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MVH12, Analytical Finance I

# Metal Trading
# at the
# London Metal Exchange

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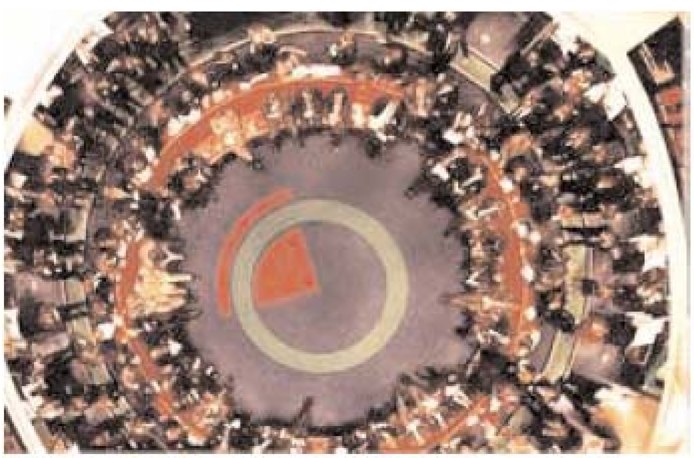
# 1. The London Metal Exchange

The London Metal Exchange (LME) is one of the leading international commodity, futures and options exchanges. It specialises in non-ferrous metals such as Copper, Primary Aluminium, Lead, Zinc, Nickel, Tin and Aluminium Alloy. The LME accounts for about 95% of global exchange business for the metals it trades. All contracts on the exchange are priced in USD, but they can also be cleared in three other currencies; euro, Japanese yen and Sterling.

Only members of the LME can buy or sell futures and options on the exchange. The LME market operates on a principal basis whereby LME broker firms trade with themselves on behalf of their clients. There are currently three different ways to trade on the LME:

- **Open outcry market ("ring trading"):** Ring trading is so called because the LME uses a "ring" with the traders sitting at fixed points around the circle. Trading activities takes place throughout the day with each LME contract traded in specific five minutes periods known as "rings". At present there are 11 "ring dealers" and all business, which is required to be dealt across the floor, must be passed through a ring-dealing member. A significant proportion of all LME contracts are traded in the ring sessions, especially the second morning ring where the official prices are set, but more about that later on.

  The ring itself is about 6m in diameter, with two large display boards above it showing the official prices. There is a special both where the exchange's staff monitor the prices and input bids, offers, spreads and trades made into a computer system. This is instantly sent to various newsvendor services that display LME prices (e.g. Reuters and Bloomberg). Behind each firm's ring seat is a place for assistants to stand in order to pass orders into the ring and to give commentaries to customers about current market conditions.



*Picture 1. The LME ring seen from above.*

- **Telephone market:** The ring offers benefits of transparency attached to a physical, open marketplace, but it is only available for a part of the working day. To cover the whole 24-hour day an inter-office telephone market is used. This is a system like a foreign exchange, bond or stock market, but then clears like a ring-traded contract. In other words, people can see an indicative price on a screen as they contact a broker, and then complete a deal there and then. Brokers continue to provide indicative prices through vendor screens. The actual prices quoted to a prospective client by a broker may not be identical to the indicative prices, but will depend on the size of the deal, the state of the market and on the client's credit rating and relationship with the broker.

- **LME Screen Trading System ("LME Select"):** LME select is the official exchange operated trading platform, available in addition to open outcry ring trading and the telephone market. Member firms are connected to the system which allows accredited traders to execute trades electronically. The system allows trading on all LME contracts, futures and options. It also allows straight through processing whereby LME Select trades will automatically be sent to the matching and clearing systems.

## 1.1 The History of LME

The origin of the LME can only be traced back as far as the opening of the Royal Exchange in London in 1571. It was there that traders in metal and a range of other commodities began to meet on a regular basis. In the early 19$^{th}$ century there were so many commodity traders, ship characters and financers using the Royal Exchange that it became impossible to do business and individual groups of traders set up shop in the nearby city coffee houses. "The Jerusalem Coffee House of Cornhill" became a favourite of the metal trading community, and it was there the tradition of *"the Ring"* was born. A merchant with metal to sell would simply draw a circle on the dusty floor and call out "change" at which point all those whishing to trade would assemble around the circle and make their bids.

