

Sopa Piranha*

The Missing Catalyst

June 23, 2011 - Issue #20



This quarter's Sopa takes a look at the **platinum group of metals (PGM)**—platinum, palladium, rhodium, osmium, iridium, and ruthenium. Our **primary focus** is on **platinum** with a **minor focus** on **palladium**. We take a brief look at the **history of platinum** and its uses, along with the **basics of what we should know** about platinum. As always, if you are generally familiar with platinum, you may wish to skim or entirely skip section one.

We also take a deeper look at the **supply/demand environment**, primary **end users** and the impending **impact** on both **near** and **longer-term pricing**. We have addressed a wide array of opinions and research on the topic to demonstrate the **investment opportunities** within the space. Our core thesis is that the PGM's only need one catalyst to send prices skyrocketing in Q4.

Some of you may not have heard the recent news; **catalytic converter theft is on the rise**. Many local police stations are laser etching license plate numbers into the catalytic converters for those people who choose to take them up on it. Why is it that thieves are targeting catalytic converters? Platinum and palladium prices have run quite a lot and the scrap value of a catalytic converter is apparently now significant enough for thieves to take the risk. We show you **why platinum and palladium are worth watching in your portfolio as well as your garage**.

Section One: What should I know about platinum?

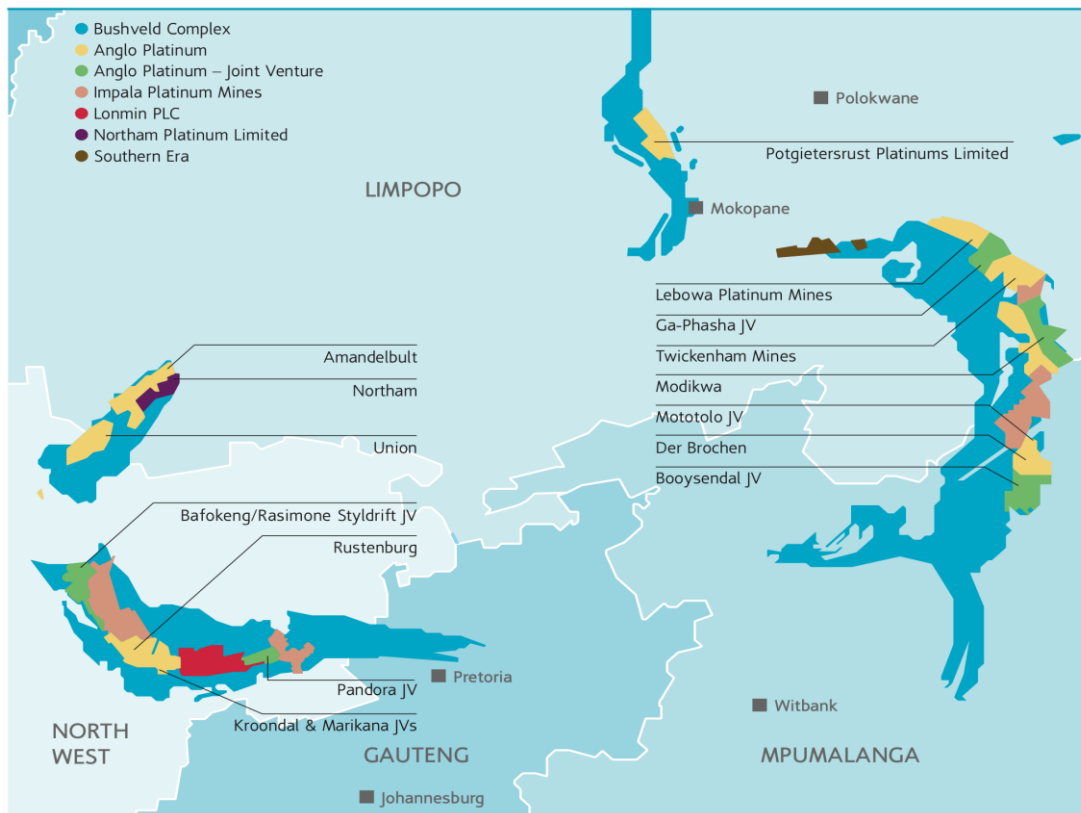
- I. A Brief History and Overview—the **earliest evidence of platinum's use** dates to near **700B.C.** with the ancient Egyptian high priestess Shepenwepet II. The small, adorned copper alloy box, excavated along with the accompanying sarcophagus can be traced to the era of the high priestess. While the box is made primarily of copper alloys, it is also decorated with gold and platinum group alloys. **It is questionable whether or not the use of platinum was deliberate at the time** but nevertheless it is noteworthy.

