The Dominant Role of Investment Funds in the Long-Term Economics of the Copper Industry

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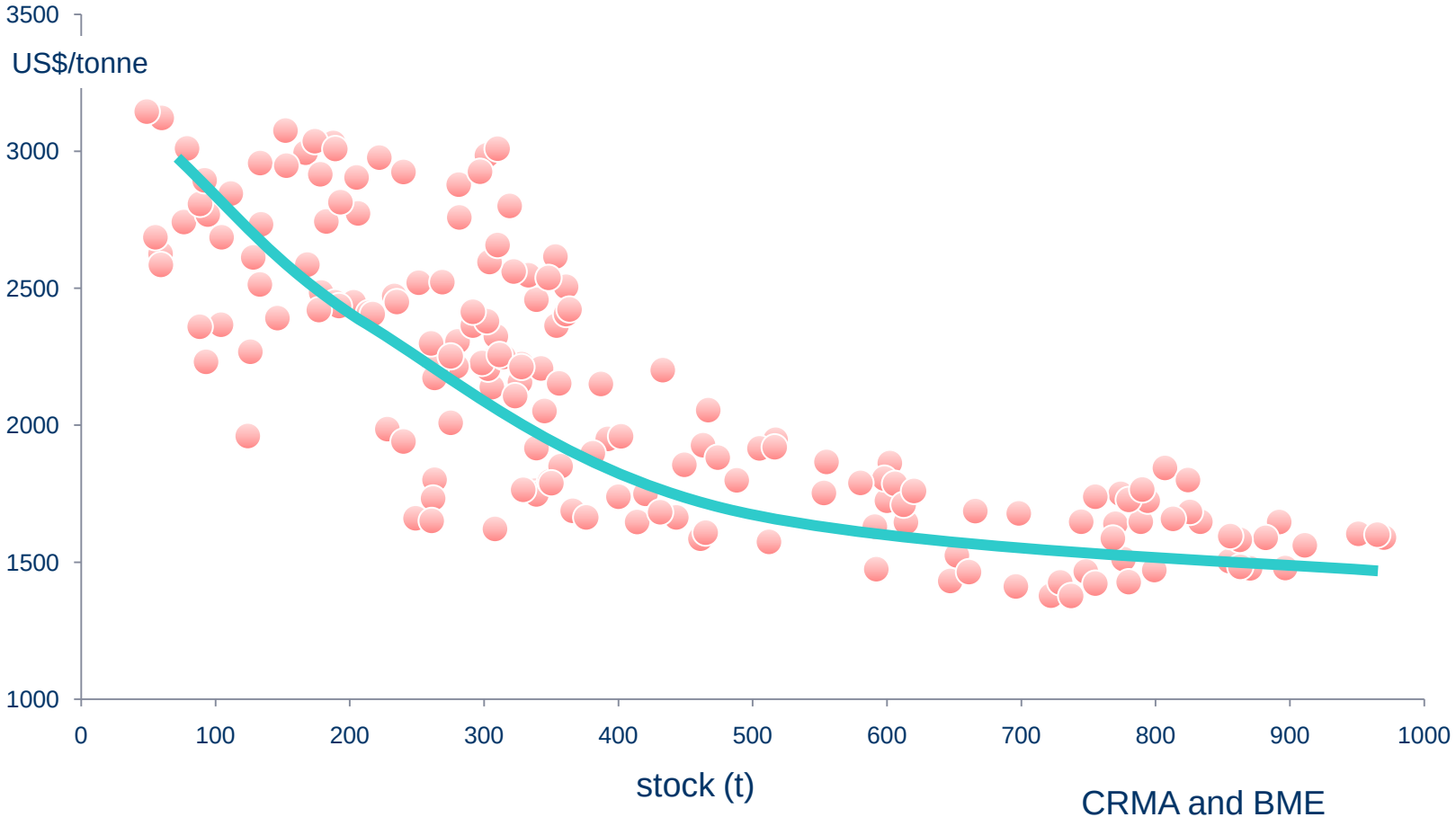
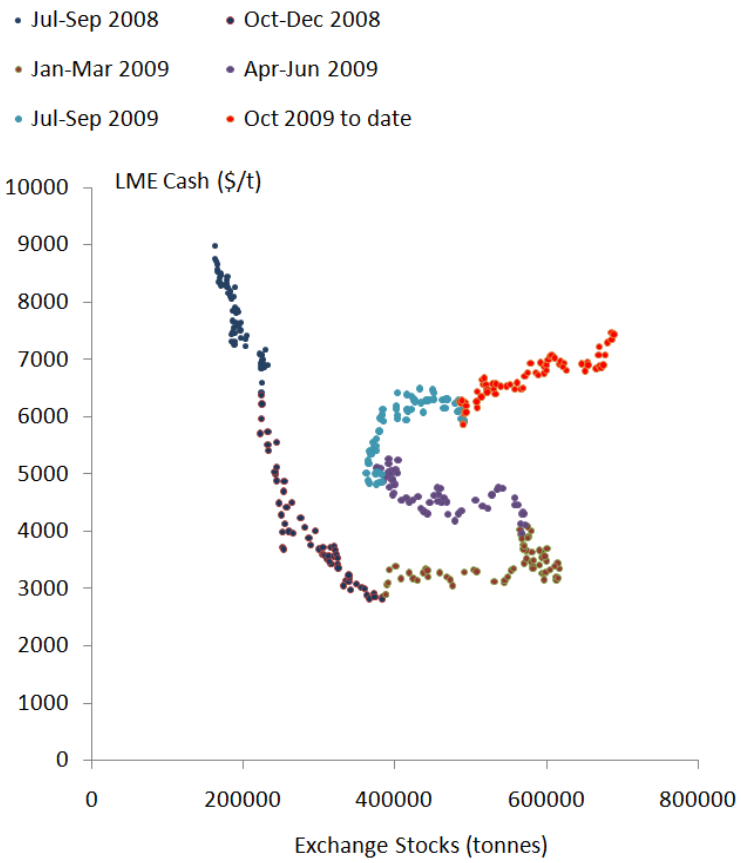
CRM Associates and

Bloomsbury Minerals Economics

Stock\price curve 1990-2004
An understandable relationship



Stock\Price Curve 2008-2009 Something Very Different



Prices saw a precipitous fall from October 2008, when economic sentiment really turned sour. Stocks rose, and prices continued to fall until early in 2009.

From March to June 09 LME stocks then dropped sharply and prices continued to rally, following the normal pattern

Until mid-year, we seemed to have regained a more normal stocks to price relationship – but at a high level of price in relation to stock.