In the early part of the 19$^{th}$ century the U.K was self sufficient in copper and tin. However, with the advent of the industrial revolution the U.K needed to import large tonnage's from abroad. The metal traders were now faced with a real problem because, having bought for example copper concentrates from Chile or tin from Malaysia, they had no way of knowing what the price would be at the time of the ships arrival months later. The import of large quantities from overseas at irregular intervals put merchants and consumers under serious risk. But with new inventions like the telegraph and steam ships the arrival dates of the gods was much more easy to predict. Now merchants were able to sell a cargo of metal forward for delivery on a fixed date, thus protecting themselves against a fall in price during the voyage. This was the start of the LME future's market.

As delivery tonnages grew to meet the increasing demands of the industry, more and more merchants were attracted to the metal trading. New metals have been introduced as

demand dictated. Copper and tin have been traded on the LME since the beginning, although with upgraded contracts. Lead and zinc were officially introduced in 1920, but were traded unofficially before that. Primary aluminium was introduced in 1978 and was followed by nickel one year later. Aluminium alloy was introduced in October 1992.
In the beginning of 2005 two different plastic contracts were introduced, and it looks likely that a steel contract as well as a pulp contract will be presented in the near future.

Over the years the LME has moved between different addresses in London, but since 1994 the LME is located at Leadenhall Street, not far from the Banks tube station.

# 2. Market Terms

There are a number of expressions that are used everyday in the metal trading industry. Several terms and market rules have a long history and were based on market conditions during the 19th century. Here are some of the most used terms:

## 2.1 Warrants

Delivery of LME contracts is in the form of warrants that are bearer documents of title. Each warrant entitles to take position of one *lot* of metal at a specific LME warehouse.

## 2.2 Lot

A lot is the minimum amount of a commodity in which one may deal on a futures market. The lot sizes at LME are as follows:

| | |
|---|---|
| Aluminium, Copper, Zinc | 25 metric tonnes |
| Aluminium alloy | 20 metric tonnes |
| Nickel | 6 metric tonnes |
| Tin | 5 metric tonnes |

## 2.3 Buy/Sell

Naturally, "Buy" means to buy a contract and "Sell" means to sell a contract. However, it is worth mentioning that the English terms "Buy/Sell" are the only one allowed. Although there are several brokers with multi language skills you can't for example use the Swedish terms "Köp/Sälj". The reason for this is to avoid misunderstandings. In some languages the terms for "Buy" and "Sell" sound alike, e.g. in German where "Buy" is "Kaufen" and "Sell" is "Verkaufen", so a small disturbance on the telephone line could end up to be very expensive for some part. In the telephone market all deals and conversations between the brokers and their clients are recorded.

## 2.4 Prompt date

The prompt, or delivery date is the date on which the metal has to be delivered to fulfil the contract terms. However, the major part of all contracts is closed before the prompt date so there is no physical flow of metal. The LME uses a "t+2" system, which means that the deal must be closed two days before prompt. On the LME, the date the second following day of the trading date is also known as the **"Cash date".** The "t+2" system are illustrated below:

| Trading Day | Prompt Date (cash) |
|---|---|
| Monday | Wednesday |
| Tuesday | Thursday |
| Wednesday | Friday |
| Thursday | Monday |
| Friday | Wednesday |