As for platinum itself, platinum is a **chemical element** with the symbol **Pt** and the **atomic number 78**. Platinum **derives its name from the Spanish word *platina***, which is a diminutive of the **Spanish word for silver—*plata***. During the 16th century, Spanish Conquistadores came across platinum in their ultimate quest for gold and El Dorado, the lost city of gold, in the region known as New Granada— in present day Columbia. However, the **Spanish largely dismissed platinum** and viewed it as needing to 'ripen' into gold so they returned the majority of their finds to the rivers where they thirsted only for gold.

It wasn't until the 18th century that chemists began looking more closely at platinum and **it was not until the 19th century that techniques were developed for refining platinum**,

palladium, and later rhodium, iridium, and osmium. Columbia was still thought to be the principal source of supply at this point in history but that began to change near the end of the 19th century as platinum was discovered in the nickel and copper ore mines of Canada in 1888, near Ontario. In 1924, platinum was discovered in **South Africa's Transvaal** province and shortly thereafter, two very large deposits were discovered which later became known as the **Bushveld Igneous Complex**, now known to be the world's largest reserve of platinum. Today, we know the **majority of the world's platinum deposits reside in South Africa and surrounding regions with 80+% of the 2010 world supply**. See below a map of the Bushveld Complex and mine breakdowns by ownership. See also the table showing supply breakdown for 2010 by region. We delve further into supply and demand dynamics in section two but want to demonstrate the overall regional breakdown so the reader may have an idea of where the world's platinum supplies are generally sourced.

Bushveld Igneous Complex



Source: Anglo American

2010 Platinum Supply ex-Recycling

Platinum Supply 2010				
	UBS	Macquarie	Johnson Matthey	Average
in ,000s ounces				
South Africa	4,585	4,619	4,635	4,613
Russia	810	832	825	822
North America	210	210	210	210
*Other	379	348	390	372
Total	5,984	6,009	6,060	6,018

*Note: Roughly 72% of the ounces defined as "Other" are mined in Zimbabwe and refined in South Africa. Depending on the data source, recycling adds between 1.095(Macquarie)-1.84(Johnson Matthey) million ounces to world supply. **Both firms choose to look at recycling as a demand reducer within sectors (primarily autocatalyst and jewelry) rather than a source of supply.**

**Data Sources: UBS, Macquarie, Johnson Matthey—2011

- II. Platinum and Uses: **Platinum is rare**, only occurring at the rate of 0.005 parts per million in the earth's crust. By comparison, silver for example occurs at a rate of 0.075ppm, gold 0.004ppm. Platinum has many favorable properties that make it suitable to industrial applications. Platinum is **extremely dense**. Platinum sometimes occurs as a native metal but it **more commonly occurs in other PGMs or along with nickel and copper ore**.

Because of its extremely high melting point (**3,214.9°F**) and density relative to other elements, virtually all impurities can be melted away leaving the platinum as a stand-alone. Platinum by itself is **highly resistant to corrosion** and also **unsusceptible to both hydrochloric and sulfuric acids**. Platinum is **non-magnetic**.