Then from July 09 until March 10 LME stocks turned and rose above their 09 highs – **but prices also rose, almost to all time highs**

From March 10 stocks have been falling –**but there has been a sharp decline in prices**

Clearly something other than supply and demand is involved

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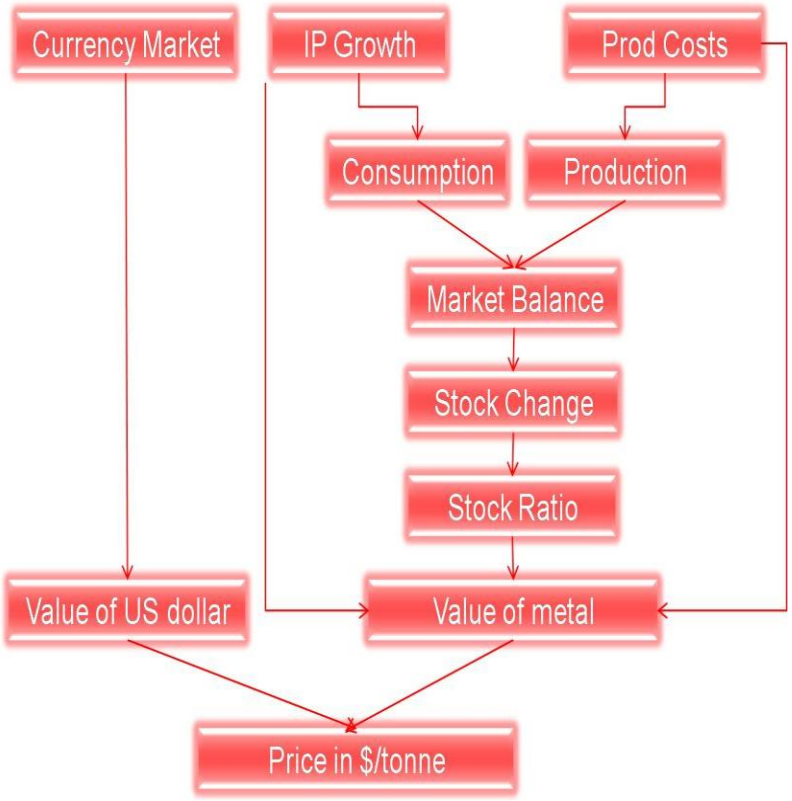
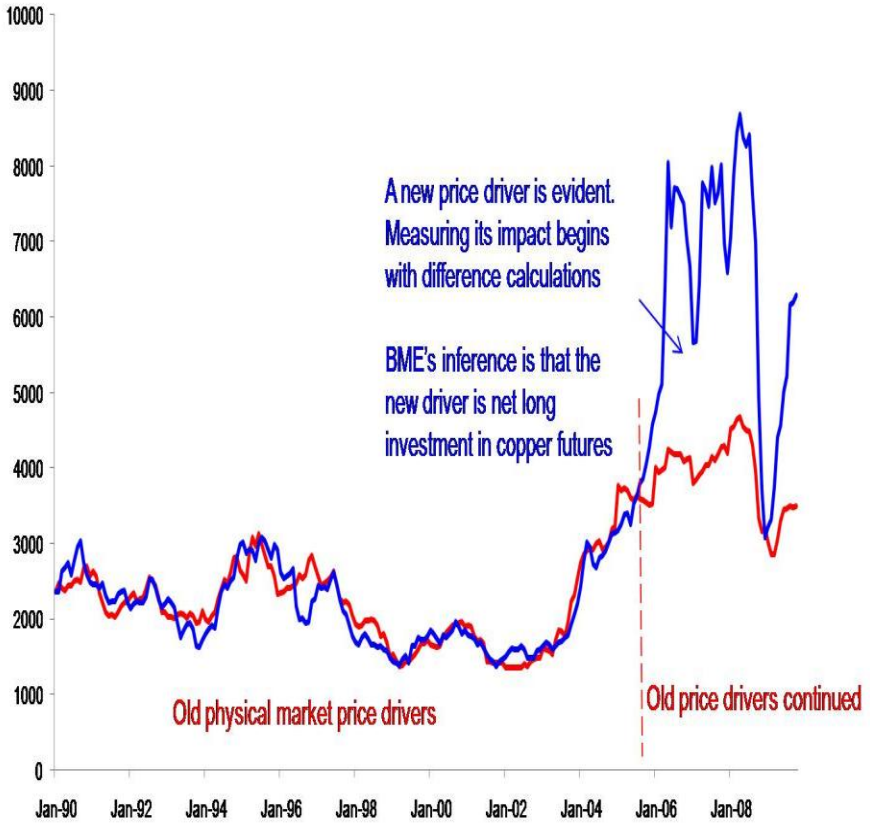
Copper Prices 1990-2005
The Input Factors and The Outcomes



R^2=0.82



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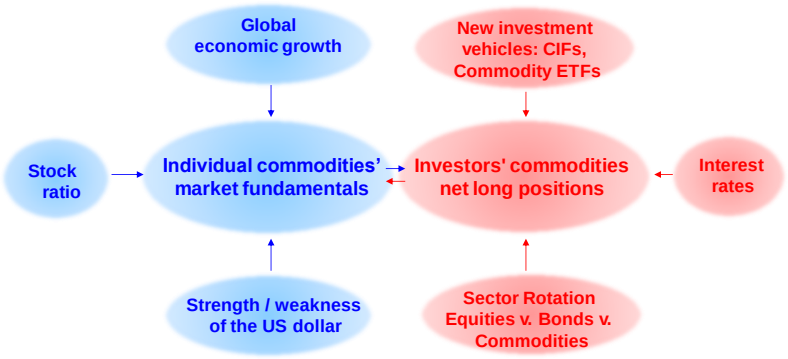
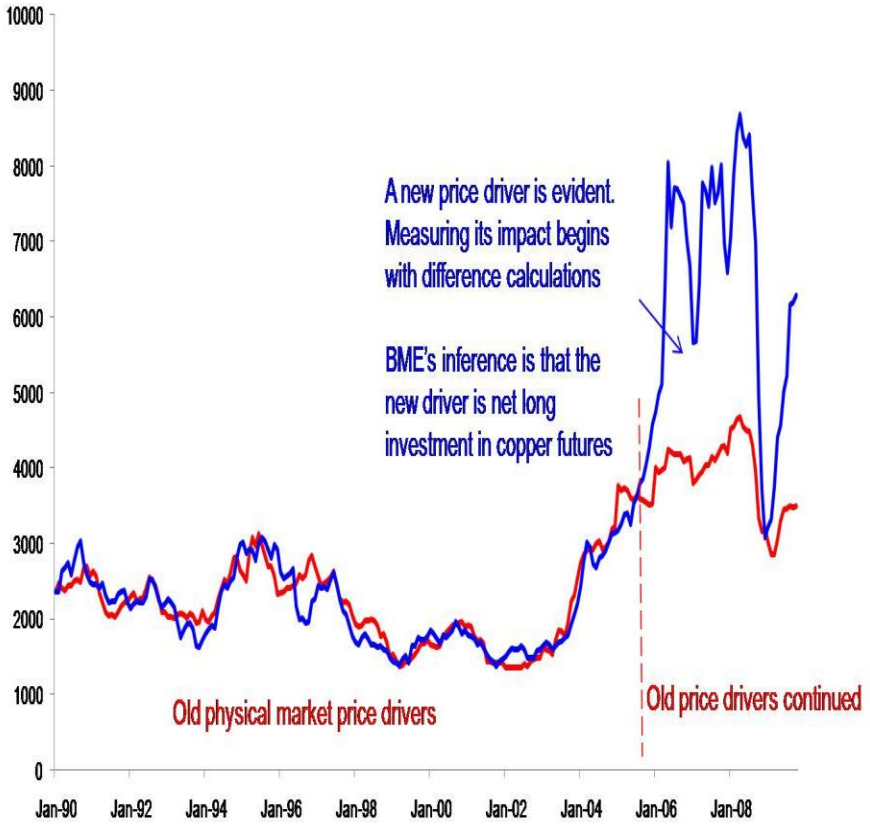
Copper Prices 2005-2010
The Input Factors and The Outcomes





