BEYOND BOOM AND BUST: DECOMMODITIZATION OF MANAGING MINING PRICE CYCLES
(Price Cycles, Cost Curves and the Art of Mindful Management)

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Preamble

- “Constant reinvention is the central necessity at GE … we’re all just one step from ‘commodity hell’”—Jerry Immelt, Chairman & CEO, GE

- There is no escape from “commodity hell” for mining companies, since they have a limited ability to reinvent new products.

- There are no hard and fast rules that mining companies have to eternally suffer through periods of boom and bust.

- Companies cannot control price cycles, but they can choose the way to manage them, which is termed “decommoditization” of management.

- Instead of being victims, companies can profit from the opportunities provided by the ups and downs of cycles.

Introduction

- Presently, mining companies are affected dramatically by the ups and downs of commodity cycles, and suffer particularly during recessions.

- The industry is constantly being challenged to diminish the volatility and punitive consequences of recessions.

- The objective of this presentation is to explore ways to moderate the effects of recessions, by keeping the gains achieved during an upturn.

- The presentation consists of the following three segments:

  1. <u>Analysis of the price cycle</u>: Determine the root causes why companies are usually unprepared for a recession.
  2. <u>Utilization of cost curves</u>: Use the cost curve as a strategic tool to lessen the impact of a recession, by continuously focusing on cost reduction.
  3. <u>Practice of mindful management</u>: Achieve success by following the tenets of mindful management, by paying attention to present costs, instead of attempting to predict future prices.

Phases of Price Cycles (Slide 5)

- Heightened economic activities increase demand, which results in a tightening of supply, and as a consequence, prices rise.

- **Markup phase: I**ncreases in profits lead to planning for expansion to satisfy the growing demand.

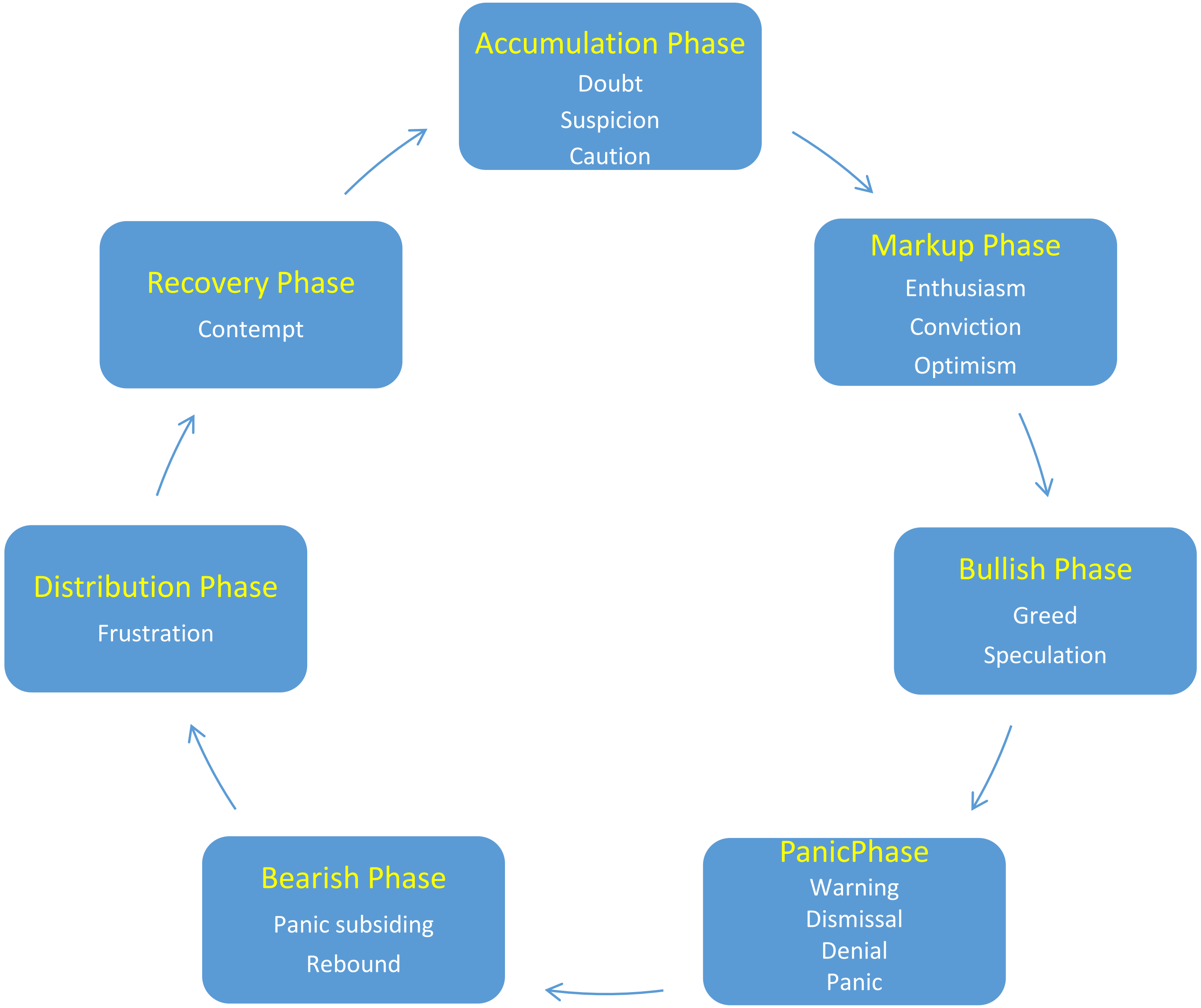
- **Bullish phase:** With growing confidence and encouragement by investors, the race is on to achieve higher profits and faster growth.

