Advanced Risk Analysis: Managing Key Risks

a Case Study: Asciano

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February 2019

The context for action

- Firms must move beyond qualitative risk assessment.
- CFOs and boards need to understand the potential monetary magnitude of their key risks individually and in combination (i.e. as a **portfolio**).
- Once this combined magnitude is understood it will serve as basis for **capital planning** and **risk prioritisation**.

The practical challenges firms face

- **Challenge 1:**

  Firm's key risks are **interdependent**: they can be correlated so that they may occur at the same time or their **magnitude** may be **amplified** if they occur at the same time as other key risk occurs Therefore, we need to model them as a **portfolio of risks** and understand the sensitivity of that portfolio to the underlying key risk drivers and correlations.

- **Challenge 2:**

  The monetary magnitude of risks varies with **required strength of resilience/confidence level**. The monetary magnitude increases with the required strength of resilience/confidence level. **How can firms link the required resilience level to target credit rating or internal risk appetite?**

A solution to the challenges

- A **Monte Carlo simulation approach** will solve both challenges simultaneously.
- **Monte Carlo simulation** produces a large number of scenarios for each key risk event and their combinations with other key risk events (i.e. correlated scenarios), i.e. a monetary amount for risk at the required **resilience/contingency/probability level** is produced.

The benefits of Monte Carlo simulation

- This serves as the key basis for firms to **understand the trade-off** between the value of risk mitigation and required capital for their risk profile.
- Greater understanding where firm may be in jeopardy through quantification all **key risks simultaneously** as a firm can be affected by many risks at once.
- Proper risk responses & prioritisation of risk mitigating actions accordingly can be devised when risks are evaluated simultaneously.
- Best suited for for **scenario analysis** where no or little historical data exists and forward looking analysis is required.

A Case Study: Asciano

Was Australia's largest national rail freight and cargo port operator.

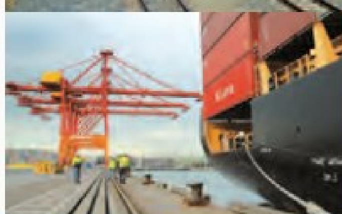
Melbourne-based; ASX-listed; split-up and sold in 2016

Pacific National Coal ("PN Coal")

Is the second largest coal rail haulage provider in Australia, moving export coal from mine to port and domestic coal from mine to power stations and steelworks primarily in New South Wales and Queensland. Pacific National Coal also hauls coal by rail in South Australia servicing the local power industry. *Detailed overview and review of operating performance at page 20*

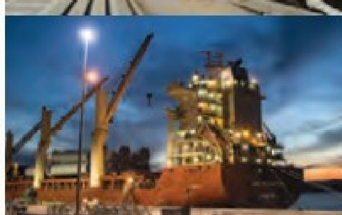
Pacific National Rail ("PN Rail")

Provides intermodal rail services and bulk haulage rail services (excluding coal) throughout Australia. The intermodal business includes interstate container freight, interstate break bulk freight (steel), regional freight rail services in Queensland and hook and pull services for passenger trains. *Detailed overview and review of operating performance at page 20*



Terminals & Logistics

Is one of two major competitors in the Australian market providing container stevedoring services in the four largest container ports in Australia; East Swanson Dock in Melbourne, Port Botany in Sydney, Fisherman Islands in Brisbane and Fremantle in Western Australia. The division also provides an integrated logistics service establishing the interface between the shipping lines and the beneficial freight owner. *Detailed overview and review of operating performance at page 28*



Bulk & Automotive Port Services ("BAPS")

Specialises in the management of bulk ports and supporting infrastructure and the provision of port related logistics at over 40 sites across Australia and New Zealand. It also operates an integrated service for the transportation, processing and storage of motor vehicles from the port to the beneficial freight owner. *Detailed overview and review of operating performance at page 32*

Moody's view in 2015

- "The combination of Asciano's coal **commodity exposure**, headwinds to top-line revenue growth and moderately high financial leverage constrain the rating at the Baa2 level".
- "Asciano's coal mining counterparties are facing challenging operating conditions as a result of **low coal prices**. Whilst Moody's expects mine owners to stand behind the take-or-pay obligations of **Asciano's mine counterparties** in the hypothetical event of the latter's **failure**, such a scenario remains untested."
- The rating could experience downward pressure if the company experiences **sustained erosion in its revenues and earnings** or material unforeseen costs such that gross adjusted Debt to EBITDA increases above 4x, and/or EBIT to Interest trends below 1.5x on a sustained basis.