Platinum is more efficient than palladium at removing harmful gases from the combustion process but often times the two are combined for the use in catalytic converters. **Diesel engines** in particular, require a **higher proportion of platinum in their catalysts** than **gasoline based engines**. Platinum demand has been on the rise as environmental legislation has become increasingly stringent. The demand side of the equation is closely linked to the global auto and truck sales. Approximately **40% of gross platinum demand (33.9% of net demand) comes from autocatalyst uses**. (Note for our purposes, net demand is inclusive of recycling as a demand reduction which pertains primarily to autocatalysts and jewelry.)

Autocatalysts are the **largest user of platinum in the world** but also the **largest source of recycling with 35% of gross demand needs being met by recycling**. Roughly **40-45% (Johnson Matthey v. Macquarie data) of 2010 global world supply, inclusive of recycling**, is currently being taken up by autocatalysts. Autocatalysts also make up the **lion's share of demand for palladium with 56.6% of gross demand (53% of net demand)** coming from the sector. When looking at **recycling/use ratios, palladium recycling** within the sector **satisfies roughly 24% of gross autocatalyst demand when compared to platinum's 35% rate**. For 2010, **total gross palladium autocatalyst demand as percentage of global world palladium supply inclusive of recycling equated to 60%**.

Jewelry demand is a significant demand driver for both platinum and palladium. **31% of gross platinum demand is jewelry related**, second only to **autocatalysts**. Jewelry recycling is also a significant source of supply (demand reduction). When looking at the Matthey data of **recycling to use ratios**, we see that roughly **31% of total platinum jewelry demand needs are met via recycling**. Palladium jewelry is also becoming increasingly popular and falls fourth behind autocatalysts, electronics and investments as a source of demand.

Platinum is also in the **electronics industry** where it is used in **hard disc drive** and **LCD monitors**. **Palladium** is used in **multi-layer ceramic capacitors, hybrid integrated circuits** and **plating** for connectors within computers. Platinum is used by the **glass industry** in flat panel displays and mobile phones. Thin film transistor liquid crystal displays (TFT-LCD) are on the rise and are a source of new demand. Platinum is used in the **chemical industry as a catalyst in the manufacture of fertilizers, explosives, polymers and in oil refining**.

The **pharmaceutical industry** uses platinum in **anti-cancer drugs**, most notably cisplatin, which is used in chemotherapy treatments. Platinum is also used in cardiac stents, electrophysiology catheters, and neuromodulation devices. A **source of increasing potential demand** for both platinum and palladium comes as a **major use in fuel cells** where electricity is produced as a by-product of a chemical reaction between hydrogen and oxygen.

Industrial demand plays an **important role** in the **price of platinum** and **traditional supply/demand relationships** tend to **dominate price historically**. Any **significant uptick in investment demand is expected to create imbalances in the supply/demand dynamic and thereby price action**. Please see below the overall demand statistics for Platinum in 2010. The demand picture alone is compelling for prices to rise but it is the supply side that may provide us with the necessary catalyst to create the explosion we expect in Q4.

2010 Platinum Demand by Sector

	UBS	Macquarie	Johnson Matthey	Average
in ,000s ounces				
Autocatalyst Gross	2,985	3,203	3,125	3,104
Autocatalyst Recycling	(1,095)	(1,095)	(1,085)	(1,092)
Autocatalyst (Net of Recycling)	1,890	2,108	2,040	2,013
Chemical	450	450	445	448
Electrical(Net of Recycling)	225	237	210	224
Glass	365	380	345	363
investment	435	488	650	524
Jewelry(Net of Recycling)	1,685	1,685	1,670	1,680
Petroleum	175	220	170	188
Other	505	461	510	492
Total Demand(Net of Recycling)	5,730	6,030	6,040	5,933

**Note: Jewelry recycling is the only major re-user of platinum other than autocatalysts. Roughly 31% of gross jewelry demand is met with recycling according to Johnson Matthey. Roughly 35% of gross autocatalyst demand is met by recycling. Electrical demand is only minimally mitigated by approximately 4-5% of recycled material. Approximately 50% of the demand in category noted "other" is biomedical/medical related.*

***Data Sources: UBS, Macquarie, Johnson Matthey—2011*

Section Two — Closer Look at Supply and Demand

Below we look at the primary industrial sectors of demand in closer detail, as well as investment demand. We finish section two with supply and consider several factors that may prove to be **headwinds for production** in the near and medium term, giving the market a catalyst to drive platinum prices higher.