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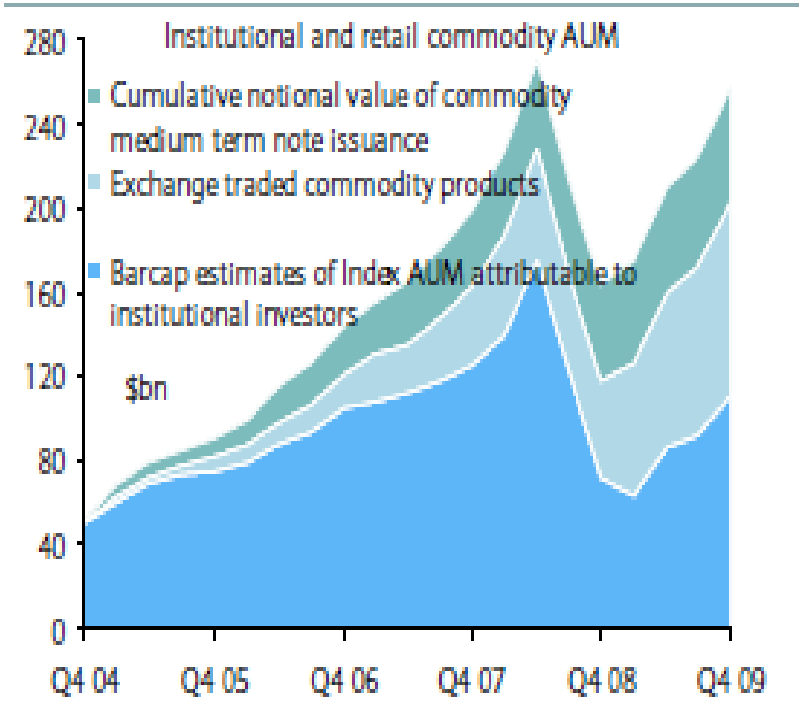
Types of Commodity Investments

- In the 1980's commodity investments were managed by CTAs in Managed Accounts
- Up to 2004 AUM were small – but by 2008 it was up to $260 billion
- Three types
  - Short term trend-followers
  - Medium term discretionary hedge funds
  - Long term index replication funds
- From 2004-8 money basically flowed one way – inwards. Gave birth to the supercycle mentality
- In 2008-9 the money flow became two-way. Investment values fell and some long term investors dumped large positions after only 2-4 years
- Over all these periods fund managers focused on one instrument – exchange traded futures contracts

Figure 18: Assets under management rose strongly in 2009



Source: Bloomberg, MTN-i, various ETP issuer data, Barclays Capital

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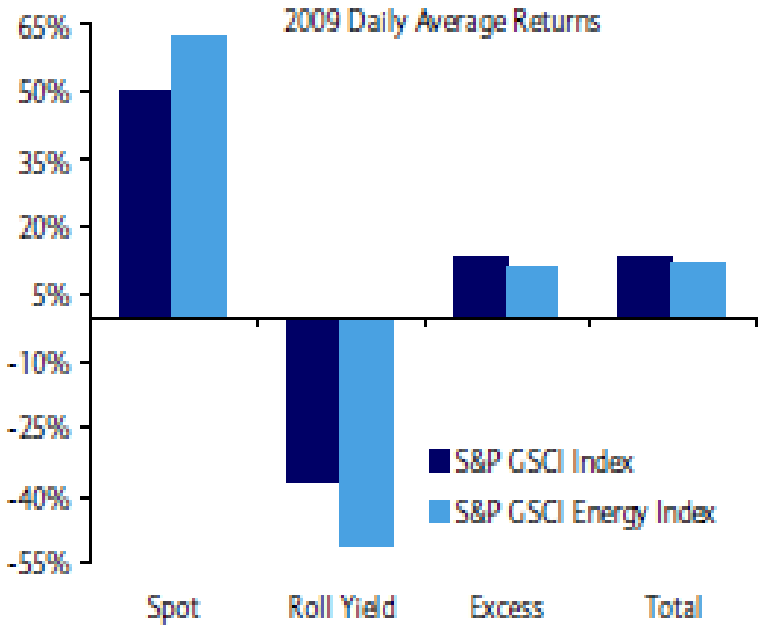
Contango Kills the Returns

- In 2004-8 buy and roll of futures generated most of its yield from backwardation – this was the model the pensions industry was sold on index funds by Goldman Sachs
- By early 2008 the volume of the roll was killing the backwardation even in a time of shortage
- By 2009 the yield of the index funds has been decimated by the contango – in an outstanding year for bulls
- Maybe there will never be a backwardation again!
- If not, will some long-term index fund investors feel cheated of their returns and exit or reduce their investment?
- Turning full circle on the price cycle and driving us back closer to the fundamentals of supply and demand