High volatility of Australian coal prices

Key business risks across divisions

Key Business Risks

Asciano's four reporting divisions are exposed to specific business risks. These specific risks are detailed on pages 21, 29 and 33. There are also a number of risks and challenges that Asciano as a whole faces in achieving its overall business objective. Asciano's overarching key business risks include:

People and safety

- Injury to employees, contractors and other third parties
- Industrial relations activity that impacts the Company's ability to meet its contractual and customer expectations
- Attraction and retention of key senior management and operational staff

Customer

- Increased competition that results in the loss of major customers, including government legislated changes to competition levels
- Counterparty risk

Global markets

- Exposure to volatility in commodity flows and domestic and global economic cycles
- Ability to access financial markets when required at a competitive cost of capital

Changes in government policy, investment decisions and regulation

- Infrastructure capacity constraints and disruptions caused by the failure to invest in critical infrastructure to meet the requirements of the market place
- Changes in the Australian Accounting Standards and the Income Tax Assessment Act that could have a material impact on the Company's financial statements in future periods

Operational risk

- Infrastructure capacity constraints and disruptions caused by the failure of critical IT platforms and support
- Performance and reputation issues
- Disruption or loss of critical supply inputs including security breaches of IT platforms
- Integration risks associated with acquisitions and business restructures including the impact on customer service levels

Environment

- Climate change risk
- Environmental regulation compliance risk. The Company's approach to environmental regulation is set out in the Corporate Governance Statement in the Directors' report and is available on our website

Asciano seeks to mitigate its risks through the effective management of and engagement with its key stakeholder base; an ongoing focus on its cost base and productivity improvements; and ensuring that it has effective systems and procedures in place to manage the business on a day-to-day basis and address the strategic issues and challenges that may impact the business over the medium term.

These risks are identified to assist investors in understanding the nature of the risks faced by Asciano and the industries in which it operates.

The Company's risk management approach is set out in detail in the Corporate Governance Statement in the Directors' report.

Risks and their impact on Asciano

- Operational risks
- People &safety
- Customers
- Investment decisions
- Global markets
- Government policy