- I. **Autocatalysts** play a key role in demand for platinum as the number one consumer of the world's platinum. A typical passenger car contains 4-5 grams of platinum group metals on average per catalyst. Diesel cars average closer to 8 grams per catalyst. The range is quite large depending on engine size and type. For micro cars for instance, approximately 1 gram is used, while for very large powerful vehicles, up to 15 grams is used per catalyst. The typical ratio for a gasoline car catalyst is 1.5 grams of platinum to 4.5 grams of palladium.

For diesel cars the majority of loading in the autocatalyst is platinum given its **superior properties** in reducing emissions. Diesel passenger cars typically contain 8 grams of platinum. Catalysts generally require a high temperature to function and since diesel engines operate at lower temperatures, there are fewer catalysts that are able to function properly under those conditions; therefore, diesel engines are fairly dependent on a higher proportion of platinum for use in their autocatalysts. Exact amounts of platinum and PGM in autocatalysts are confidential information between the manufacturer of the catalyst and the car manufacturer. From recent UBS literature, passenger car ratios of platinum to palladium are near the 1.5/6 grams of platinum with 2.4/5 grams palladium. Johnson Matthey, BASF and Umicore are the three major suppliers of autocatalysts together accounting for roughly 87% of the global market split almost equally.

While the terrible earthquake in Japan caused sell off in the PGM space, the medium to long-term impact on auto production is envisaged to be minimal. If anything, temporary reductions in supply will create pent up demand in the medium term with continued global growth.

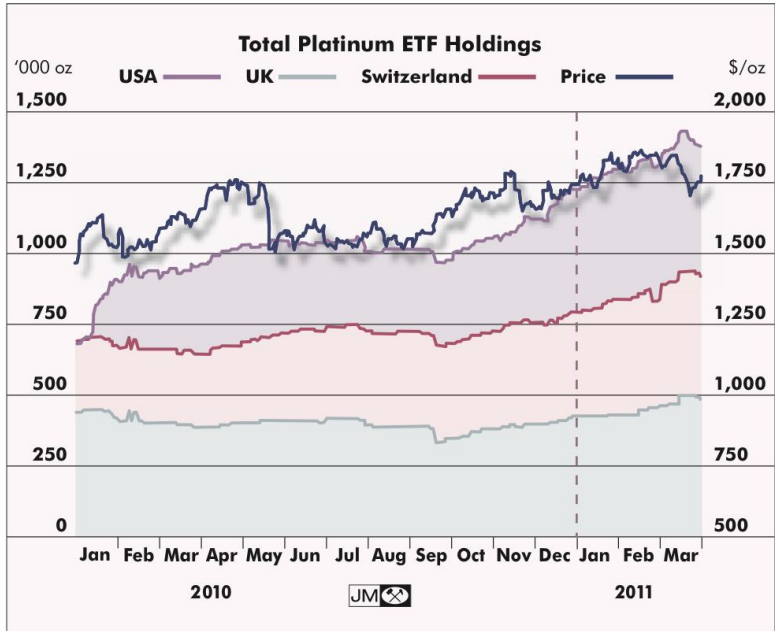
Prior to the events in Japan, for the week ending **February 8, 2011 NYMEX platinum speculative net long sat at 1.56 million ounces** representing 69.2% of the total combined open interest. Japan's earthquake and ensuing tsunami sent levels as far down as 945,000 ounces in the week ending March 22. This represented a 39+% reduction in net longs from the February highs. For the week ending May 31st, speculative net longs sat at roughly 1.15 million ounces, some 26% below February's high with some recovery from the March lows. This represented 59% of the total combined open interest in the NYMEX platinum market.

