PARADIGM CAPITAL

MES Discussion Group

Deep Freeze!

January 2016

David Davidson, Sr. Analyst,
416-360-3642,
ddavidson@paradigmcap.com

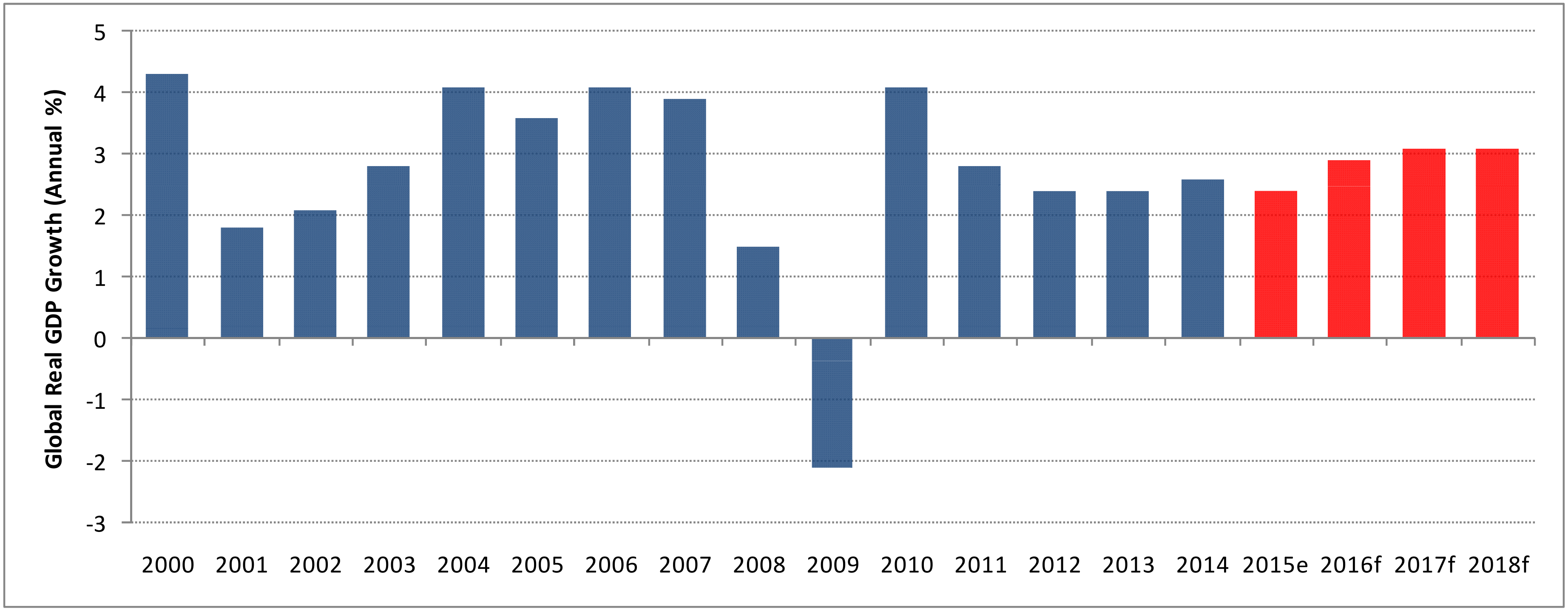
Investment Thesis

- We remain cautiously optimistic for 2016; however, the first half of the year is expected to remain volatile. While providing some short-term trading opportunities, it could also provide an opportunity to position portfolios for the longer term.
- Balance sheet risk is emerging as a major concern for investors. Consequently, we recommend sticking with companies that have limited re-financing risk. It should be noted that ~70% of the industry's debt matures during 2020 and 2022 — avoid that window.
- Diversification, both by commodity and geography, is still considered prudent in volatile markets. It remains too soon to chase leverage.
- Valuation at market inflection points remain very difficult. As a consequence we are using a discount to NAV of 0.75x. This more than compensates fro a period of low commodity prices.

Economic Backdrop

Global GDP Growth

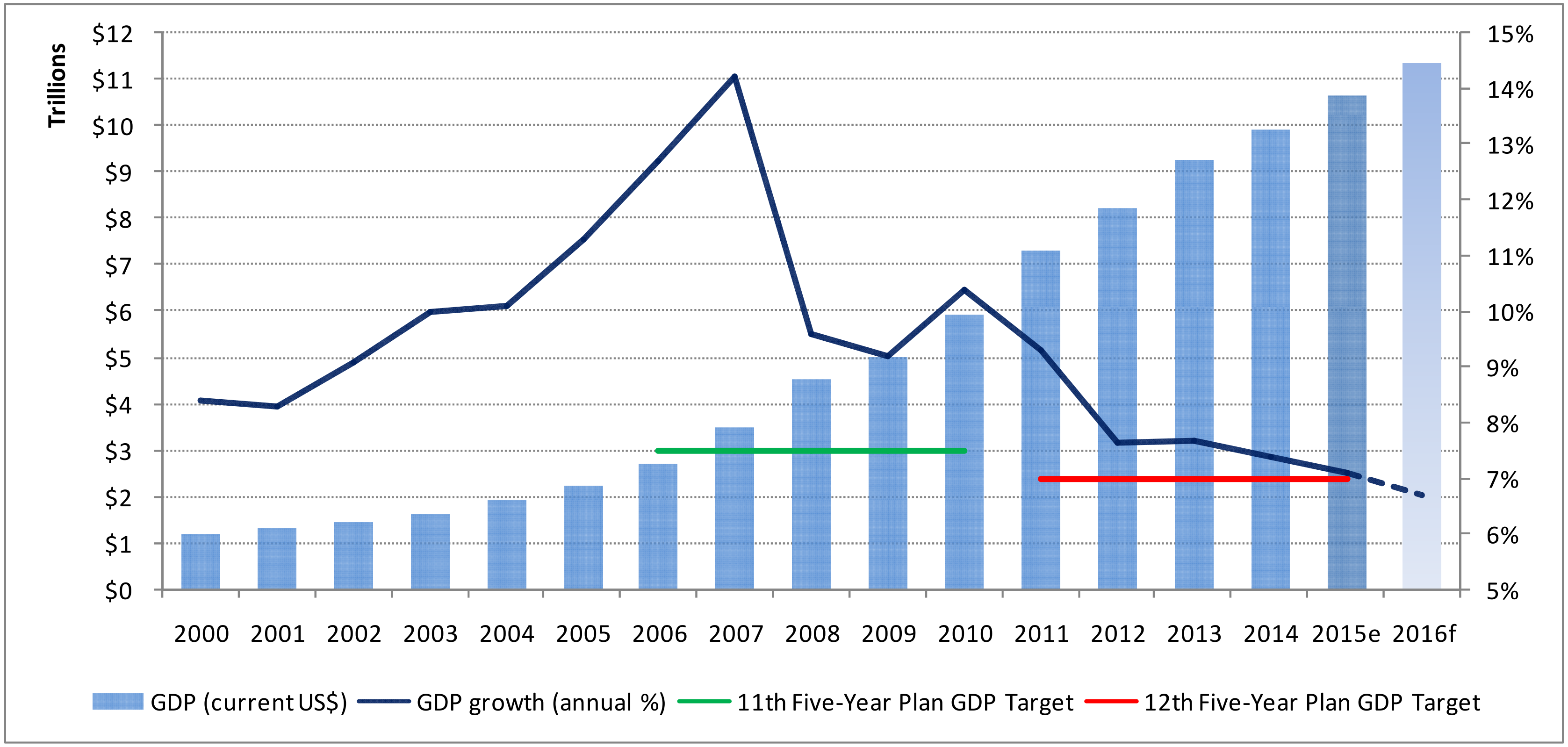
- World Bank is forecasting 2016 global real GDP growth of 2.9%, but emerging markets are being left behind – bias remains for downward revisions