DIRECT financial consequences

- direct financial loss
- increase in cost
- decrease in earnings

Reputational consequences

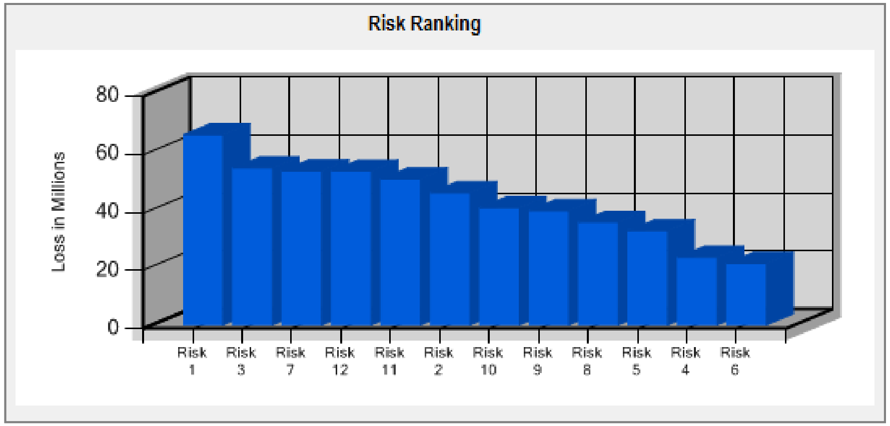
- customer defection

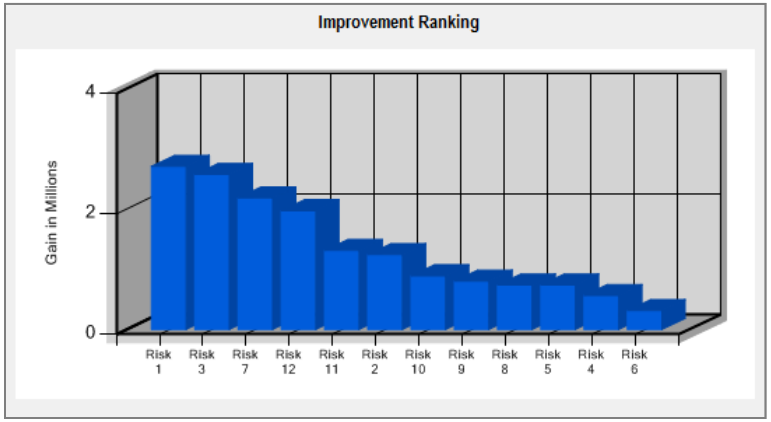
INDIRECT, further consequences

- decrease in rating
- decrease in share price
- governmental interference

Evaluating the key risks

Risk 1	Industrial relations activity and its financial impacts
Risk 2	Injury to employees, contractors and other third parties
Risk 3	Increased competition that results in the loss of major customers
Risk 4	Counterparty risk
Risk 5	Exposure to volatility in commodity flows
Risk 6	Ability to access financial markets when required at a competitive cost of capital
Risk 7	Changes in the Australian Accounting Standards and the Income Tax Assessment Act
Risk 8	Infrastructure capacity constraints and disruptions caused by the failure of critical IT platforms and support
Risk 9	Performance and reputation issues
Risk 10	Disruption or loss of critical supply inputs including security breaches of IT platforms
Risk 11	Integration risks associated with acquisitions and business restructures including the impact on customer service levels
Risk 12	Environmental regulation compliance risk





Monte Carlo simulation: Results

Total capital required for all key risks modelled **simultaneously**

Diversification benefit i.e. portfolio effect

Total capital required for all key risks if not modelled through Monte Carlo i.e. **individually**

The monetary magnitude of risks at various contingency levels

Capital Requirements in Aggregate at 99.50% C.L.

Total Capital Required	267,884,285
Diversification Benefit	243,327,773
Total Capital w/o Div.Ben.	511,212,058

	Description	99.5%-tile	95%-tile	90%-tile	75%-tile	50%-tile
Risk 1	Industrial relations activi...	65,218,703	18,701,745	9,881,075	0	0
Risk 2	Injury to employees, con...	45,361,731	29,917,766	25,406,962	18,951,537	13,880,758
Risk 3	Increased competition t...	53,765,954	0	0	0	0
Risk 4	Counterparty risk	23,138,921	1,594,407	0	0	0
Risk 5	Exposure to volatility in ...	32,289,699	25,119,628	22,859,643	19,391,013	16,117,472
Risk 6	Ability to access financi...	21,071,918	0	0	0	0
Risk 7	Changes in the Australia...	52,876,802	13,996,739	0	0	0
Risk 8	Infrastructure capacity c...	35,218,734	17,324,723	0	0	0
Risk 9	Performance and reputa...	39,242,721	21,174,415	14,993,836	0	0
Risk 10	Disruption or loss of criti...	40,181,065	10,003,814	5,006,843	0	0
Risk 11	Integration risks associa...	50,078,029	28,098,269	12,962,187	0	0
Risk 12	Environmental regulatio...	52,767,777	4,877,541	0	0	0
Aggre...		267,884,285	128,964,713	94,591,454	56,969,942	37,600,520

