



MACRO OUTLOOK
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Crisis spurs new stock level model

A pioneering forecasting model could change the way businesses plan their stock levels and investments

ELAINE BURRIDGE LONDON

Robert Peels, a former employee of Netherlands-based health, nutrition and materials company DSM, has helped to develop forecasting software that can predict the effect on businesses upstream, from changing stock levels throughout the supply chain, right down to the end-user. This is the first time information from both a macro view (end-markets such as retail, automotive or construction) and a micro view (demand at a company's level in the supply chain) has been brought together in one business model.

"The link between macro and microeconomics represents a fundamental change in analyzing and forecasting industry stock movements. No one has been looking at true end-markets to determine demand," says Peels.

The idea resulted from his investigation of the impact from the destocking/restocking behavior that followed the start of the financial crisis in 2008.

LEHMAN WAVE

The crisis and subsequent bankruptcy of global financial services company Lehman Brothers in September 2008 was the catalyst for companies to destock en masse. This wave of global active destocking caused sales of companies high up the value chain to plummet by 40–60% while, in contrast, their end-markets remained rather stable. Peels has named this effect the Lehman Wave.

At that time, Peels was strategy and communication director for DSM NeoResins. After a dramatic decrease in the company's sales at the end of 2008, Peels suspected inventory effects may have been the cause, as product sales in the company's end-markets such as construction and retail had not shown any substantial decline.

Peels and colleagues from the Eindhoven University of Technology decided to investigate. Research confirmed their suspicions, that extensive and simultaneous destocking causes a bullwhip in the supply chain, with companies upstream suffering heavier losses because of the cumulative destocking downstream.

Peels says that once active destocking has taken place, sales levels should go up again and reactive restocking takes place, in most cases causing an upward peak. He found that the further away a company is positioned from its end-markets, the deeper the sales dip.

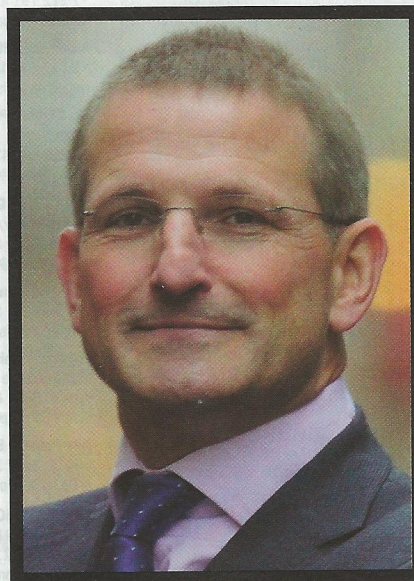
Based on Peels's insights, DSM NeoResins started to rebuild stocks early in 2009 and kept all factories open so it had reasonable supply once demand picked up. The move paid off. "The DSM coatings unit gained 15–20% market share, equating to cumulative extra sales worth €250m (\$344m) compared with a competitor," Peels says.

Peels and his colleagues decided to develop a computer simulation model to predict behavior throughout the multiple layers in the supply chain. The model, based on system dynamics principles, includes basic decision-making behavior across an entire supply chain and makes a connection between the macro and micro worlds.

He says his model can determine and analyze between stockbuilding, demand development in end-use markets and market share changes, helping companies in the supply chain to implement robust capacity and business planning.

"If you can explain and make proper forecasts and make the right curves, you can take measurements that can bring huge benefits in – or outside – a crisis," Peels says. "Interestingly, the higher the volatility, the more accurate these predications are. During the height of the crisis, accuracy in some segments was above 95%."

Such is Peels' conviction in the software, he left DSM this year to start up his own company, Flostock. Peels says interest has been shown by chemical multinationals, consultants and the Dutch Central Planning Bureau. In the medium-to-longer term, Peels says he would like to develop his software into an off-the-shelf product. For now, he hopes to make a breakthrough in economic thinking. "That would be a major result for me," he says. ■



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ROBERT PEELS

Founder and director, Flostock

For more on DSM, as well as other chemical industry players, visit icis.com/companyintelligence