Source: The World Bank Group

Chinese GDP Growth

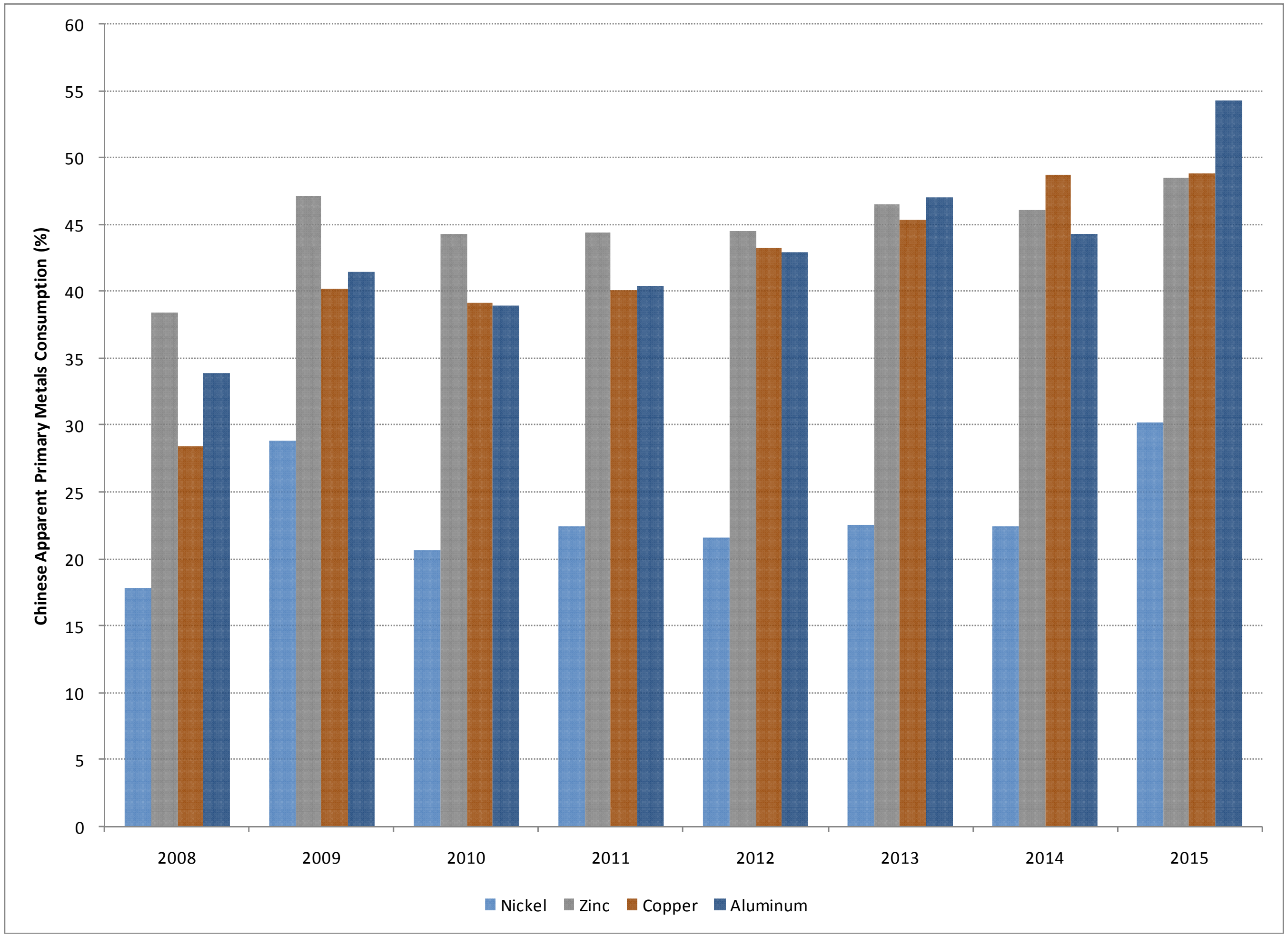
- Forecasts are for GDP growth of 6-7%, which equals US$700B of absolute GDP growth
- Ten years ago, China achieved GDP growth of 10–13%, which equated to ~US$250–US$350B of GDP per year
- 13th 5-Year Plan will be scrutinized carefully – expectations for GDP growth of ~6.5%



Source: The World Bank Group

Chinese Apparent Metals Consumption

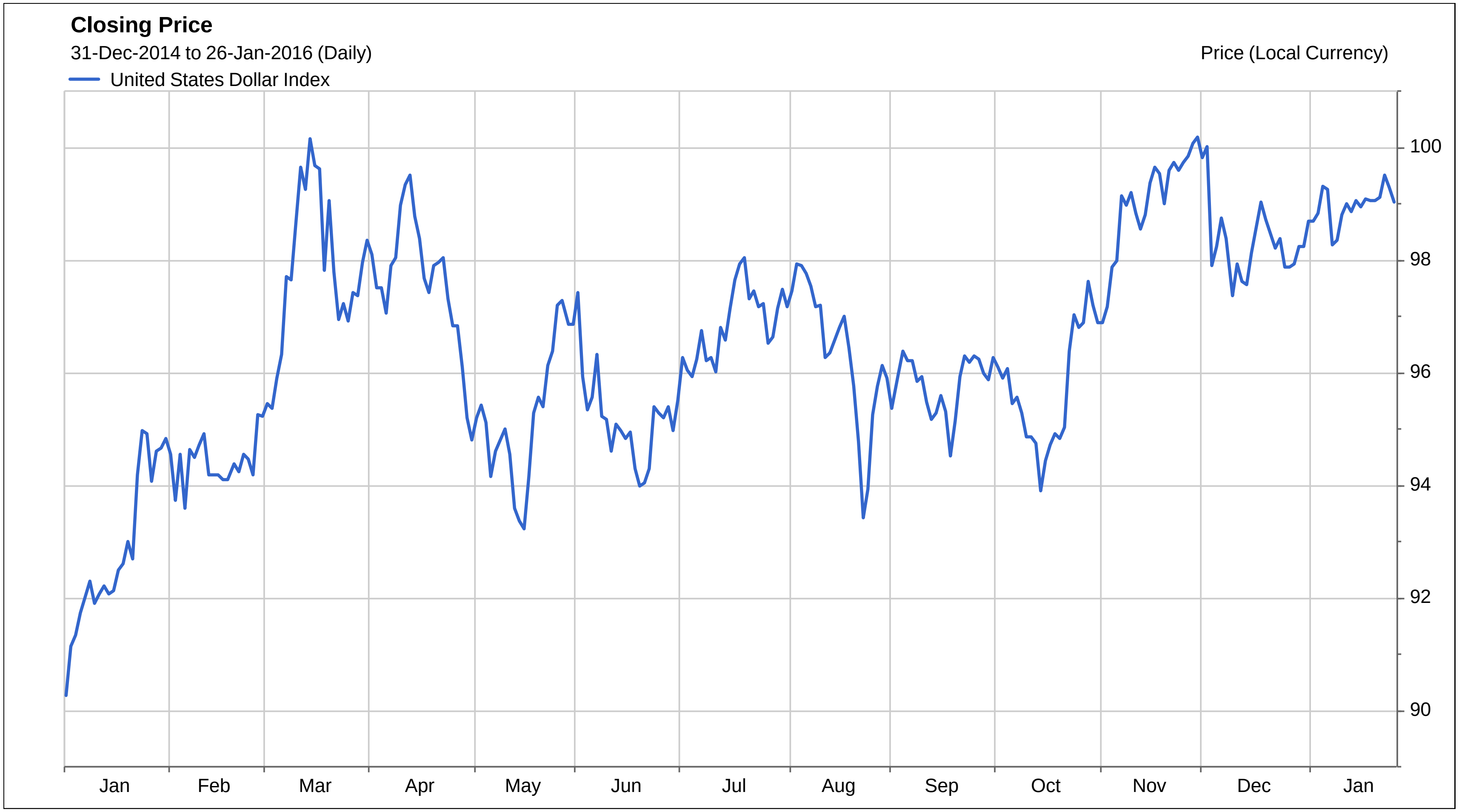
- Despite slowing GDP growth, the percentage of industrial metals China consumes continues to increase



Source: Bloomberg, ICSG, ILZSG, WBMS, Paradigm Capital Inc.