Capital required:
at **99.5% (i.e. 1 in 200)** contingency or confidence level

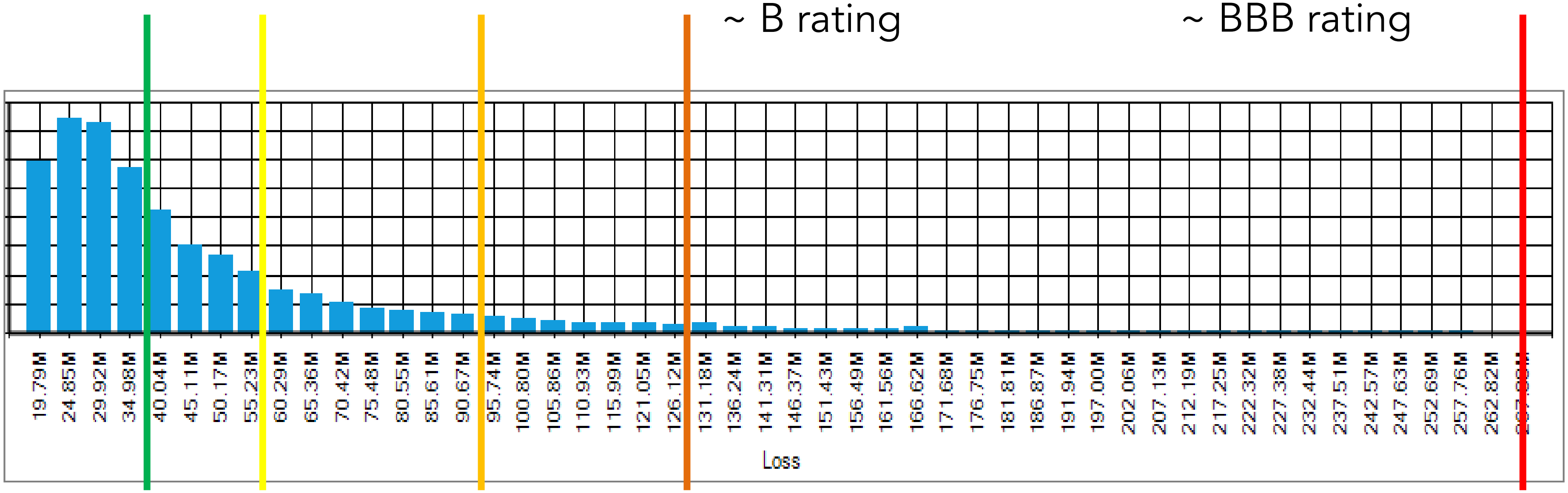
	Description	1 in 200 Capital in m
Risk 1	Industrial relations activity and its financial impacts	65.22
Risk 7	Changes in the Australian Accounting Standards and the In	55.20
Risk 3	Increased competition that results in the loss of major cust	53.58
Risk 12	Environmental regulation compliance risk	52.65
Risk 11	Integration risks associated with acquisitions and business	50.43
Risk 2	Injury to employees, contractors and other third parties	46.30
Risk 10	Disruption or loss of critical supply inputs including securit	39.27
Risk 9	Performance and reputation issues	39.21
Risk 8	Infrastructure capacity constraints and disruptions caused	34.52
Risk 5	Exposure to volatility in commodity flows	32.10
Risk 4	Counterparty risk	23.97
Risk 6	Ability to access financial markets when required at a com	19.97
	Aggregate	512.43

Link to external / target credit rating

The monetary magnitude of risks varies with required strength of contingency level – this is also the link to the Company's risk rating – demonstrated at the example of Earnings at Risk (EaR).

EaR - Loss of 128m
~ B rating

EaR - Loss of 268m
~ BBB rating



50% tile

75% tile

90% tile

95% tile
i.e. 1 in 20 yrs

99.5% tile
i.e.1 in 200 yrs

"Asciano currently has a split credit rating, Moody's rating is Baa2 (Stable) and Standard & Poor's (S&P) rating is BBB- (Positive Outlook). S&P has determined that for Asciano to move to BBB rating it must be sustainably reporting stable earnings"

Impact of risks on earnings

Risk impact on expected earnings and dividends: Earnings-at-risk at various contingency levels

contingency level impact of key risks			90% level impact	95% level – Impact	99.5% level – Impact
	2013	2014	2015 f	2015 f	2015 f
Earnings at Risk (m)			95m	129m	268m
EBIT (m)	686	720	625m	591m	452m
Dividend (cps)	11.5	14.25	12.37	11.70	8.95

Observed benefits

- Based on few user defined inputs – easy to use.
- Estimated the notional capital requirement.
- Compared risk profiles across the business.
- Identified the main drivers of the risk profile.
- Prioritised risk mitigating actions.
- Allocating capital amongst the risk drivers.
- Used what-if analyses to
  - determine sensitivities of the main drivers,
  - decide where to invest in e.g. controls,
  - calculate whether proposed investments in systems and controls are cost effective.
- Optimised the insurance programme within target risk profile

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