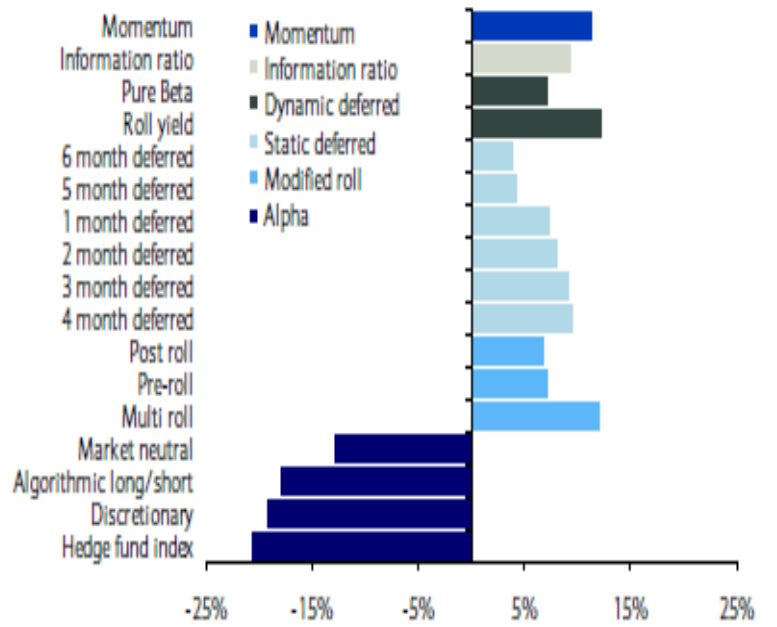
Figure 21: Negative roll yields crippled index returns



Source: Ecowin, Barclays Capital

Investment Strategies Are Now More Varied

Figure 28: Deferred and momentum strategies have outperformed in 2009



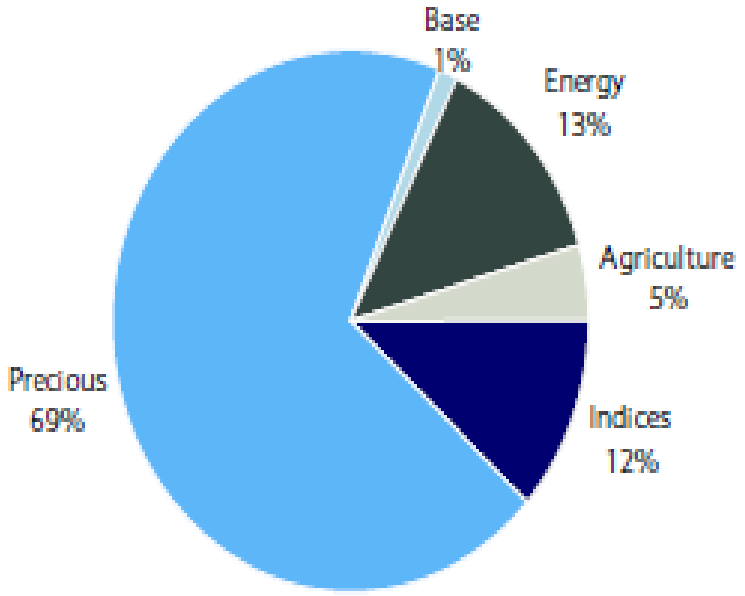
Source: Bloomberg, Barclays Capital

- Investment managers have responded to adversity by varying their approach – trading down the curve
- But they can only defer the evil day of having to roll their positions uphill until an end-user (or a “greater fool”) takes their position off their hands
- Given high prices there may be more “makers” than “eaters” down the road, so it may be harder for funds to sell positions profitably
- BME believes the investment bubble may create demand destruction, increased production and an unsustainable overhang of stocks – all financed by investment activity
- The result could be massive price volatility, and if the long term investors lose interest, many “locust years” for the industry
- For the moment it means substantial liquidity along the forward curve with a contango inducing bias – good for industry hedgers

2010 - Year of the Base Metals ETF

- Exchange Traded Funds have been a big influence on commodities, but so far tiny in base metals
- ETFs have a lot of leeway in how the funds are backed – by futures or physical stocks. They are like index funds on steroids
- This year Credit Suisse\Glencore plans to launch a major base metals ETF
- Will this provide more financing for more unused metal stocks?
- Will it provide investors and traders with a mechanism to squeeze the physical market?

Figure 29: Global AUM – long ETPs (31 Dec 2009: $90bn)



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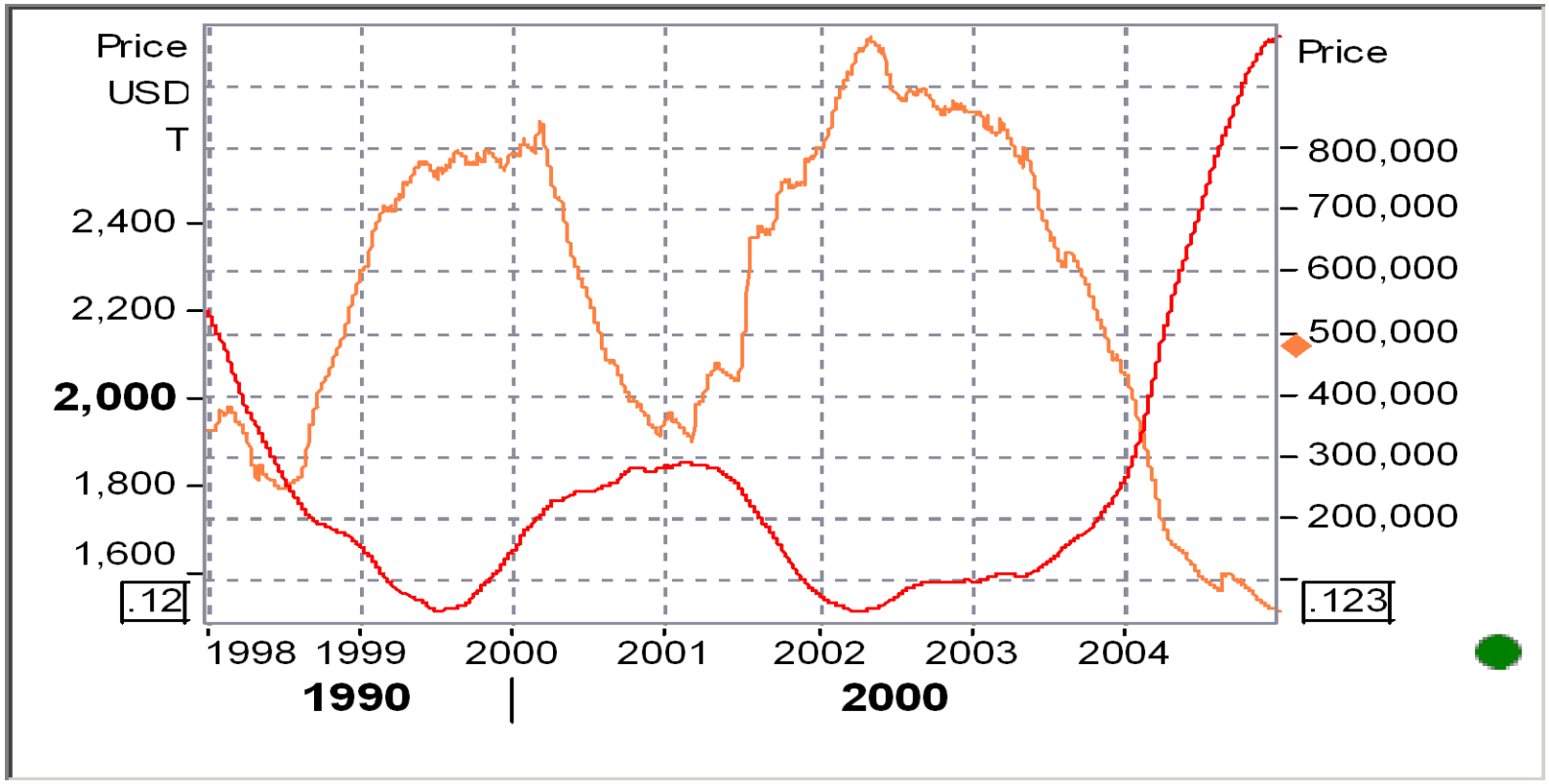
The Fundamental Drivers
Copper Prices Vs LME Stocks 1998-2004