The Mighty Dollar

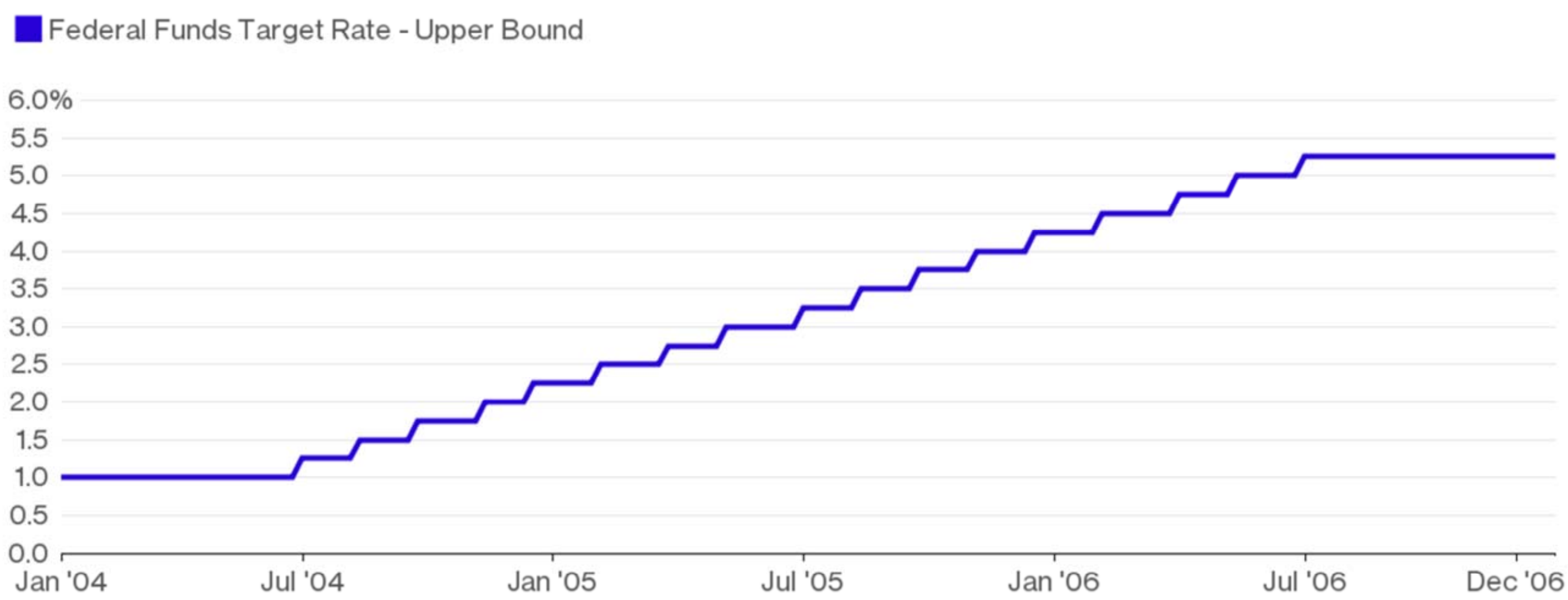
- Despite raw material price declines consumers have yet to fully benefit as the USD remains the currency of choice



Source: FactSet

U.S. Monetary Policy

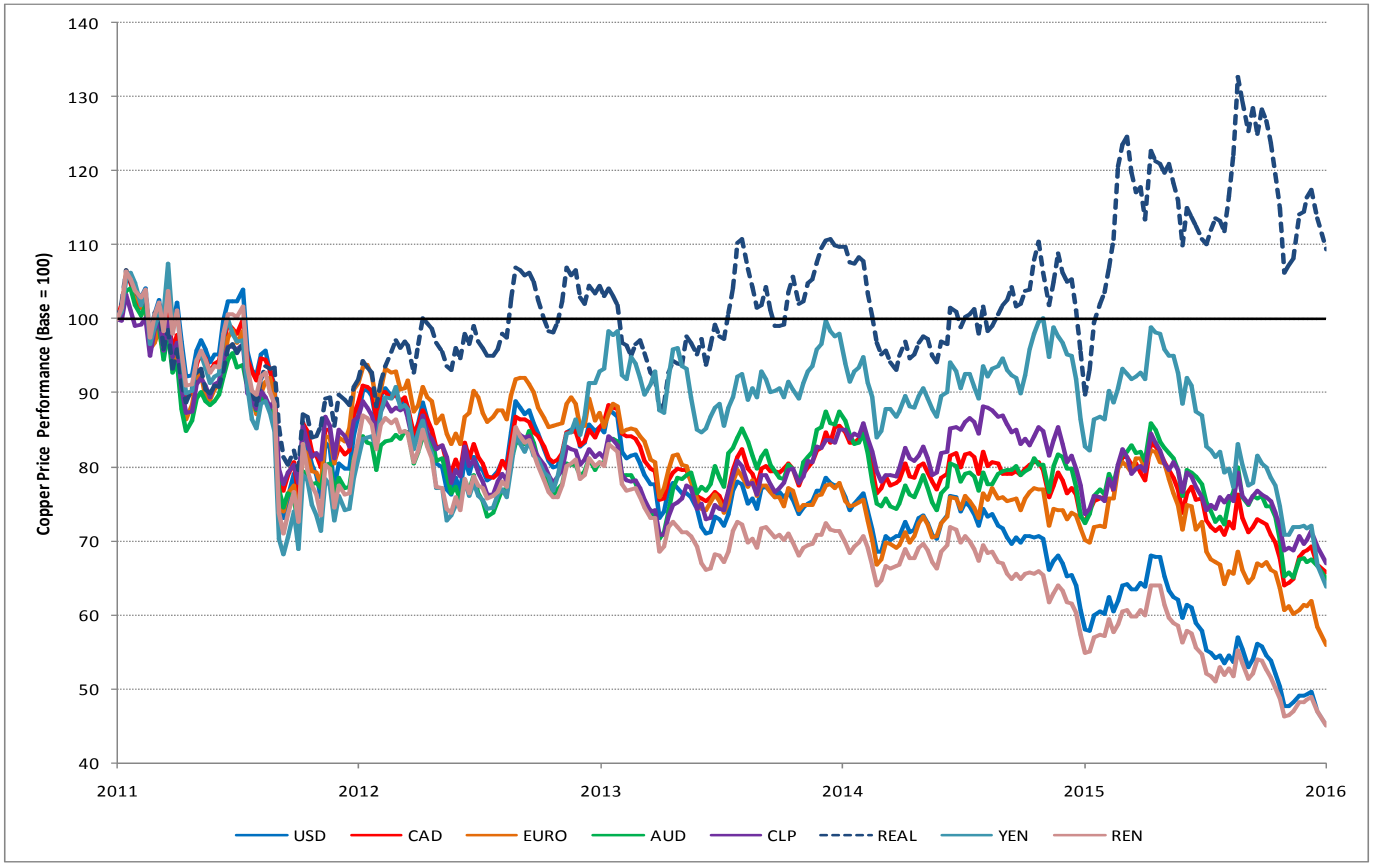
- The 0.25% interest rate increase by the U.S. Fed in December goes against the global trend of easing
- Where do we go from here? Gradual is what the market has been has been told, but few know what that may mean
- We are unlikely to see the stair-step policy witnessed during the Bernanke era in 2004-2006, which received a rate increase every FOMC meeting



Source: Bloomberg

Copper Price Performance

- Despite the ~50% copper price drop in US$ terms, producers have been aided by weaker domestic currencies
- Producers are also enjoying the benefits of lower treatment and shipping charges, as well as decreased diesel prices, which can be a significant cost component



Source: FactSet, Paradigm Capital Inc.

Commodity Forecasts

Commodity Price Forecast

- Despite downward revisions, we are still viewed as too optimistic
- Strict adherence to fundamentals underrates the role market psychology can play

January 2016

Forecast	Units	Average 2015	Short-term 2016	Mid-term 2017	2018	2019	Long-term 2020+
Base Metals							
Cobalt	US$/lb	12.91	13.00	13.00	13.00	13.00	13.00
Copper	US$/lb	2.50	2.35	2.75	3.50	3.50	3.10
Iron Ore (62% CFR)	US$/t	56	Spot				
Lead	US$/lb	0.81	0.80	0.95	1.15	1.15	1.10
Metallurgical Coal	US$/t	101	80	90	100	100	110
Molybdenum	US$/lb	6.56	5.50	6.00	7.00	8.00	9.00
Nickel	US$/lb	5.37	4.50	6.50	9.00	9.00	9.00
Uranium*	US$/lb	37	40	45	60	60	65
Zinc	US$/lb	0.87	0.80	1.05	1.20	1.20	1.10
Precious Metals							
Gold	US$/oz	1,160	Spot				
Palladium	US$/oz	691	Spot				
Platinum	US$/oz	1,054	Spot				
Silver	US$/oz	15.71	Spot				
Exchange Rate							
C$/US$	-	0.78	0.70	0.75	0.80	0.85	0.85

*Calendar year-end spot price, opposed to a yearly average price for the other commodities.

Source: Paradigm Capital Inc.