  - In this process, all-inclusive costs (AIC) uncontrollably escalate, just when the market unnoticeably starts to turn downward.

  - Unable to stop their growth plans, companies are caught between rising costs and falling prices.

- **Panic phase:** Reality sets in when prices hit the bottom, drastic cost-cutting measures are hastily ushered in to get into survival mode.

Stages of Commodity Cycle



Root Cause Analysis

- Companies and their investors are well aware that a recession will inevitably follow an upturn, yet they are always caught unprepared.

- History has shown that losses inflicted by a recession not only erase all gains made during an upturn, it also will take years of struggling to fully recover.

- This phenomenon could be explained by the following factors:
  - Overconfidence in forecasts of the duration of the bull market.
  - Optimistic belief in the validity of a long-term price, used to estimate future cash flows and ability to pay back debts.
  - Collective amnesia about the inevitability of a recession.
  - Inadequate cost discipline during the expansion, as a result of following a herd mentality.
  - Reward based on short-term results.

- In summary, human factors such as manic behaviour during the bull market and lack of cost discipline, not the onset of a recession itself, are the root causes and contribute to the subsequent problems.

The Challenge of Managing the Cycles

- Price cycles have long been the norm in the industry. Referring to Slide 8, copper experienced around 20 such cycles since 1900.

- However, behaviours and management practices have not changed during these 100+ years.

- Losses incurred during a past recession should have been a constant reminder to be ready for the next one, even during a bull market.