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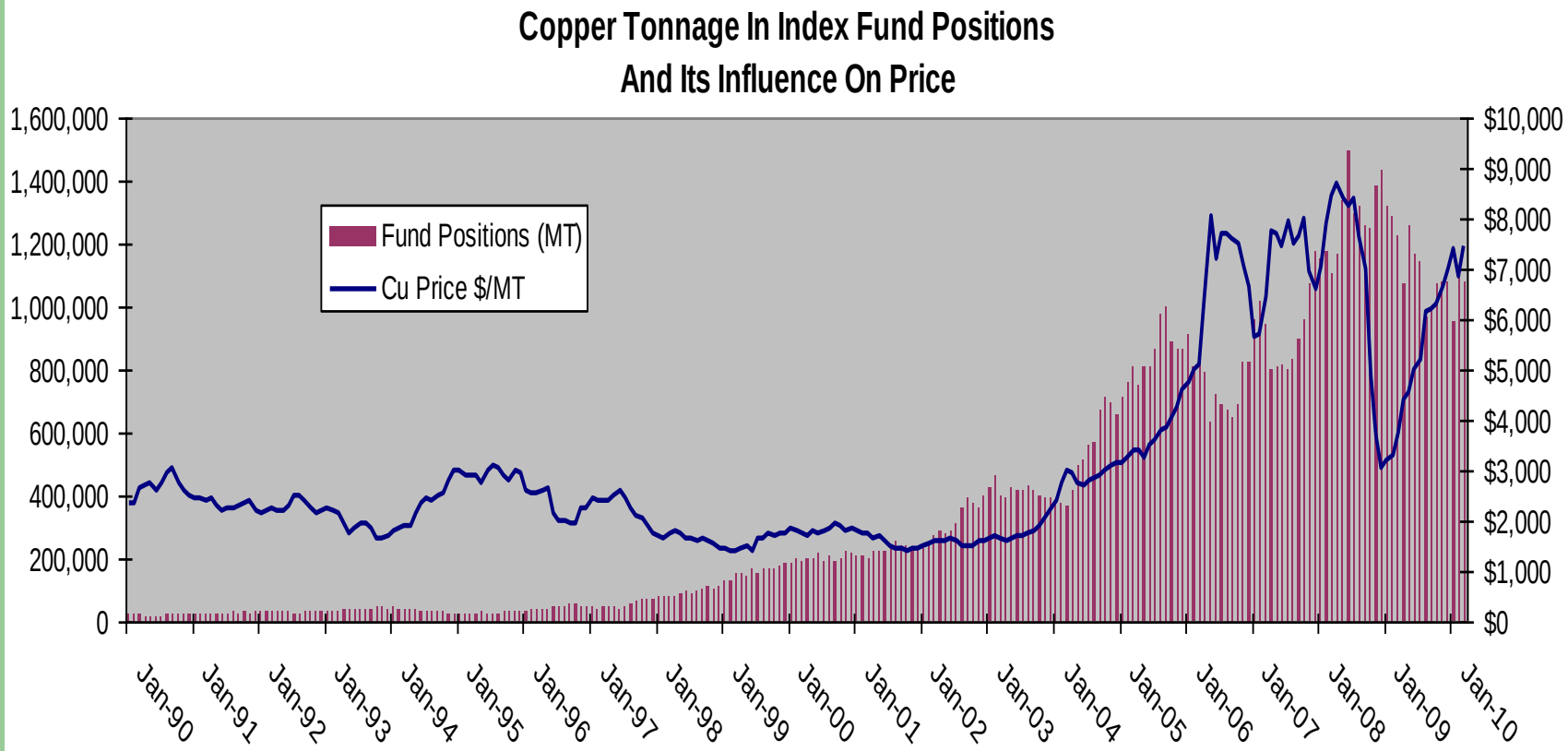
The New Drivers
Investor Influence on Copper Prices