Copper

Heading for Another Tight Market

New Copper Supply – Under Pressure

- In the wake of the lower copper price environment ~1.0Mt of cutbacks have been announced – cutting into the tentative new supply
- Expect further cutbacks

New Supply (000's Mt)	**2015e**	**2016e**	**2017e**	**2018e**
Alumbrera	(50)	-	-	-
Batu Hijau	130	(20)	-	-
Buenavista	50	100	50	-
Caseronnes	60	-	-	-
Cerro Verde	-	150	175	50
Cobre Panama	-	-	-	150
Constancia	60	10	-	-
Escondida	(50)	(50)	-	-
Grasberg	125	100	(100)	-
Kennecott	(100)	50	50	-
Konkola Deep	55	-	-	-
Las Bambas	-	125	150	75
Morenci	75	-	-	-
Oyu Tolgoi	-	50	-	-
Sentinel	50	100	100	-
Sierra Gorda	65	-	-	-
Tenke	-	15	15	-
Toromocha	55	50	55	-
Other	300	250	200	250
Total New Supply	**825**	**930**	**695**	**525**
Disruption Allowance (4.5%)	(37)	(42)	(31)	(24)
Net New Supply	**788**	**888**	**664**	**501**

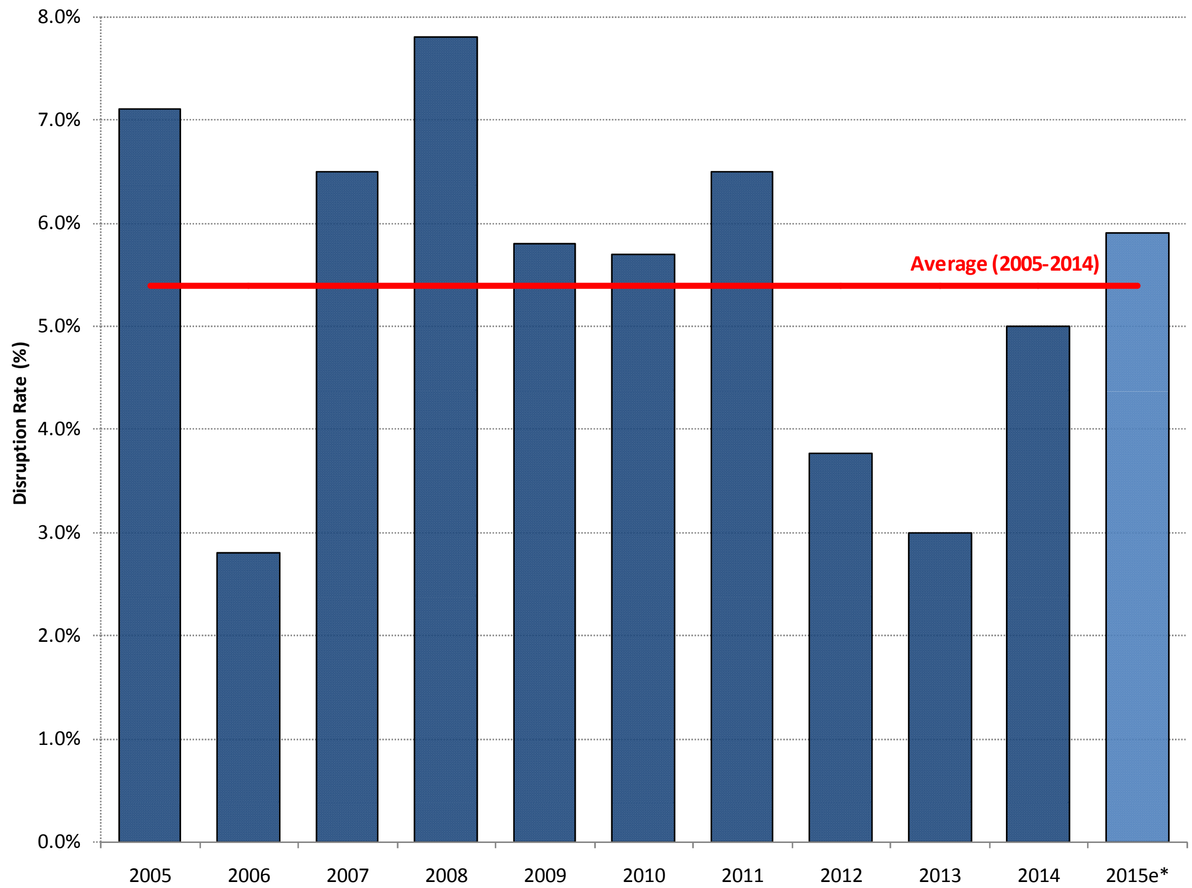
Source: Paradigm Capital Inc.

			Production Cuts (Kt Cu)			
Operator(s)	**Announced**	**Operation(s)**	**2015e**	**2016e**	**2017e**	**Total**
Glencore	07-Sep-15	Katanga, Mopani	66.7	266.7	66.7	**400.0**
Freeport	27-Aug-15	Several	-	68.0	68.0	**136.0**
Freeport	22-Oct-15	Sierrita	-	45.4	45.4	**90.8**
Asarco/Grupo Mexico	28-Aug-15	Hayden, Ray	7.5	30.0	30.0	**67.5**
Anglo/Glencore	29-Sep-15	Collahuasi	7.5	30.0	30.0	**67.5**
Total			**81.7**	**440.1**	**240.1**	**761.8**

Source: Company news, Paradigm Capital Inc.

Disruption Allowance

- The new reality in the old standby fudge factor "the disruption allowance"
- 2015 was impacted by rains in Chile, power disruptions in Zambia and now cutbacks by major producers such as Glencore and Freeport



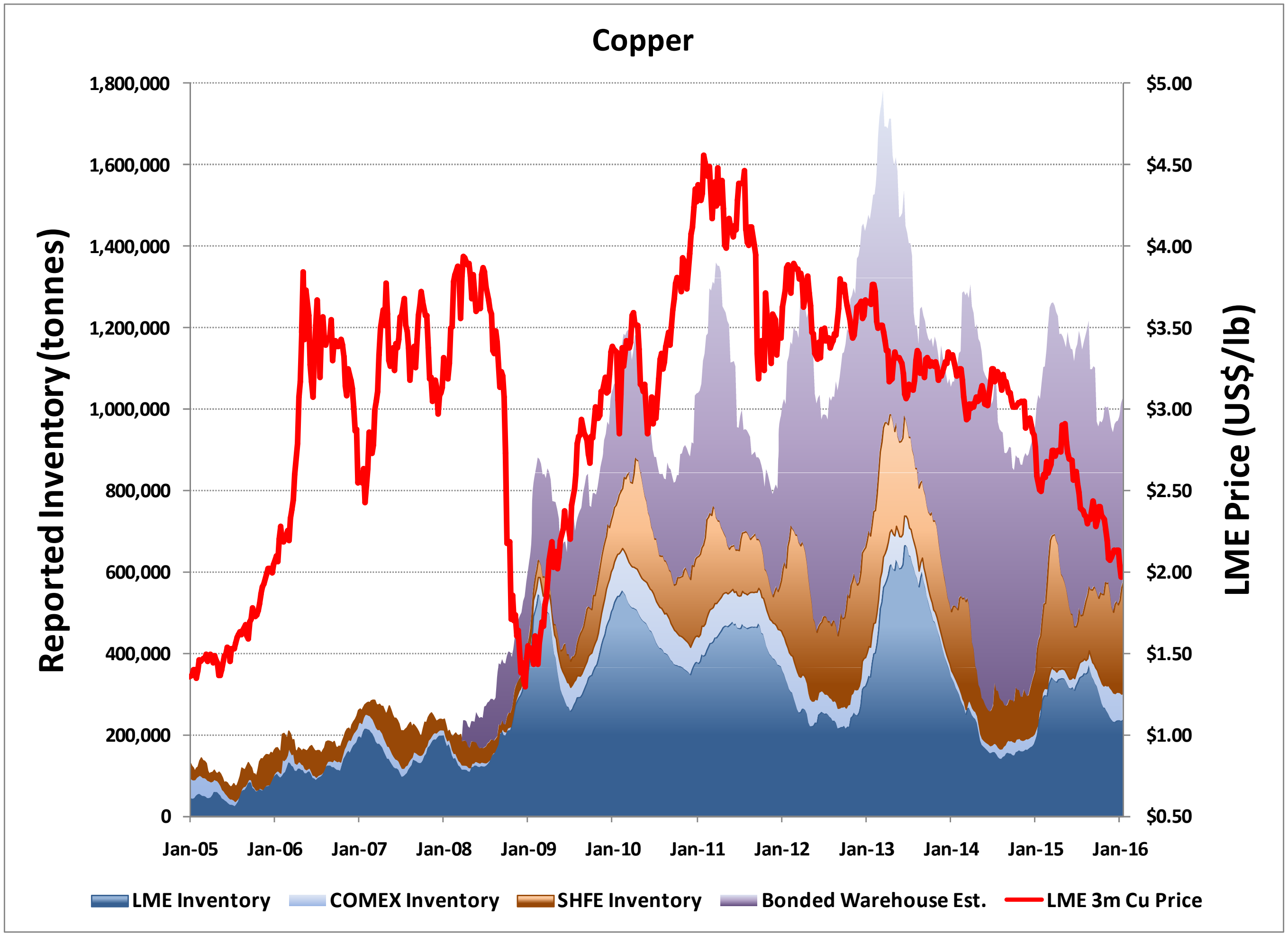
*PCI estimate

Source: Rio Tinto, Paradigm Capital Inc.