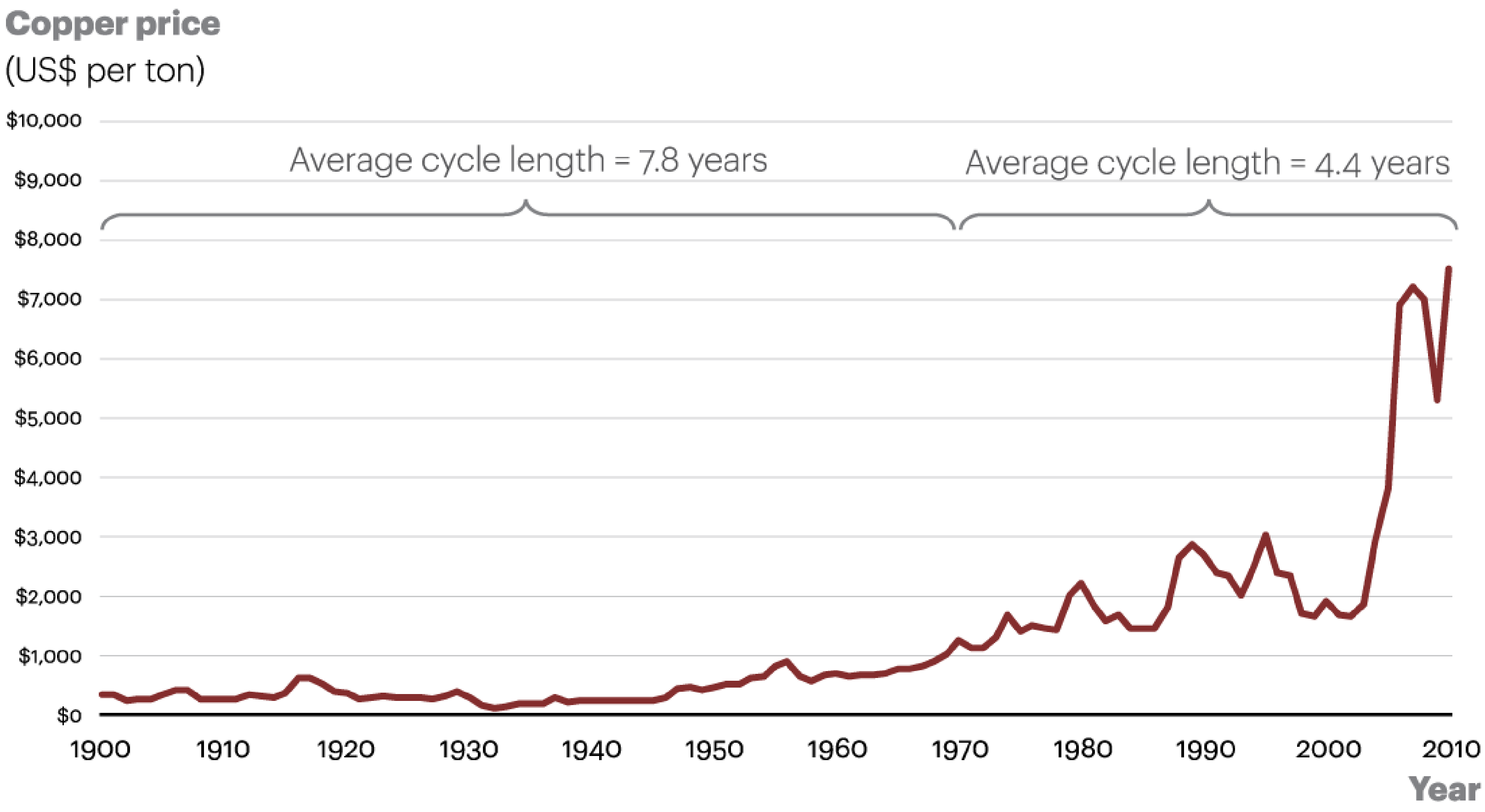
- The transition from an environment of rising prices to one of falling prices should be seamless.

- The question is, how to make this happen?

Copper Cycles over the Past Century

Figure 2

The copper industry's cycles of peaks and valleys have grown shorter over the past century



Sources: ICSG Yearbook 2011, London Metal Exchange; A.T. Kearney analysis

The Answer can be Found in the Cost Curve

- The cost curve as a tool has a strategic function: the position on the curve determines the relative competitive strength of a company.

- Since no one can predict the price, the position should be low enough to ensure a positive cash flow even at the bottom of the cycle.