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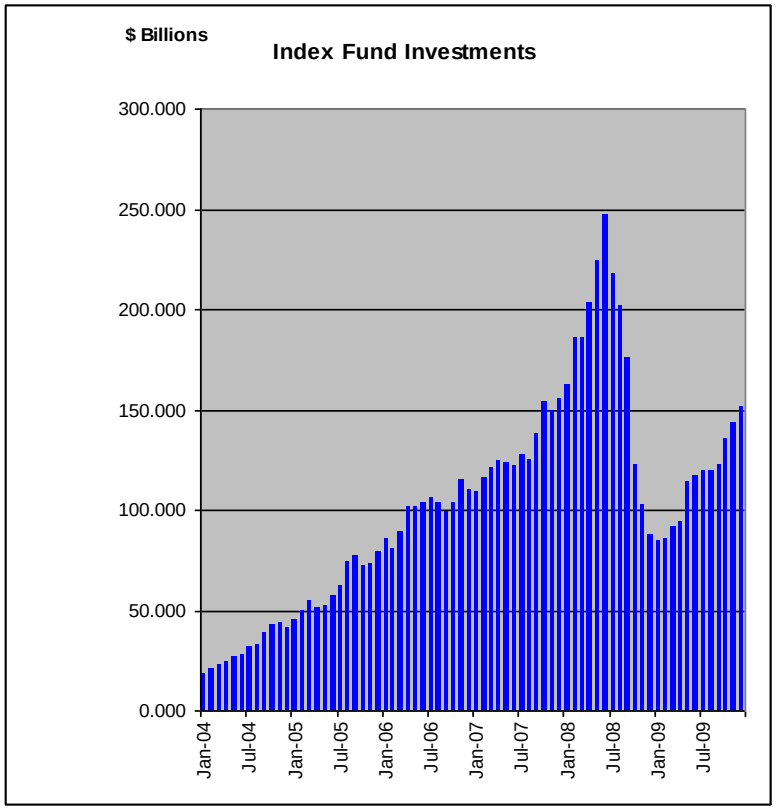
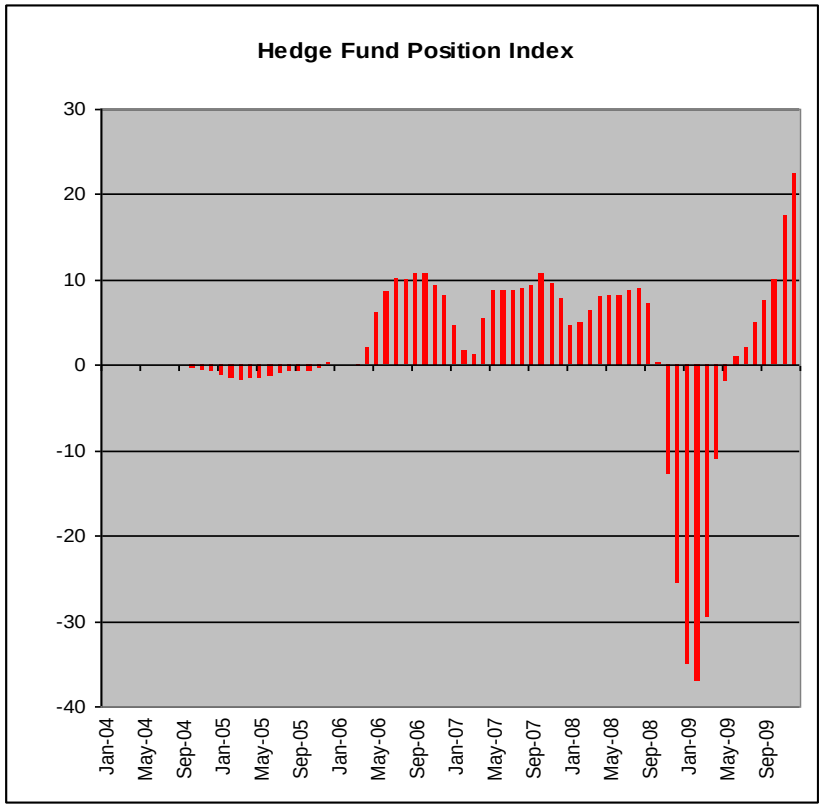
Copper As An Investment Product
BME's Fund drivers





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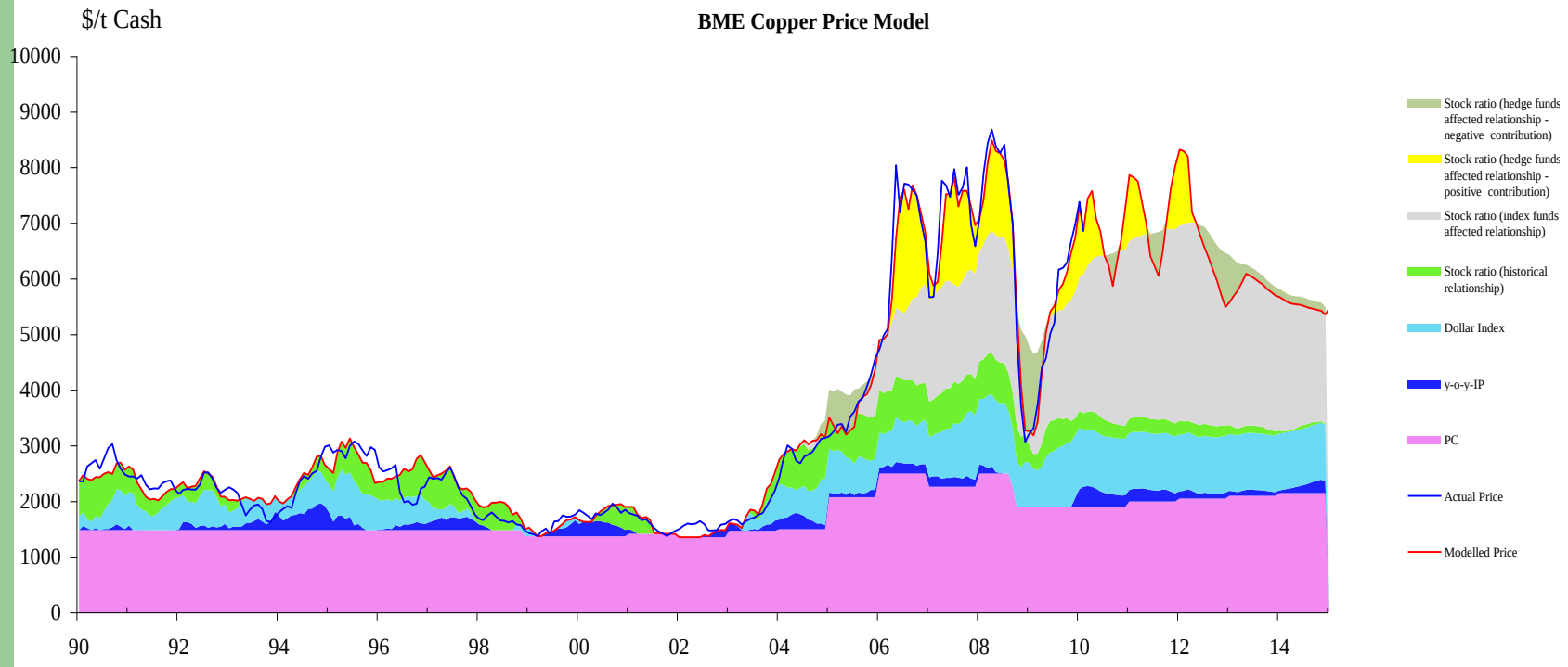
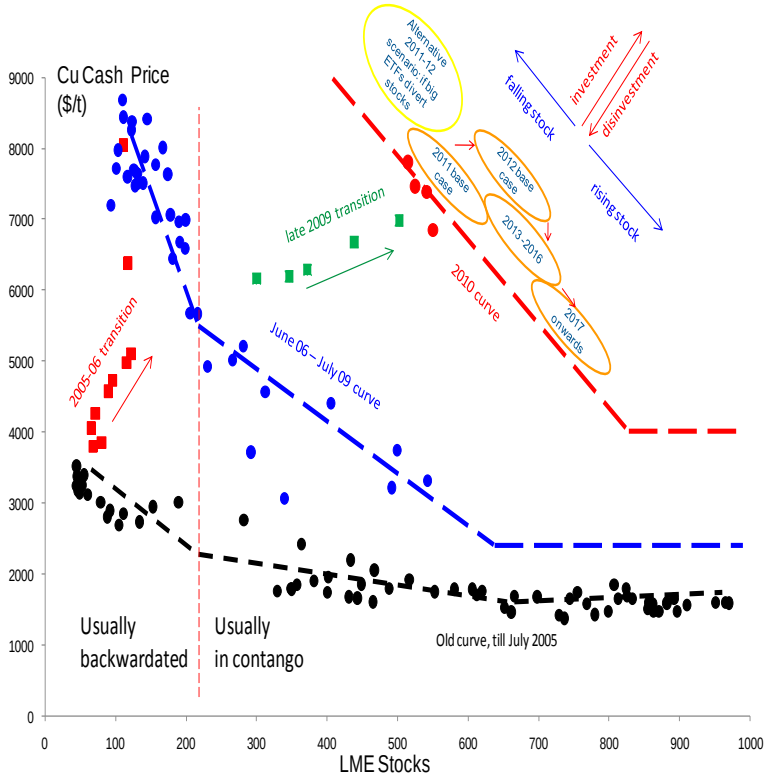
BME's Interactive Copper Price Model Fundamental and Investment Drivers