PARADIGM CAPITAL

Forward Copper Price and Inventories

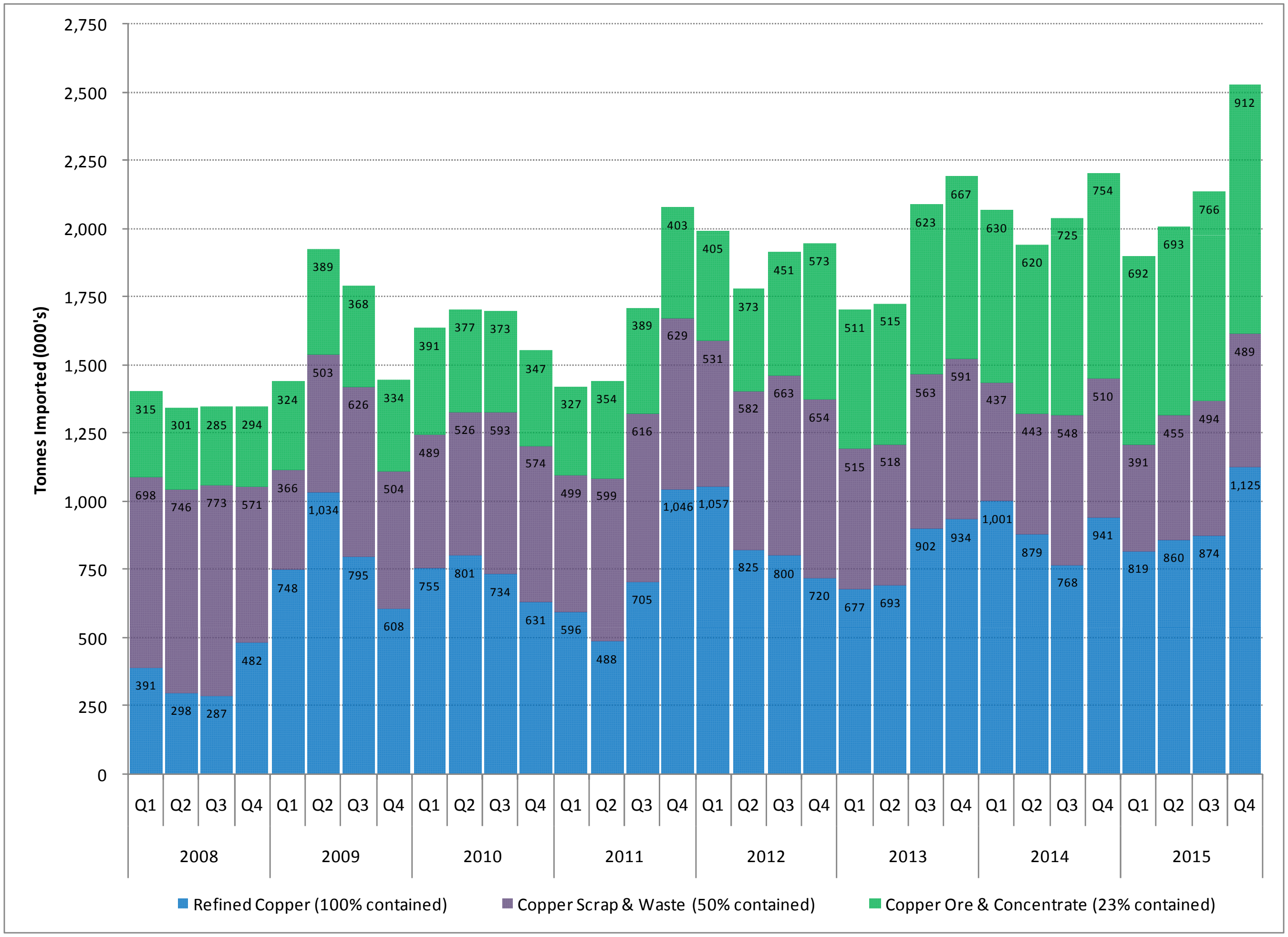
- Visible copper stocks remain low on a historical base at less than two-weeks consumption



Source: Bloomberg, Paradigm Capital Inc.

Chinese Copper Imports

- Despite China's slowing GDP growth, copper imports are at record levels
- ~45% of China's copper consumption is in the electrical grid that is still being expanded

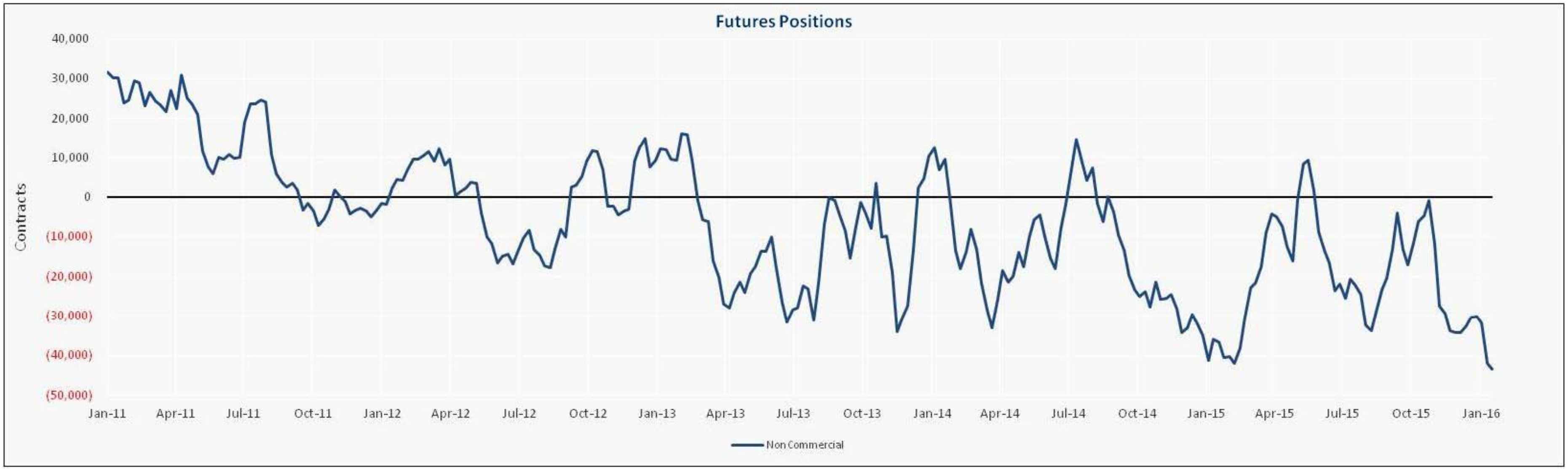


Source: Bloomberg, Paradigm Capital Inc.

PARADIGM CAPITAL

Traders View of Copper

- The copper net non-commercial futures position is back to record short levels
- A first derivative of a short on the Chinese economy
- Volatile when direction changes



Source: Bloomberg, CFTC

World Copper Supply & Demand Forecast

- Recent International Copper Study Group (ICSG) provided revised guidance implying a tight market in 2015 and a meaningful deficit in 2016

Regions (1,000 t)	Mine Production 2014	Mine Production 2015	Mine Production 2016	Refined Production 2014	Refined Production 2015	Refined Production 2016	Refined Usage 2014	Refined Usage 2015	Refined Usage 2016
Africa	1,945	1,877	2,006	1,357	1,372	1,349	247	257	263
N.America	2,595	2,520	2,741	1,812	1,789	1,894	2,266	2,319	2,364
Latin America	7,562	7,705	8,167	3,344	3,191	3,178	579	546	568
Asean-10/Oceania	1,726	1,926	2,270	1,002	934	1,088	908	932	1,004
Asia ex Asean/CIS	2,363	2,407	2,564	10,798	11,392	11,868	14,498	14,420	14,939
China	1,781	1,741	1,845	7,649	8,174	8,600	10,995	10,937	11,389
Asia-CIS	578	616	679	370	432	478	102	103	103
EU	845	854	873	2,741	2,713	2,696	3,179	3,191	3,195
Europe Others	914	925	935	1,056	1,082	1,087	1,115	860	875
TOTAL	**18,528**	**18,830**	**20,235**	**22,480**	**22,905**	**23,638**	**22,894**	**22,628**	**23,311**
World Adjusted	**18,528**	**18,751**	**19,542**	**22,480**	**22,669**	**23,183**	**22,894**	**22,628**	**23,311**
% Change		**1.2%**	**4.2%**		**0.8%**	**2.3%**		**-1.2%**	**3.0%**
World Refined Balance (China apparent usage basis)							**(414)**	**41**	**(127)**
World Refined Balance Adjusted for Chinese Bonded Stocks Change							**(427)**		

Source: ICSG (Oct. 2015)

Supply	2013	2014	2015e	2016e	2017e
Mine production	18,200	18,875	19,555	20,161	20,665
Change y/y	8.0%	3.7%	3.6%	3.1%	2.5%
Refined copper	20,850	21,600	22,425	23,120	23,863
Change y/y	3.5%	3.6%	3.8%	3.1%	3.2%
Demand					
Global demand	20,600	21,500	22,250	23,096	23,973
Change y/y	5.2%	4.4%	3.5%	3.8%	3.8%
Market Balance					
Surplus/(Deficit)	250	100	175	25	(110)
Inventory					
Exchange stocks	510	315	520	550	412
Bonded warehouses	550	600	600	600	600
Inventory in weeks	2.7	2.2	2.6	2.6	2.2

Source: Paradigm Capital Inc.

