of economic forecasts during different market conditions.

THE END

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