This worksheet shows the actual Copper cash price and the modelled Copper price over the historical and forecast period. Changing the drivers in Columns B to I in the Main worksheet immediately updates the chart and shows the new scenario.

The Changing Price Response Curves

- 1990-2005 price curve ranged from cost curve+contango to “pinch point” in backwardation. Forward structure dominated by forward hedging
- 2006-9 Curve shifts higher - producer hedge shorts overwhelmed by fund longs, but price movement still negatively correlated with stocks
- 2009 Transition - curve shifts higher still – price dominated by renewed investment down the forward curve, tolerates higher stocks, and forward contango
- 2010-2017 Curve may pushed yet higher - investment buying coinciding with physical surpluses and higher tolerated stock levels
- Future price structure inherently unstable
  - Subject to swings in investment mood rather than supply\demand – extreme short-term volatility
  - Creates hard to quantify environment for demand destruction and high-cost production
- Conditions encourage permanent contango and resumption of selective forward hedging by both producers and consumers



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What Can We Do About All This?

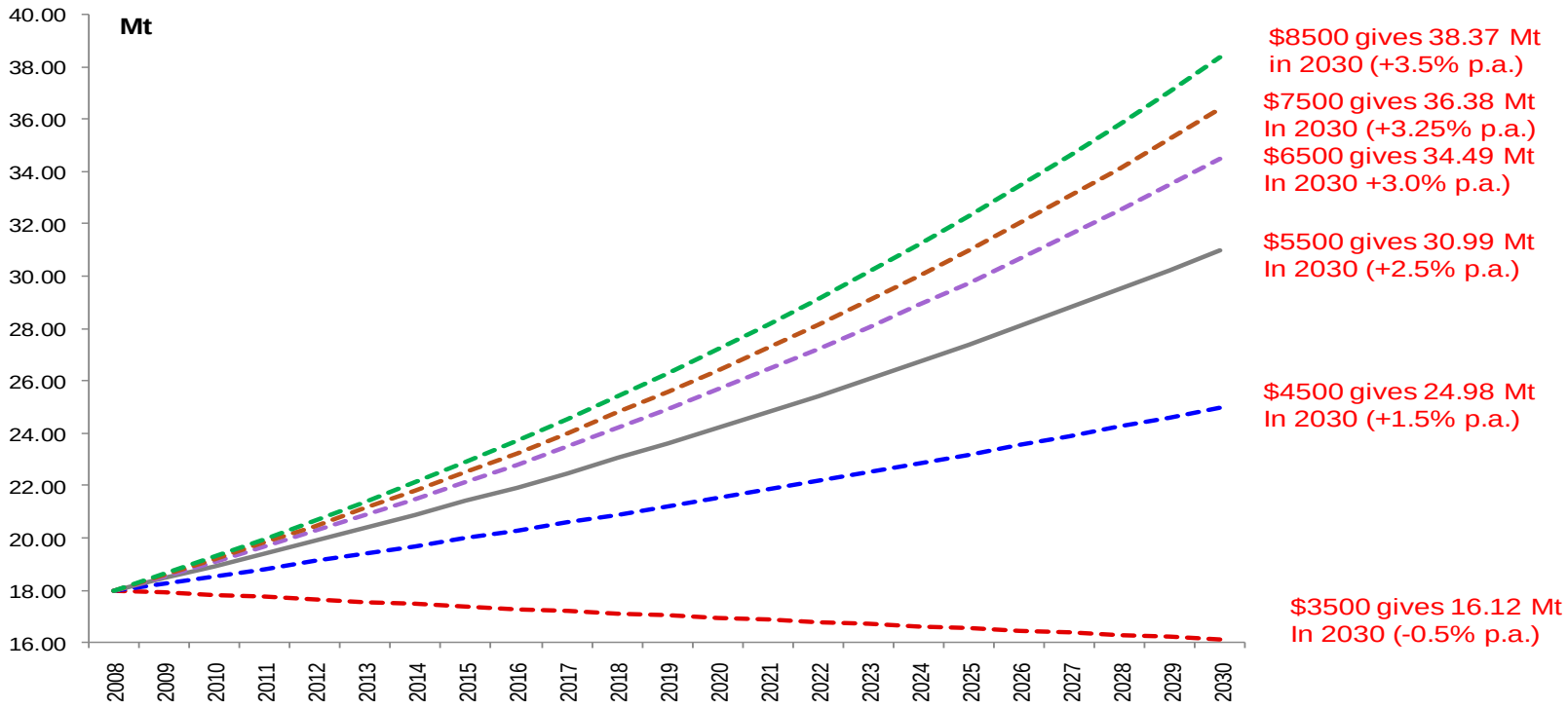
- Leave the copper industry and get into something safe like bomb disposal?
- Support government regulation to restrain investor participation in commodities?
- Recognize we are all in two parallel businesses – breaking rocks or making widgets on the one hand and managing copper risk on the other – we must manage copper risk as successfully as manufacturing risk
- Devote as much time, energy and money to the latter as the former – research, market understanding, risk management skills
- Negotiate copper pricing terms with commercial counterparts as if you were defusing an unexploded bomb. If a pricing formula isn't hedgeable, don't allow it
- If you are a producer or an end-consumer, dust off those hedging manuals. Selectively hedging forward copper production or end-consumption makes more sense now – over a medium-term horizon at least
- Learn to take advantage of volatility – gain market share and enhance margins by being smarter than your customers and taking advantage of profitable market structures in your hedging