PARADIGM CAPITAL

Copper Scorecard

- Fundamentals are generally supportive
- Surplus still a risk, but becoming less of a concern

Indicator	Trend	Comment
Terminal Stocks	Positive	~1 week of consumption
Bonded Warehouses	Positive	400,000 tonnes and stable
Chinese Imports	Positive	Still at record levels
Scrap	Positive	Tight availability
Supply Disruption Allowance	Positive	In excess of 5% in 2015
TC/RC's	Neutral	Flat at 90/9
Cancelled Warrants	Neutral	Currently at 15%, but increasing
Premiums	Negative	Less than $100/tonne
Commitment of Traders	Negative	Near record short levels

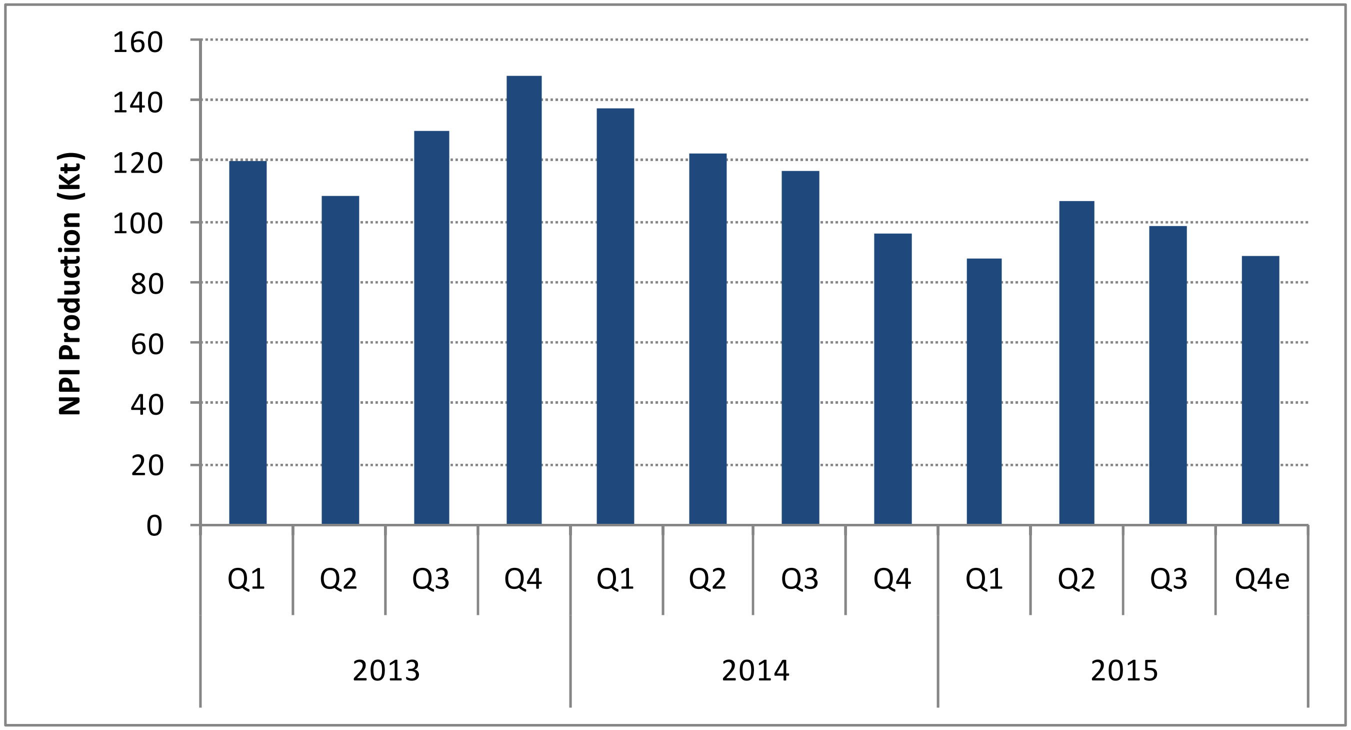
Source: Paradigm Capital Inc.

Nickel

Will this be the Year?

Chinese Nickel Ore Stockpiles

- As expected, production of Chinese NPI dropped off dramatically during 2015 as stockpiles of high-grade laterite ore were depleted



Source: Bloomberg, Glencore, Antaike, Royal Nickel

New Nickel Supply

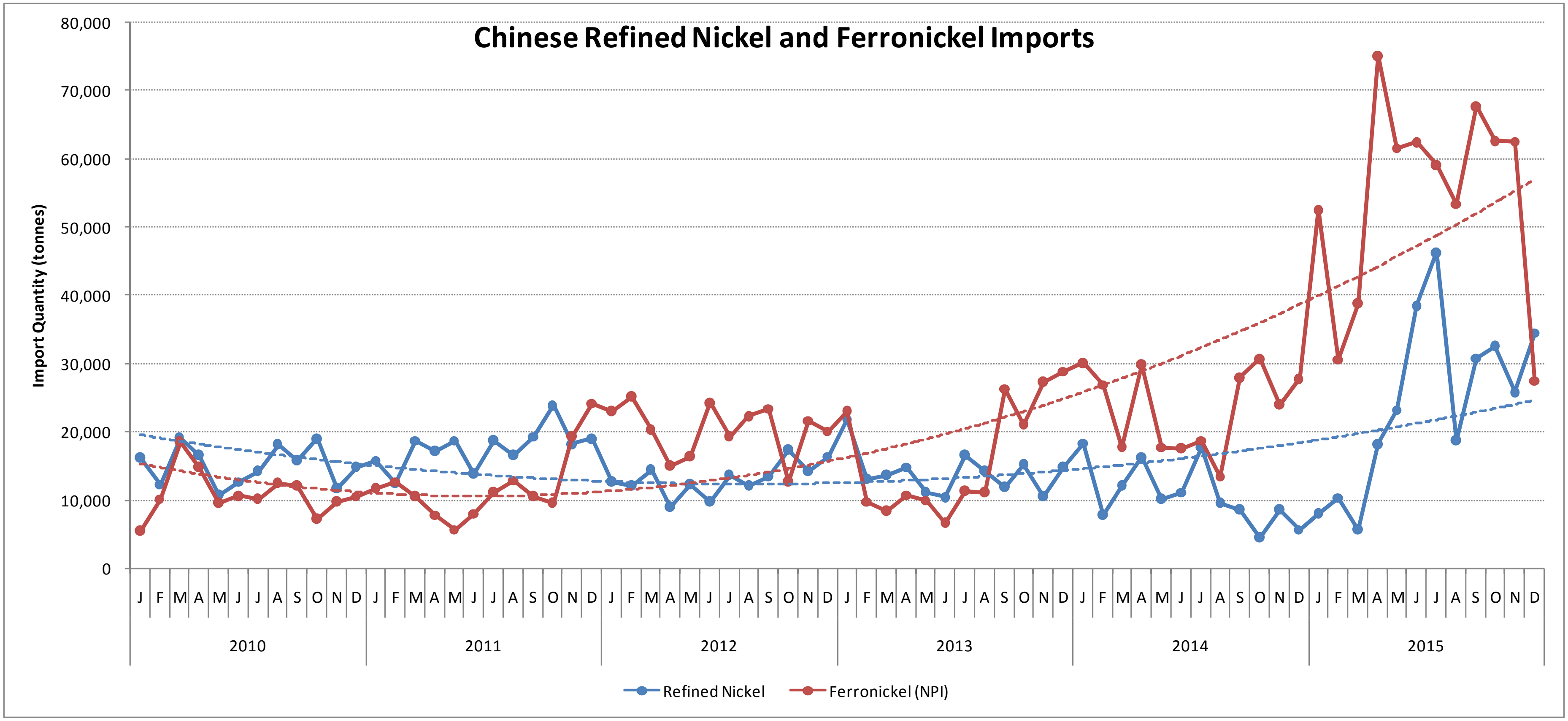
- Beyond 2016 no new nickel production is in the pipeline
- NPI should not be viewed as swing production unless domiciled in Indonesia

New Supply (000's Mt)	**2014**	**2015e**	**2016e**	**2017e**
Aguablanca	-	-	(6)	-
Ambatovy	37	10	10	-
Eagle	5	15	-	(5)
Enterprise	-	-	-	-
Goro	15	10	15	-
Koniambo	18	15	15	5
Total	**75**	**50**	**34**	**-**
NPI	**470**	**(85)**	**(50)**	**-**

Source: Paradigm Capital Inc.