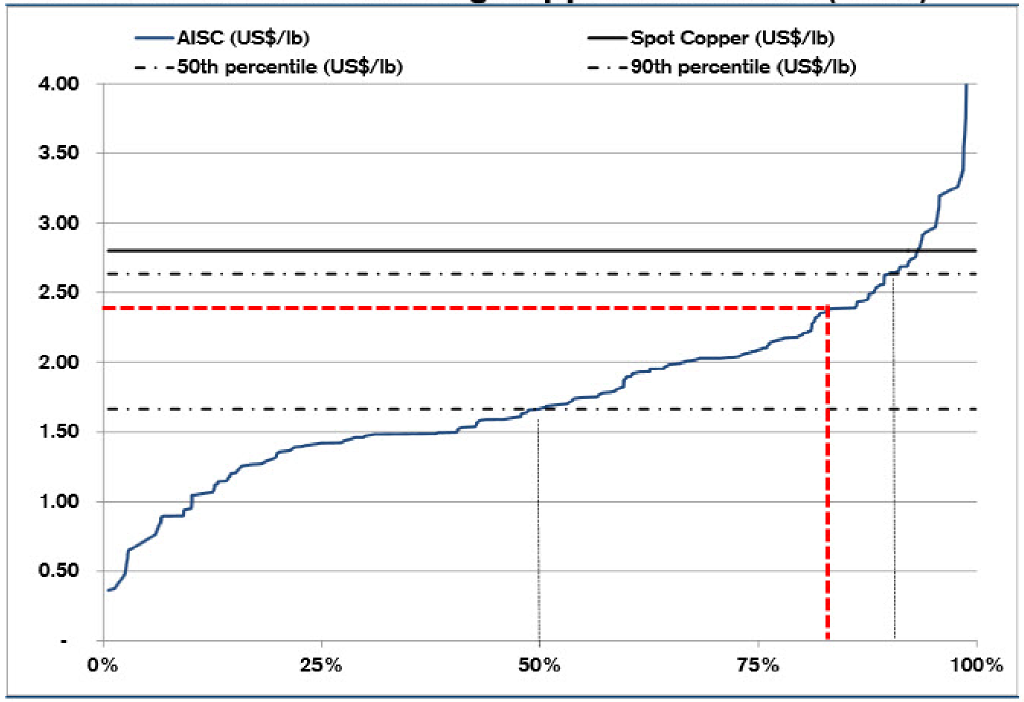
- Referring to Slide 10 for an example involving copper, a 10-year price curve shows that, except for a brief period, copper prices had a floor of $2.00/lb.

- In this case, an AIC between $1.50 and $2.00 should ensure a cash-positive operation during a recession.

- In general, a position well within the second quartile should be maintained by actively controlling the AIC, irrespective of price and profit levels.

Copper Price Chart & Cost Curve

Exhibit 11: All-In Sustaining copper cost curve (2015)



Source: Wood Mackenzie, Credit Suisse estimates

Continuously Focusing on Costs—a Sensible Strategy

- Mining is a commodity business, where differences in quality and marketing of the product are not significant factors.
- The market sets the price depending on the supply and demand balance, and all producers have to meet the same price to remain in business.
- Cost is the principal metric for competitiveness, and should be vigorously controlled.
- Continuous Improvement (CI) is a well-established system to contain costs required to maintain a favourable position on the cost curve.
- CI is routinely used by several major mining companies to manage their operations.

What is Continuous Improvement?

- CI was developed in the ’30s by manufacturers to improve work efficiency, by identifying and reducing waste, and minimizing non-value-added activities.
- **CI requires everybody’s participation:** From management to engineering, production and service departments, and customers and suppliers.
- **CI must include every activity:** In the mining context, this includes geology, mining, processing, procurement, shipping, sales, etc.
- **CI is a bottom-up process:** It starts with the formation of small work groups at the floor level, to discuss operating problems and generate improvement ideas.
- **CI requires teamwork and cooperation:** Stakeholders from multiple disciplines participate, forming cross-functional teams to focus on continuous improvements.
- Successful and sustainable implementation of CI requires changes in an organization’s systems, work methods, and behaviours of all employees.
- This culture change requires the support and commitment of senior managers leading the way in changing their own behaviours to conform to the new values.
- **It may take up to 5 years to achieve a culture change.**

Benefits of the Proposed Strategy

- It instills spending discipline during the boom, preventing companies from driving up the AIC to unsustainable levels.

- By keeping the AIC well below the market price, companies will always generate profits and build up their cash reserves.

- The surpluses could be used to take advantage of opportunities available during the recession.

- In a downturn, prices of equipment and supplies are usually at rock bottom, service rates are much lower, and assets are often a bargain.