The Long Term Threat of $4.00+\lb Copper Demand Destruction and Supply Explosion

- China second in world in engineering research investment
- Extensive well-publicized current Chinese research in copper clad aluminum for electrical conduction
- Worth employing 180,000 Chinese engineers to save the cost of 10% of Chinese copper consumption
- Large high cost, high risk orebodies become feasible long term. Mongolia, Zambia, DR Congo, Pakistan, Afghanistan – Chinese investment in each one
- Small high cost mines and expanded scrap generation in the short term – swing producers who exacerbate price volatility
- Gradual increase of oversupply, if financed by commodity investment flows, may leading to unsustainable inventory overhang and long term price collapse,
- BME's revolutionary industry model demonstrates what happens when investment drives price which drives supply and demand, rather than the reverse

BME Long Term Copper Outlook Supply Curve Vs Price

Copper production growth: how different assumed steady-state investment/disinvestment driven prices might affect the supply trend



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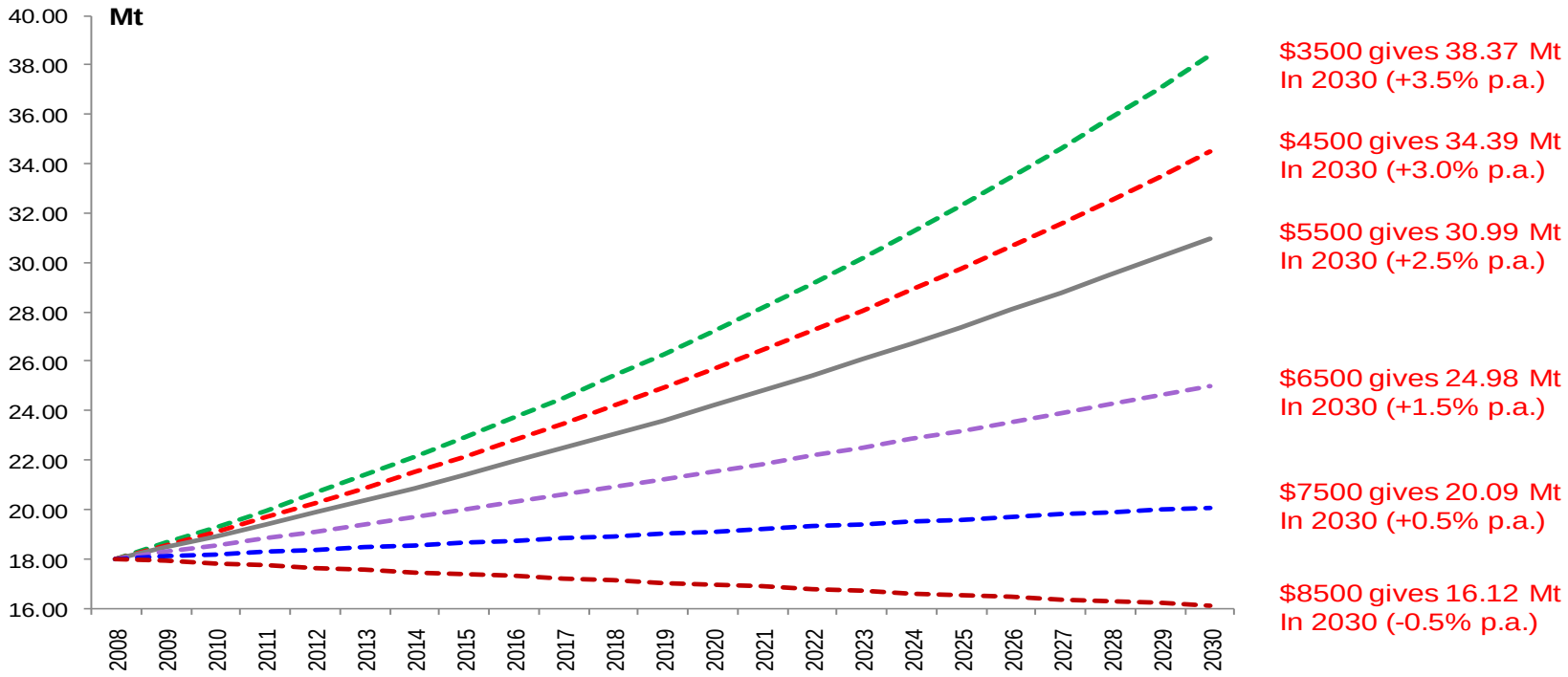
BME Long Term Outlook for Copper Demand Curve Vs Price

Copper consumption growth: how different assumed steady-state investment/disinvestment driven price levels might affect long term demand trends.



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What is The Good News?

- Volatility is a two-way street – if managed properly it enhances profit margins
- Liquidity down the forward price curve facilitates hedging by producers, end-consumer and fabricator inventory hedgers
- Nearby contango structure created by “buy and roll” funds is more stable for hedgers and generates margin enhancement for inventory hedgers
- Increased forward hedging by producers creates mixed contango backwardation structures down the curve which can be used to good benefit by fabricators hedging customer price fixation
- The payback from use of risk management skills vs. their resource costs is now much greater
- Software control systems necessary to manage risk are more accessible, more sophisticated and less expensive
- Outside guidance is now better and more affordable. CRMA and BME will be glad to help

Contacts

- BME – Further information on publications, models and technical analysis expert systems can be obtained from Robert Goldstein: rbg@bloomsburyminerals.com
- See also our website: www.bloomsburyminerals.com
- CRMA – Please contact David Waite regarding price risk management: davidwaite@commoditiesriskmanagement.com
- See also our website: www.commoditiesriskmanagement.com

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