## 2.5 3-Month date

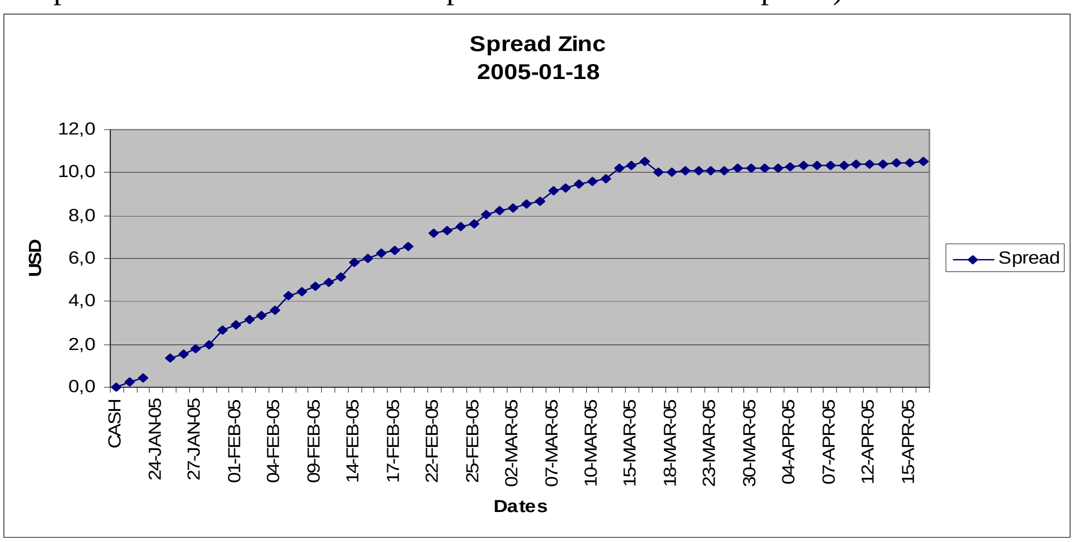
The 3-month date is the reference price for all metals traded on the LME, i.e. the price for one tonne of metal delivered in three months. The 3M system has a long history. After opening of the Suez Canal in 1869 the delivery time of tin from Malaya matched the delivery time of copper from Chile and was 3 months. LME's unique trading system of daily trading dates for up to three months forward still exists to this day. For time being, it is possible to trade copper and aluminium 63 months forward. From cash to 3M there are daily trading dates. From 3M to 6M it's possible to trade on every Wednesday (**"week date"**) and from 6M to 63M on every 3$^{rd}$ Wednesday (**"monthly date"**).

## 2.6 Official prices and the second ring

The official LME prices are set during the "second ring", which takes place during 12.30-13.00 GMT. The ring trading starts with a five minute trading session for copper and then moves on with the other metals. The **"settlement price"** is the last unfulfilled offer to sell cash at the close of the second ring in each metal – i.e. the cash sellers' price at that close. This price prevails as the accepted cash reference price for the metal for the succeeding 24-hours. Apart from the settlement price (cash seller) there are three other official prices published for each metal: cash buyer, 3-month buyer and 3-month seller.

## 2.7 Forward price spreads: Contango

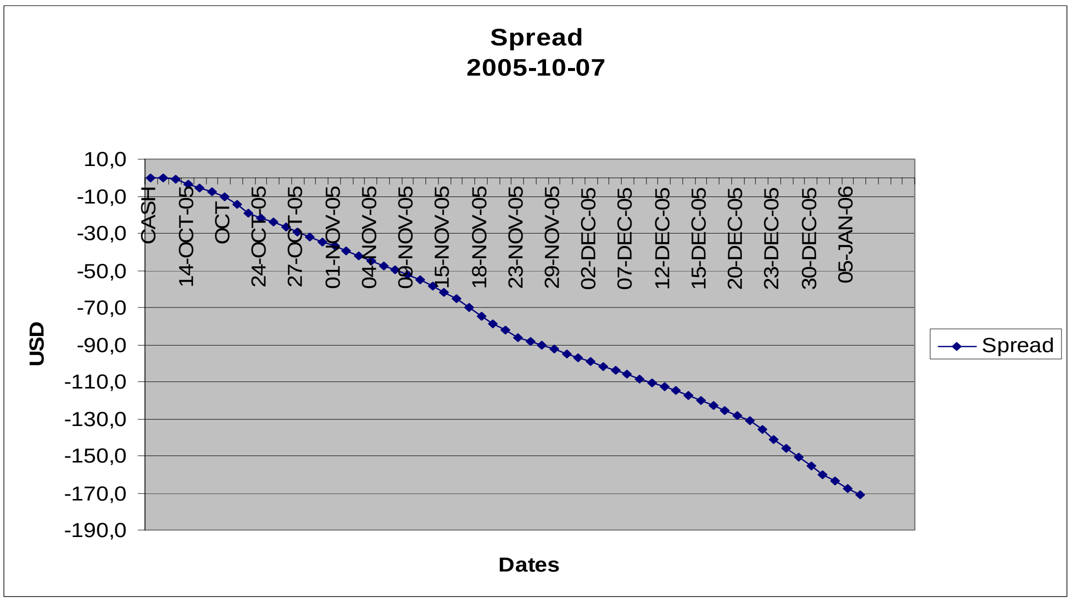
The situation when the price of a metal for forward or future delivery is greater than the cash price of the metal is called "contango". One could say that a contango market is the normal market condition and occur when the metal is plentiful in supply. The size of the contango is a function of the cost of financing, insuring and storing the metal over the future delivery period. Below there is a cash-3M spread curve for zinc from January 18 this year. The chart shows that the cash-3M is trading in roughly $10 contango.
(The spread is calculated as the cash price minus the forward price.)