An overall reduction in net longs undoubtedly helps to mitigate downside with fewer sellers in the market relative to levels earlier in the year. ETF ounce holdings for week ending May 31 represented some 1.25 million ounces which is near all time highs. ETFs first hit the 1.2 million ounce mark in 2010 but have since surpassed those levels. See the tables below and figures depicting NYMEX interest statistics, ETF and price overview. Note the steadily declining ratio of platinum to palladium prices, **which are near an all-time low**.

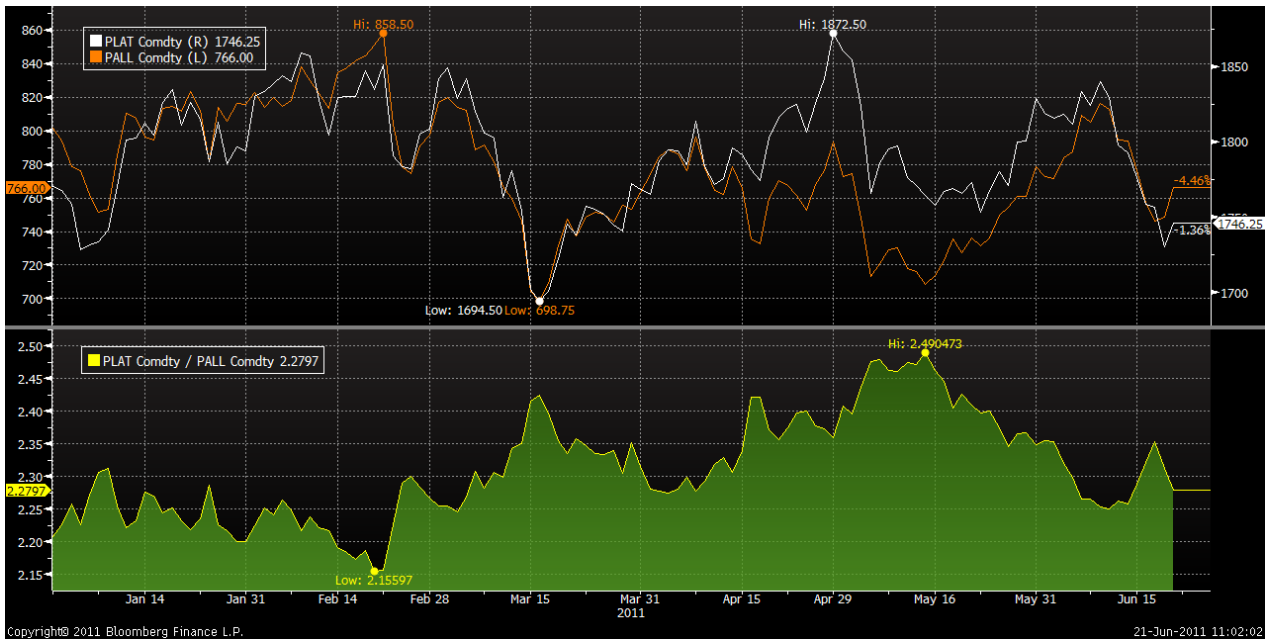
PLATINUM SPECULATIVE NET LONG AS A PERCENTAGE OF TOTAL(COMBINED) OPEN INTEREST--WEEKLY DATA

	3/95-	12/99-	12/04-	12/06-	12/08-	12/09-	12/04-12/07
HI	73.4%	73.4%	73.4%	72.1%	72.1%	72.1%	73.4%
LOW	-35.4%	-21.1%	5.3%	16.2%	32.2%	48.6%	5.3%
AVERAGE	34.6%	41.9%	49.9%	51.4%	55.1%	60.3%	47.9%

*Note: "-"=Current=May 31, 2011



Platinum and Palladium Prices & Ratios 2011



Sources: Source: **Source: CFTC, NYMEX, Johnson Matthey, Bloomberg

Despite the selloff in the futures market and milder selloff in the ETF space from an ounce holdings perspective, the **price risk is to the upside when looking at auto production**. Global auto production is still on track to increase barring any major global macro slow down. Off the back of the events in Japan in April of this year, UBS estimated that 2011 global auto production would be reduced by approximately 2.5% factoring a 14% reduction in Japanese auto production, roughly the equivalent of 1.35 million vehicles. More recent data from the Japanese Auto Manufacturers Association suggest that their estimates were too optimistic.

