**Risk management by commodity trading firms: The case of Trafigura**
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Commodity trading firms (CTF) transform commodities in 3 ways:

- They move commodities through space to the ultimate consumer.
- They transform commodities in terms of time through storage.
- They change commodities in terms of shape and form by refining and blending.

CTFs assume a variety of basis risks that correspond to geographical distance, time and physical form. They hedge most price risks using exchange traded and OTC derivatives. CTFs also face credit, operational, liquidity, freight and other risks.

**Market risk**

Trafigura, the CTF hedges market risk wherever possible. The company trades in several commodities and has to track a large number of prices. So it has invested heavily in Information Technology.

Trafigura hedges market risk through futures and swaps. It self-finances the initial margin and finances many mismatches in daily variation margin payments.

Trafigura is exposed to the risk in changes in the difference between the price of the hedged commodity and the hedge instrument. This is called the basis. Essentially, the hedging strategy of Trafigura replaces flat price risk by basis risk. But basis risk is typically smaller than flat price risk.

Basis risk varies with the commodity and over time. Basis tends to be volatile when the inventories are low or when there are transportation bottlenecks. Trafigura manages basis risk using its knowledge of the relationship between the prices of related but different commodities. To the extent that Trafigura speculates, most of it is on basis relationships. And to the extent that basis movements are uncorrelated across different transactions, the risk can be reduced through diversification. Basis movements across commodities may also not be highly correlated.

Trafigura used Value at Risk as its measure of the overall price risk. Typically, the company uses a one day time horizon and a 95% confidence level. The firm tries to maintain VaR below 1% of equity. Trafigura supplements VaR with simulated P&L outcomes to fit heavy tailed probability distributions for portfolio P&L.

Trafigura regularly recalibrates and back tests its VaR models. The company has developed various analytic techniques and chooses historical data that is most representative of the current conditions.

VaR is being increasingly supplemented by stress tests that estimate possible losses under extreme scenarios. Trafigura does not perform stress tests on its entire portfolio due to its diversity and complexity and the difficulty in establishing realistic stress scenarios. To achieve a better understanding of downside risk exposure under extreme outcomes, Trafigura uses conditional VaR and Extreme Value Analysis. Conditional VaR takes the average of the losses in excess of VaR. Extreme Value Analysis can be used to measure the probability of extreme outcomes with losses substantially greater than VaR.

**Credit Risk**

Trafigura uses various methods to manage credit risk. It has a formal credit process by which it establishes credit limits for each counterparty. Besides "soft" information, the company also uses the KMV Moody's methodology. Credit officers are located across the world to make a first-hand assessment of the credit risk. Where credit exposure to a counterparty exceeds the prescribed limit, Trafigura purchases payment guarantee or insurance from prime financial institutions. The company also purchases political risk cover in specific geographies. Trafigura also monitors credit risk concentration by industry and geography closely.

85% of the company's derivatives are exchange traded or centrally cleared. In case of OTC trades which make up the remaining 15%, Trafigura deals with blue chip banks and market participants. Credit limits and collateral are used to minimize credit risk exposure. The use of standardized contracts is another risk mitigation technique.

**Liquidity risk**

With initial margins in the range of $ 700 million - $ 1 billion, Trafigura monitors its margin accounts very closely and uses corporate lines of credit to manage mismatches in cash flows.

Trafigura maintains a large cash balance, bilateral credit lines with various banks, committed, unsecured credit lines, securitization that accelerates the receipt of cash upon delivery to customers and significant retention of earnings.

Liquidity risk is inversely correlated with the price of the commodity. Funding needs are reduced in low price environments. Banks are also generally willing to support transactional financing in view of its secured, low risk, self-liquidating nature. But in high price environments, credit lines may be insufficient to fund potentially profitable trades. That is why Trafigura maintains credit facilities substantially in excess of current or anticipated needs.

**Freight risks**

Once a ship is chartered and the freight rate fixed, Trafigura sells a forward rate agreement to hedge against declines in charter rates. The company also uses fuel swaps to manage the risk of fuel price changes.

**Other risks**

Trafigura uses insurance to cover risks such as product liability, bodily injury and pollution. Where risk cannot be insured, the company has policies and procedures, training for employees and various compliance requirements. Trafigura also has a comprehensive Health, Safety and Environment policy.

**Speculative trading**

Trafigura does limited speculative trading, taking advantage of its information advantages. In these trades, the positions taken do not normally involve exposure to flat price risks but focus on calendar and inter market spreads. These trades are driven by the economics of transformation, with which CTFs are very familiar.

**Conclusion**

Trafigura assumes little flat price risk. Basis risks are the primary price related risks that the company bears. Trafigura uses centralized risk management and continually undertakes quantitative analysis of the various risk exposures. Collection, analysis and distribution of information play an important role in risk management. So Trafigura has invested heavily in information systems. Eliminating some kinds of risk invariably involves assuming some other type of risk. Thus, eliminating flat price risk results in counterparty risk. Moving a trade from an OTC environment to a futures exchange creates liquidity risk. For Trafigura, liquidity risk may be the most important risk. So, it has credit lines with many banks and well in excess of the current requirements.