Chinese Nickel Imports

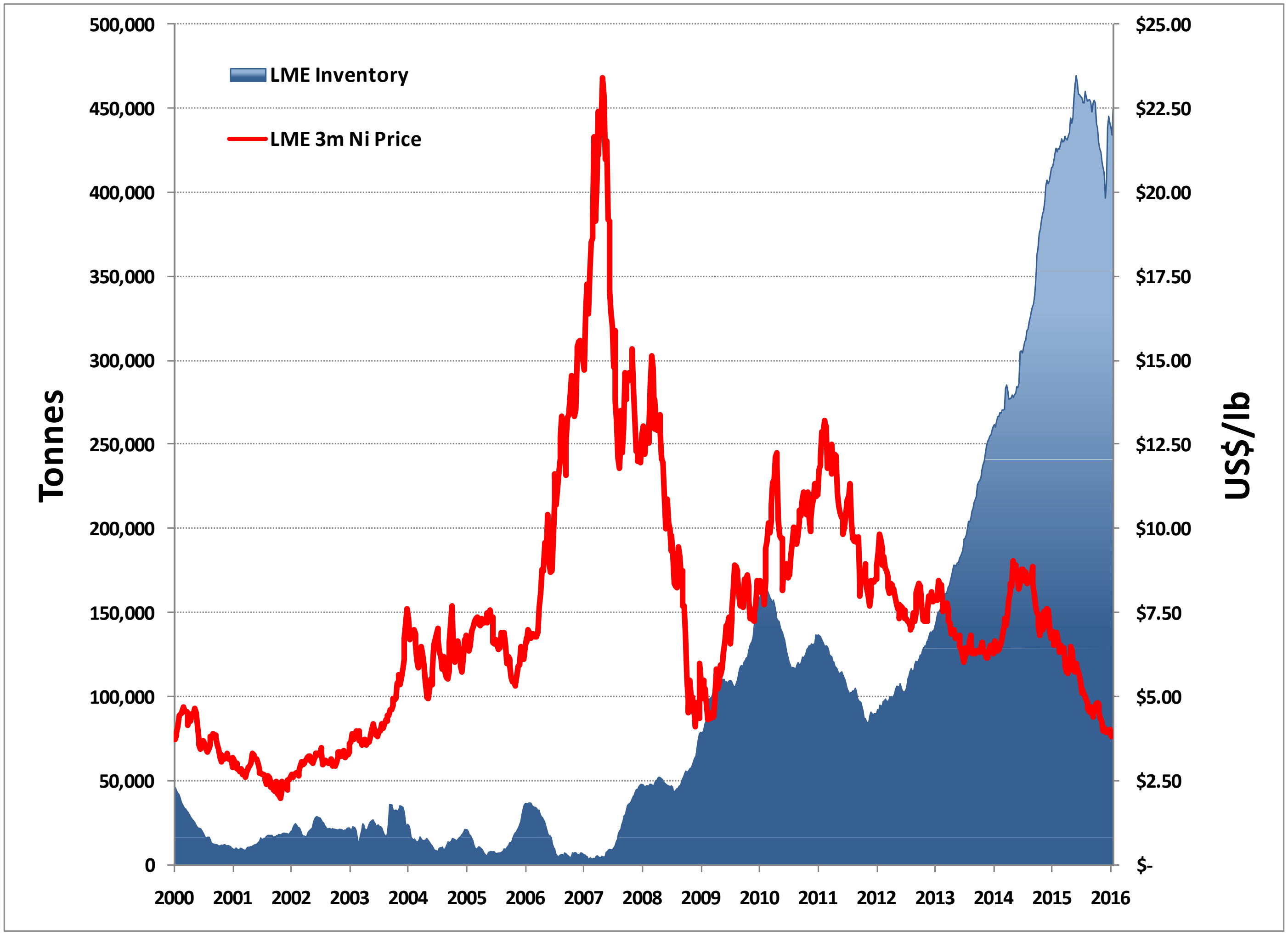
- With NPI production declining China is relying on nickel imports – cheaper to buy than produce



Source: Bloomberg, Paradigm Capital Inc.

Forward Nickel Price and Inventories

- LME inventory at record levels at ~11 weeks of consumption



Source: Bloomberg, Paradigm Capital Inc.

World Nickel Supply & Demand Forecast

- Nickel market heading towards significant deficits

Supply	2013	2014	2015e	2016e	2017e
Mine production	1,980	2,025	1,950	1,950	1,975
Change y/y	12.2%	2.3%	-3.7%	0.0%	1.3%
Refined nickel	1,980	2,025	1,950	1,950	1,975
Change y/y	12.2%	2.3%	-3.7%	0.0%	1.3%
Demand					
Global demand	1,825	1,900	1,955	2,035	2,100
Change y/y	8.0%	4.1%	2.9%	4.1%	3.2%
Market Balance					
Surplus/(Deficit)	155	125	(5)	(85)	(125)
Inventory					
Exchange stocks	295	420	435	350	225
Inventory in weeks	8.4	11.5	11.6	8.9	5.6

Source: Paradigm Capital Inc.

Nickel Scorecard

- Fundamentals remain generally positive
- Need to see inventories drop below 350,000 tonnes before the market takes notice

Indicator	Trend	Comment
Cancelled Warrants	Positive	Near record levels at 40%
Chinese Imports	Positive	At record levels
Producer Inventories	Positive	Tight
Scrap	Positive	Tight
Premiums	Positive	Starting to rise
Supply Disruption Allowance	Positive	Some recent shutdowns announced
TC/RC's	Positive	Sulphide concentrate in short supply
Terminal Stocks	Negative	At record levels; ~11 weeks of consumption
Commitment of Traders	Negative	Traders still short

Source: Paradigm Capital Inc.

Equity Markets

Underperforming the Commodities

S&P/TSX Metals and Mining Index

➢ Since topping out in early 2011, the S&P TSX Mining index has declined ~80%, while our custom metals index (weighted 45% copper, 30% zinc, 20% lead and 5% nickel) is down ~50%

Source: Bloomberg, Paradigm Capital Inc.

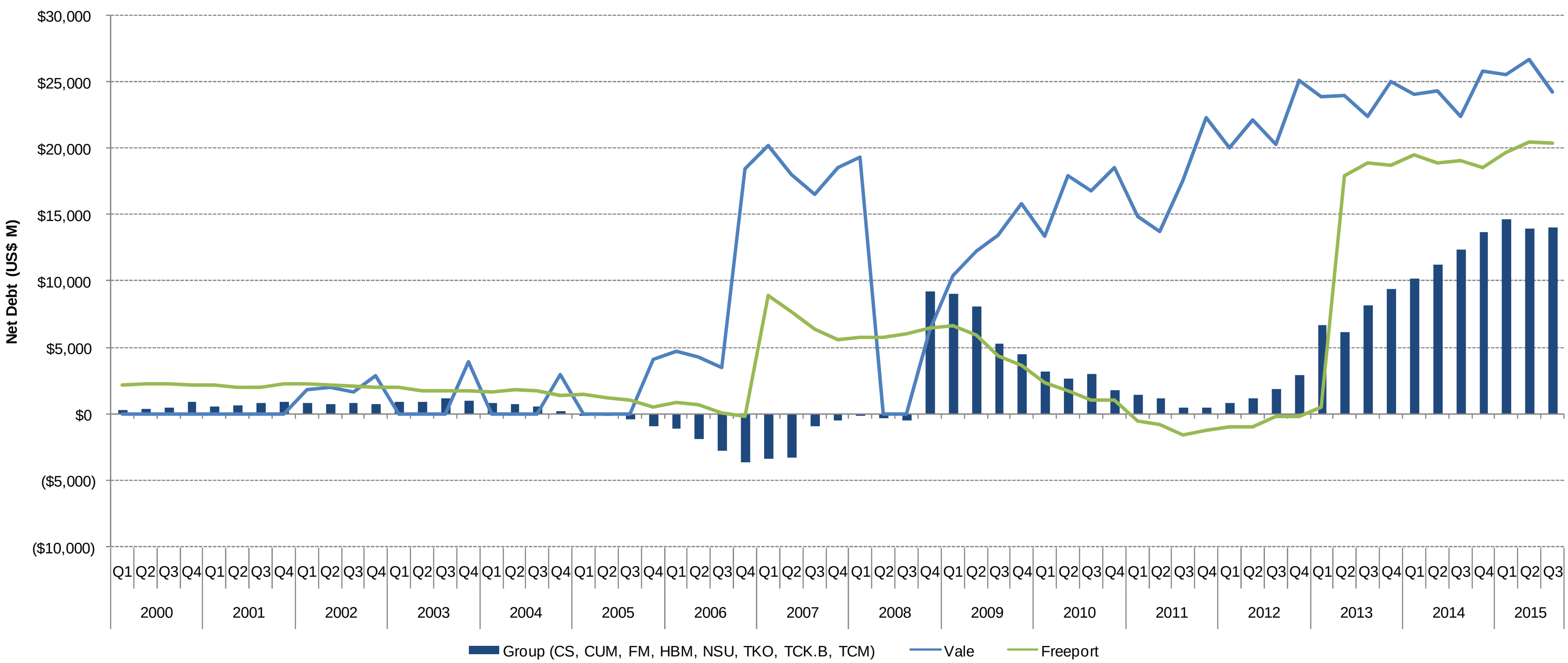
Industry Market Capitalization

- At its peak, the base metals producer universe had a combined market capitalization of ~C$100 billion and an S&P/TSX weighting of ~8%. The combined market capitalization sits at ~C$15 billion and has a market weighting of less than ~2% — the choice is limited.