*Picture 2: Zinc spread, contango market*

## 2.8 Forward price spreads: Backwardation

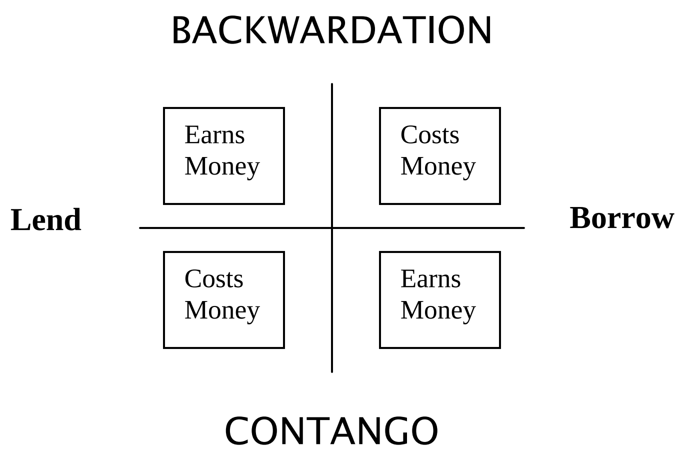
"Backwardation" is the opposite of contango, i.e. the situation when the cash price of the metal is greater than its forward price. A backwardation occurs when a tight nearby situation exists in a metal. The size of the backwardation is determined by differences in supply/demand factors in the nearby positions compared with the same factors on the forward position. Theoretically, there are no limits to the backwardation although it has occurred that the board of LME has interfered in the market and put a $50/day limit to the back. For the time being several metals are trading in backwardation. Below is a cash-3M spread curve from the October 7 in copper:




*Picture 3: Copper spread, backwardation market*

## 2.9 Carries: Borrowing and Lending

Carrying is the general term used for both borrowing and lending on the LME. Borrowing is derived from “borrowing metal from the market”, which is achieved by buying at nearby date and simultaneously selling a date further forward. Lending on the other hand is derived from “lending metal to the market”, i.e. selling metal on a nearby date and buy it back forward. A good memory rule to keep track of the spread and carry definitions is *BBC – Borrowing in Backwardation Costs.* The carries matrix below also shows the economic outcome of lending and borrowing in a contango and backwardation market:




*Picture 4: Carries’ matrix*

# 3. The Copper Market

Copper is at time of writing trading at historical all time-high levels of $3930/tonne (3M). With a backwardation around $190 (cash-3M) copper cash prices are above $4100/t (!). Copper has been a “rocket” market during the last three years with price increases by over 150%. Here are some reasons behind the historical highs:

- **Chinese demand**. The exploding economic growth in China has brought an insatiable appetite for metals, not at least copper for it’s huge infrastructure projects in electricity and plumbing.
- **The weak USD**. Copper, as well as the other base metals, has a negative correlation with the USD. Metals are used as hedge towards the dollar and at the same time a weak dollar makes the metal relatively cheaper for e.g. euro-based consumers. Thus the weaker USD has contributed to the upswing in prices.
- **Supply disruptions**. A landslide at the world’s second largest mine Grasberg at New Guinea together with long lasting labour conflicts in South America put the copper market in a record 750 000 tonne deficit during 2004. In July this year LME stocks were at the lowest levels in almost 30 years.
- **Fund buying**. Maybe most important, fund money has been poring into the copper market, like almost all other commodities. Everyone wants to be in commodities and for the time being there are no signs of a subsided interest in the future.

Below is a chart of the LME 3M copper price from January 2003 to today’s date (October 10).


*Picture 5: LME Copper chart (source: Reuters)*

# 4. Literature

Wolff Rudolph, *Wolff's Guide to the London Metal Exchange*, Metal Bulletin Books 1995.

www.lme.com