Growing More Responsibly

- The height of the bull market, when costs are rising, will be the time to double down on cost reduction efforts, instead of going on a binge to expand by building and/or acquiring.

- Companies should invest part of their profits to counter rising costs and act to strengthen their longer-term competitiveness by:
  - ➢ Improving process capabilities
  - ➢ Automating operations
  - ➢ Applying new technologies
  - ➢ Encouraging innovations

- They will be in a better position to maintain a healthy balance sheet to expand during the recession, when others will be struggling

- However, managing in a counter cyclical fashion will require cultivating a strong resolve to resist the pressure from the market to conform.

Why Mindful Management?

- Rooted in ancient Buddhist traditions, the current practice of mindfulness is based on the latest advances in neuroscience to deal with the challenges of modern life.

- Mindful management has a proven track record of success, and it is practiced by some of the planet's most valuable and creative companies (Slide 16).

- The basic tenet of mindfulness is to harness the awareness that arises through paying attention, on purpose, in the present moment, rather than rehashing the past or imagining the future.

- In the mining context, companies should manage their current costs, which they can control, instead of trying to predict the future direction of prices, which no one can.

Genentech
IN BUSINESS FOR LIFE
Aetna
intel
P&G
Procter & Gamble
TARGET
ebay
Cargill
Green Mountain Coffee
UnitedHealth Group
NIKE
Adobe
PLANTRONICS.
SOUND INNOVATION
HBO
HEARST
magazines
Google
Sun Life Financial
McKinsey&Company
General Mills
MAERSK
Ford
NOVARTIS
Deutsche Bank
Goldman Sachs
BlackRock
facebook
Compusense.
AstraZeneca
KAISER PERMANENTE.

Mindfulness is everywhere.

Achieving a Paradigm Shift

- Market forces will exert pressure in a bull market to succumb to various emotions, such as:
  - Exhilaration – intoxication with the sudden surge of profits and galloping stock prices.
  - Greed – pandering to investors' wishes for higher stock prices to get higher bonuses.
  - Unbounded optimism – believing in the continuation of good times.
  - Anxiety – herd mentality, fear of missing the boat.
  - Restlessness – impatient and neglect to act rationally.

- The practice of mindfulness as a management discipline will repress imagining the future by becoming aware of the transitory nature of the market and concentrate on the present moment.

- This will facilitate the acceptance of the new paradigm, which will ultimately strengthen the conviction to do the right things.

- Finally, it is important that investors correctly view the challenge and develop new metrics to encourage management of the cycles in order to accelerate the process of transformation.

Conclusions: Four Traits to Remember

1. Mining companies are constantly subjected to fluctuating prices during commodity cycles, over which they have no control.

2. The AIC should always be lower than the market price, which is a moving target and cannot be predicted, by ensuring a low enough positon on the cost curve.

3. The AICs have a tendency to continually increase unless companies have a system to contain them.

4. CI initiatives can continually reduce costs by minimizing waste, eliminating non-value-added work, and investing in improvements.

The Mindful Way of Managing Cycles

1. **Right knowledge:** Recognize that business is governed by economic cycles, and a bust will inevitably follow a boom.
2. **Right aspiration:** Always be prepared to deal with a certain downturn, without being complacent in the current situation.
3. **Right strategy:** Work on continuous cost reductions, regardless of the level of prices and profits, in order to be correctly positioned on the cost curve.
4. **Right leadership:** Embrace a paradigm shift to mindfulness by controlling present costs, instead of relying on predicting future prices, which nobody can.
5. **Right system:** Focus on continuous cost reduction by minimizing waste, eliminating non-value-added work, and invest in improvements.
6. **Right effort:** Involve and train everybody, and include all activities, from geology, mining, and processing, to engineering, administration, sales, etc.
7. **Right action:** Cultivate soft skills, such as team-building, communication, listening, collaboration, etc.in order to develop trusting relationships.
8. **Right contemplation:** Confidently implement the new strategy to avoid hasty reactions during downturns, and thus, deliver consistent results.

Following these principles will satisfy stakeholders, gain happy customers,

and delight shareholders.

Thank You

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