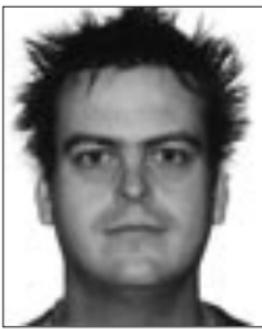


External risk: Making sense of economic noise

There is much effort put into measuring risk, but there is no foolproof methodology. Andrew Stacey suggests that risk, like an ecosystem, can be viewed as an interrelated chain of events.



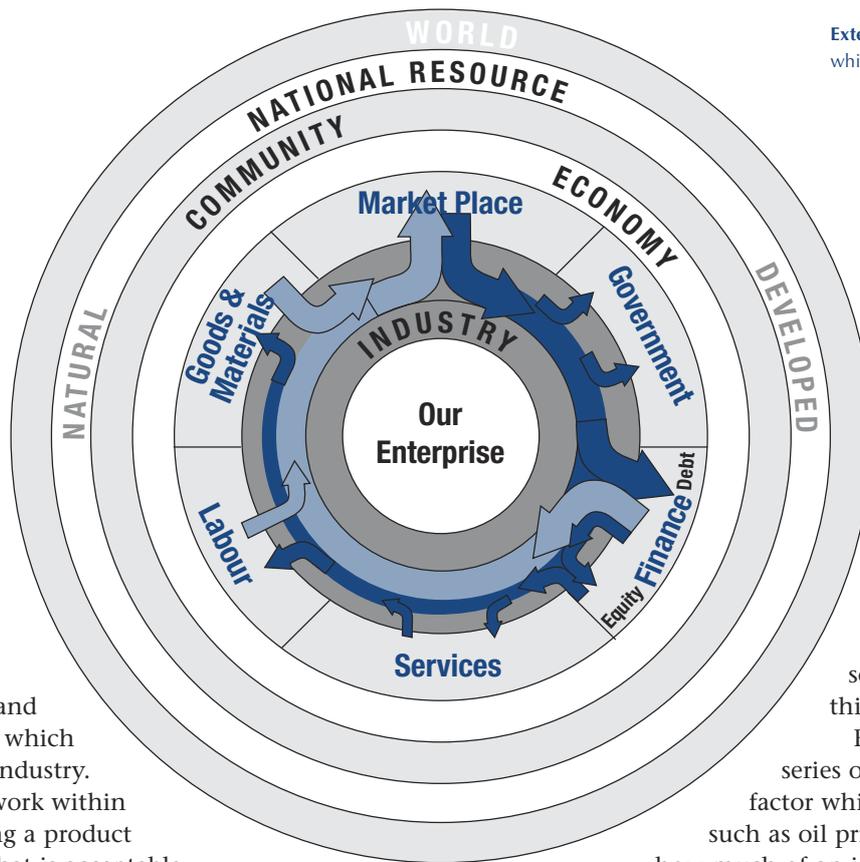
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The economy functions like an ecosystem, with each of its elements interacting in a symbiotic way. Therefore, if one of its elements, such as oil, deviates by rising in value to US\$70 a barrel, other elements will be affected. In this case, the price of petrol goes up at the service station bowser, therefore causing inflationary pressures which push up the price of consumer goods. The Reserve Bank puts up interest rates by 25 basis points to rein in these inflationary pressures. Everyone feels the pinch. Everyone knows this is bad for the economy, but how can this be effect be measured?

By quantifying these external risk factors, we can identify how much those factors affect an industry. But how do we quantify the economic noise that affects an industry, and the companies which operate within this industry? How does measuring external risk help enable banks to meet the operational risk requirement of Basel II compliance?

WHAT IS EXTERNAL INDUSTRY RISK?

Industries are subject to external forces. That is, besides interacting with each other within their own industry, companies must deal with other upstream industries, that



External risk: the economic noise which surrounds an industry.

provide raw materials, and downstream industries, that provide markets. They must purchase labour, raise finance and work within government regulations and legal requirements, all of which are factors outside their industry. Beyond this, they must work within the community, providing a product that is desired in a way that is acceptable, and ultimately this is all part of the world economy. Measuring the impact of these forces on an industry is how we determine what external risk is.

MEASURING EXTERNAL RISK

One method we can use to measure external risk on an industry is by monitoring the fluctuations of an input over time.

Typically, absolute levels of data items such as exchange rates, commodity prices and indices such as employment rates are used by such a model. Commodity volumes, consumption levels, GDP values, and so on are entered into the model as percentage changes. In cases where the data may affect industries differently by absolute or relative changes, the data is entered in both forms and may be selected separately as sensitivity items. The risk rating of these factors can be calculated using an historical and forecast series of the change in the sensitivity's behaviour. By convention, over the relevant time period, the highest data observation (or growth rate) is assigned a risk score of 1.0. The lowest observation is assigned a risk score of 9.0. This helps with quantifying the data in the model. By weighting each external risk factor accordingly, we can come up with an external risk score between 1.0 (low risk) and 9.0 (high risk) which shows the level of an industry's external risk.

The example in the table demonstrates how external risk can be measured using the methodology explained above. The data shows fluctuations in the crude oil price (\$US/ barrel). The lowest observation in the series data is for 1999, which sets the risk rating for that year to 9.0. The highest

observation for the series is the 1998 figure, which sets the risk score for that year to 1.0. All other prices are scored appropriately within this range.

By taking a 10-year time series of data of an external factor which impacts an industry, such as oil prices, we can determine how much of an impact these factors have on an industry by measuring their fluctuations over time. A high oil price will have a positive impact on an industry such as petroleum mining, as a high price means revenues are greater, and this reduces the level of external industry risk. On the other hand a high oil price for an industry such as truck transportation, where oil is an input, will have the opposite effect, as it increases running costs. In this instance, the external risk rating score is inverted so that the score of 1.0 (low risk) become a 9.0 (high risk). This ensures the external risk score is reflective of the industry. By viewing each key external factor which impacts an industry in this way and weighting their influence accordingly, we can determine external industry risk levels. **■**

	Data (\$US/barrel)		External risk rating score 9-8* ((obs-min)/(max-min))
1998	17.61	min (data)	8.42
1999	14.34	14.34	9.00
2000	26.18		6.91
2001	29.45		6.33
2002	23.85		7.32
2003	29.92		6.25
2004	41.43		4.22
2005	56.55	max (data)	1.55
2006	59.69	56.69	1.00
2007	57.41		1.40