Commodity market development puts automotive supply chains at risk

In recent years the markets of several commodities have developed to become more financial, i.e. more similar to stock or bond markets. Another development is that commodity demand has turned from local to global creating one world market instead of several regional. These developments bring higher volatility in material prices that today put actors in the automotive supply chain at risk as few means to control volatility are known in the business. This master thesis investigated what activities that exist today for risk hedging and sharing and how these could be developed to strengthen the automotive supply chain. The commodity of aluminium was used as example subject for investigation.

Commodities becoming financial assets
Commodity markets becoming financial assets is not a new trend, e.g. electricity and crude oil have been traded on financial markets for a long time. What is new is the broad interest for investment in all commodity markets. This is a development much driven by different funds that today place huge long-term investments in commodities such as wheat, coffee and aluminium.

Commodity demand turning global
Commodities have historically often been traded on regional markets. With the awakening of the Far East economy, demand for certain commodities skyrocketed in this region. Unable to satisfy its internal demand, Far East countries have turned to other markets. While supply on regional markets, as the European, remains at the same levels as before, a global demand has brought increased price levels as well as increased volatility in commodity prices.

Affecting the automotive industry
The automotive industry is highly dependent of commodities such as electricity, oil and metals. In recent years especially metal commodities have undertaken the development described above. In the example of aluminium the cost of material can make up for over 40% of the article price at the automotive assembler. Considering the recent development it becomes obvious that aluminium material price is a risk factor that needs to be taken very seriously.

Risk reducing abilities today
This study has showed that there in this business exist some tools for risk reduction. These can be divided into risk sharing tools and individual risk hedging tools. Risk sharing is performed by different contract constructions between actors. Periodical price regulation using an historical market price average is one common construction. Another is using thresholds to alarm when contracts should be updated to avoid one actor to take on too much risk. One overall reflection regarding risk-sharing tools is that there is no scientific approach behind any of them. This study has shown that many of today’s tools might be insufficient to handle the increased volatility and price levels. However, many of the tools have potential for improvement. This thesis has presented several ways that these tools can be improved if using existing technology or a more scientific approach. Many of the recommendations require increased collaboration between the supply chain actors.

The individual risk reducing tools can be derived from the development of aluminium becoming a financial asset. Hedging using futures trading on metal exchanges is one of the most powerful individual risk-reducing tools. It can allow one actor to theoretically eliminate all its exposure to the material price. Today this kind of tools is only used by some of the supply chain actors who have the most knowledge in the commodity market. The thesis discovered that this is due a general disbelief in the material market. Many actors are afraid that utilising market-connected tools will mean to take a speculative position, when it actually implies the opposite. One obstacle for individual hedging today is that market price is not always given in today's supply chain relationships. For a hedge to be effective, it is necessary that the market price is given. The reason for not giving market price is that some actors holding a strong market position today are acting opportunistic, and thereby forcing higher retail price than what the market implies. One solution to come to term with this situation could be through the
establishment of trade organisations that shall work for alignment of the supply chain’s incentives.

**The future of the supply chain**

Recently some actors have been forced to bankruptcy due to their inability to reduce material price risk. Actors in the automotive supply chain need to realise the severity of material price risks. They need to start acting collaboratively to reduce these risks for their own, their supplier’s and their customer’s welfare. This thesis has presented potential development of today’s risk reducing tools and required steps in collaboration that need to be taken for all actors possibility to achieve individual risk hedging.

As mentioned earlier there is no known scientific approach behind today’s risk reducing tools. This makes this an area necessary for future research in order to establish theoretically optimal performance for risk reduction.