# Question 1

**Challenges and Outlook of the Copper Market Extract 1: Miners face challenge tapping copper opportunities**

Both Rio Tinto and BHP Billiton, two of the world’s top ten copper producers, believe the copper market is oversupplied now but will tighten from 2018, with growing deficits. Demand for copper is expected to be steady, given that it has a wide range of applications such as electrical wiring and pipes, and is forecast to be widely needed as China shifts towards more consumer-led growth.

But the complexity and expense of mining projects means the larger miners may not be in a position to generate a quick acceleration of copper output. Rio took a step forward in December to build Resolution, a US copper mine expected to be one of the world’s largest. Rio owns 55% of the project, with BHP owning 45%. Yet obtaining all the permits for Resolution could easily take Rio another five to seven years.

Because receiving approval for mines is so laborious, Rio and others have walked away from some projects, even if the copper resources involved are substantial. Since 2013 Rio and Anglo American, another major mining company, have both given up on Pebble, a huge copper deposit in Alaska that is controversial for its potential effect on fisheries, for example.

Another challenge for miners is the expense involved in building mines. Glencore, another major copper miner, sold its Las Bambas project in 2014 to MMG, a subsidiary of China's Minmetals, for about $7 billion. MMG said in October that the remaining 25% of construction would cost between

$2.7billion and $3.2 billion. BHP, which owns Olympic Dam, an Australian mine, abandoned an expansion plan in 2012 because of the likely cost.

Source: Adapted from: *The Financial Times*, James Wilson, 6 January 2015

# Extract 2: The outlook for copper

The price of copper has fallen steadily in recent years. The sharp slowdown in industrial activity in China is disastrous for copper producers, since China consumes 45% of their output. Its attempt to shift from an investment-led economy to a consumer-led one has raised fears of a structural decline in the amount of copper it will need.

One recent disappointment has been the delay in the roll-out of electricity infrastructure in inland Chinese cities. Analysts at BHP say such infrastructure accounts for the biggest share of copper consumption in China. Yet a crackdown on corruption at state-run energy companies slowed the grid-laying projects during the first half of the year. What is more, China is increasingly using aluminium for its thick power-distribution cables, rather than copper – a cheaper option, even if aluminium is a poorer conductor and is more prone to corrosion.

Yet the outlook for China is not all pessimistic. As incomes increase, the “intensity” of copper use is likely to grow. Nascent industries such as wind and solar power and electric vehicles, all of which are copper-intensive, may also boost future demand.

Before then, supply must fall to balance the market. Some estimate that the industry will still churn out about 500,000 tonnes of excess copper this year. The oversupply will get worse: it takes several years to build a mine, so firms which had invested heavily in copper mines during the boom years now find their mines starting to come into operation. As a result big new increments of supply

have hit the market in the past year or two, just at the wrong time. Glencore, one of the five largest mining companies in the world, announced last month that it would close mines in the Democratic Republic of Congo and Zambia, cutting supply by about 400,000 tonnes over 18 months – some 2% of the world’s annual output. Besides Glencore, it is reported that other mines producing a further 170,000 tonnes a year have been idled so far this year.

But only the most expensive supplies are being removed from the market. Many firms are instead slashing costs to keep production going. The industry’s fragmentation makes it unlikely that producers will agree to rein in output. Investment bank, Goldman Sachs, notes that the top five copper producers have about 35% of the market. While some firms are trying to cut output to reduce costs and stem the price slide, other firms are expanding their output to increase market share. In some cases, it is cheaper over the long run to keep mines running at a loss for a while, to maintain security and retain staff, rather than to close them down.

Within a few years, however, many analysts expect natural constraints to put a floor under prices. The quality of ore in copper mines decreased during the boom. Water shortages make copper more expensive to extract. Mine depletion in Chile and Peru has driven companies towards new deposits laced with arsenic that require costly cleaning. And workers and environmentalists increasingly raise their voices against lousy pay and deteriorating environmental conditions. Higher costs make it less likely copper production will increase, which should eventually help stabilise the market. Chinese demand may also be supplemented by growth in other emerging markets, such as India, which currently consumes just 2% of the world’s copper.

Source: Adapted from: *The Economist*, 1 Oct 2015

# Extract 3: Fed move adds to pressure on commodities

Prices of most commodities fell after the US Federal Reserve’s decision to raise interest rates compounded their long term woes. Low interest rates had helped stoke the commodities boom as companies tapped cheap money to vastly expand production. Now commodities markets are suffering, with the interest rate hike adding to a multitude of industry-specific problems - a toxic combination of oversupply and weak demand from a slowing Chinese economy.

The biggest immediate effect of the Federal Reserve’s decision to raise interest rates came through the strengthening US dollar. That makes internationally traded commodities from oil to copper, which are priced in US dollars, more expensive for holders of other currencies. But down the road, analysts foresee more pain from rising rates as companies struggle with increased financing costs and emerging market demand takes another hit. Investors fear that the Fed's rate increase might further sap demand from once insatiable emerging economies, such as India and China. Investors have already withdrawn a net $500 billion from emerging markets in 2015, the first annual outflow in decades, compounding falls in their currencies as capital leaves their shores and make commodities more expensive.

Source: Adapted from *The Wall Street Journal*, 17 December 2015

# Extract 4: Village protest against dam built by copper miner in Chile

Black flags hang from the doors of the one-storey red brick houses in Caimanes, a village that lies in the hills north of Santiago on the course of the Pupio stream. The banners are the sign of a bitter environmental protest against a nearby dam, which holds waste from a copper mine -- one of Chile's largest -- high up in the Andes. Last November, a group of up to 150 villagers took matters into their own hands and blocked access to the dam, which was said to pollute the village's water supply and pose an environmental threat in case of flooding or an earthquake.

The battle between the people of Caimanes and the owner of the Los Pelambres mine has become a symbol of social change in Chile, which produces 30% of the world’s copper. The

government of Chile is committed to tackling inequality and as part of that is demanding higher standards from mine owners. But it is happening against a backdrop of slowing growth in China, the world's biggest copper market. Prices of the metal -- which makes up 13% of Chile's economic output and 50% of its exports -- fell to their lowest levels in five years just as the protesters kept guard outside the town. Copper mining made up 20% of the country’s tax revenues in 2010 and employed some 1.1 million people in 2013. The shift in policy in Chile is being driven by a greater focus on the environment, in some cases, at the expense of economic growth and employment.

Source: Adapted from: *The Financial Times*, 27 April 2015

# Figure 1

5.0

4.5

4.0

3.5

3.0

2.5

2.0

1.5

1.0

0.5

0.0

**Copper/Aluminium Price Ratio**

**Questions**

Jan-12 Mar-… May-… Jul-12 Sep-12

Nov-… Jan-13

Mar-… May-… Jul-13 Sep-13

Nov-… Jan-14

Mar-… May-… Jul-14 Sep-14

Nov-… Jan-15

Mar-… May-… Jul-15 Sep-15

Nov-…

Source: London Metal Exchange

1. Compare the price of copper relative to the price of aluminium over the period from September 2012 to November 2015. [2]
2. With reference to Extract 2, and using a demand and supply diagram, explain why the price of copper “has fallen steadily in recent years”. [6]
3. With reference to the data, comment on the likely PED and PES values of copper. [4]
4. **(i)** Identify one demand factor and one supply factor that would affect the price of copper in the next 2 to 3 years. [2]

**(ii)** Suppose you are an analyst with an investment bank, justify your forecast for the price of copper in the next 2 to 3 years. [6]

Total: 30]