Source: FactSet, Bloomberg, Paradigm Capital Inc.

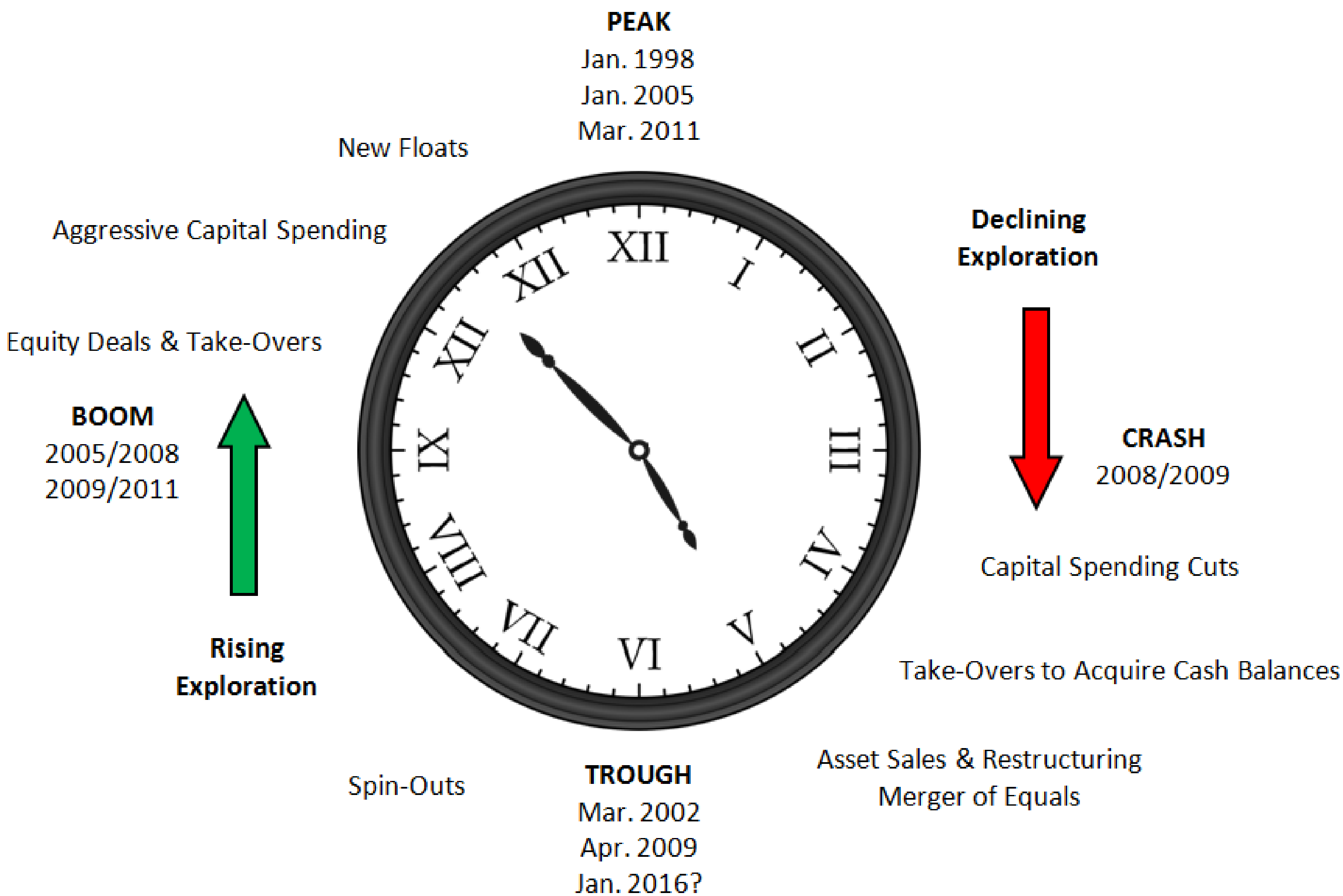
Industry Net Debt Levels

- Combined with low equity prices the industry is struggling with a crushing debt load
- Vicious circle – the higher the debt, the higher the equity risk



Source: FactSet, Paradigm Capital Inc.

The Mining Clock – What Time Is It?



Recommendations

1. We favour copper, nickel, zinc and uranium (in that order). The bulks and speciality metals remain significantly oversupplied and will take considerable time to recover.

2. The first half of 2016 is expected to remain volatile. While providing some short-term trading opportunities, it could also provide the opportunity to position portfolios for the longer term.

3. Balance sheet risk is emerging as a major concern for investors. Consequently, we recommend sticking with companies that have limited re-financing risk. We note that ~70% of the industry's debt matures during 2020 and 2022 — avoid that window.

4. Diversification, both by commodity and geography, is still considered prudent in volatile markets.

5. It remains too soon to chase leverage, but that may well be an opportunity this year.

Potential Title Pages

Potential Title Pages

Potential Title Pages

Potential Title Pages

PARADIGM
CAPITAL

Disclaimer Section

Research Rating System

Paradigm Capital Inc. uses the following rating recommendation guidelines in its research:

Recommendation	Number of Companies	Percentage Breakdown	
Buy	101	64%	**Buy** – Expected returns of 20% or more over 12 months.
Spec. Buy	17	11%	**Speculative Buy** - Expected returns of 20% or more over the next 12 months on high-risk development or pre-revenue companies, such as junior mining and other early stage companies.
Hold	22	14%	**Hold** - Expected returns of less than +/- 20% over the next 12 months.
Sell*	3	2%	**Sell** - Expected returns of -20% or more over the next 12 months.
Under Review	15	9%	**Under Review** - Estimates, Target and/or Recommendation under review.
Total	158		

**Includes companies with a "Tender" recommendation*

Disclaimer Section

About Paradigm Capital Inc.

Paradigm Capital Inc. (PCI) is a research-driven, independent, institutional equity investment dealer focused on sectors and companies that have attractive long-term secular growth prospects. PCI's research is available on our website at www.paradigmcap.com. Please speak to your Sales or Trading Representative if you require access to the website.

The analyst (and associate) certify that the views expressed in this report accurately reflect their personal views about the subject securities or issuers. No part of their compensation was, is, or will be, directly or indirectly, related to the specific recommendations expressed in this research report.

Analysts are compensated through a combined base salary and bonus payout system. The bonus payout is determined by revenues generated directly or indirectly from various departments including Investment Banking, based on a system that includes the following criteria: reports generated, timeliness, performance of recommendations, knowledge of industry, quality of research and investment guidance and client feedback. Analysts are not directly compensated for specific Investment Banking transactions.

The opinions, estimates and projections contained herein are those of PCI as of the date hereof and are subject to change without notice. PCI makes every effort to ensure that the contents herein have been compiled or derived from sources believed reliable and contain information and opinions, which are accurate and complete. However, PCI makes no representation or warranty, express or implied, in respect thereof, and takes no responsibility for any errors and omissions that may be contained herein and accepts no liability whatsoever for any loss arising from any use of or reliance on this research report or its contents. Information may be available to PCI, which is not reflected herein. This research report is not to be construed as an offer to sell or solicitation for or an offer to buy any securities. PCI, its affiliates and/or their respective officers, directors or employees may from time to time acquire, hold or sell securities mentioned herein as principal or agent. PCI may act as financial advisor and/or underwriter for certain of the corporations mentioned herein and may receive remuneration for same. PCI is a member of The Toronto Stock Exchange, The TSX Venture Exchange and The Investment Industry Regulatory Organization of Canada (IIROC).

Any products or services mentioned on this website are made available only in accordance with local law (including applicable securities laws) and only where they may be lawfully offered for sale. PCI will not open accounts except in jurisdictions in which it is registered.

To U.S. Residents: This report was prepared by PCI which is not subject to U.S. rules with regard to the preparation of research reports and the independence of analysts. PCI U.S., affiliate of PCI, accepts responsibility for the contents herein, subject to the terms as set out above. Any U.S. person wishing to effect transactions in any security discussed herein should do so through PCI U.S.