March and April declines in Japanese production of passenger cars, trucks and buses dropped 57% and 60% respectively year over year. Toyota announced they expect full production in North American plants by September rather than their earlier estimates of November. Still, **more vehicle production will be foregone than originally thought**. Already, the combined loss of Japanese production over the two months ended April is 981,111 vehicles for 2011. Estimates by UBS were 700,000 vehicles forgone by the end of 2012 with upticks in spare capacity elsewhere in the world. It is unlikely that full production will be met until Q4 2011/ or Q1 2012. A better estimate is to double UBS's estimate of production losses specific to Japan for 2011 off the back of recent news of 2.7 - 3 million units of lost production and ultimately 1.4 million units of production foregone by 2012. While this is a significant figure, its impact should be most felt following the March/April events. This is why we have seen some manufacturing slow down already. However, in the medium to longer term, **there is a developing scenario of pent up demand and more production**.

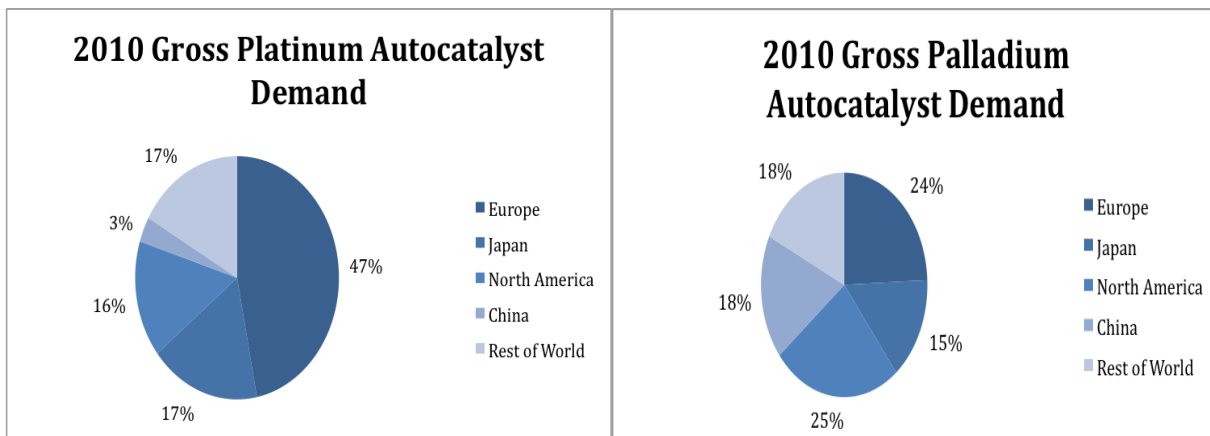
Japanese Auto Production 2010/2011

	2010				2011				YOY % Change	YOY Change
	Passenger Cars	Trucks	Buses	Total	Passenger Cars	Trucks	Buses	Total		
Jan	656,606	89,722	7,406	753,734	609,598	87,830	8,679	706,107	-6.32%	(47,627)
Feb	732,477	100,014	9,278	841,769	685,655	99,531	10,470	795,656	-5.48%	(46,113)
Mar	823,943	110,768	10,509	945,220	348,474	50,781	4,682	403,937	-57.27%	(541,283)
Apr	627,320	94,884	9,625	731,829	249,772	40,305	1,924	292,001	-60.10%	(439,828)
May	608,792	92,040	8,281	709,113						
Jun	741,013	111,151	9,941	862,105						
Jul	746,728	110,846	9,668	867,242						
Aug	595,524	89,858	6,267	691,649						
Sep	798,475	117,567	8,961	925,003						
Oct	644,765	97,781	8,874	751,420						
Nov	689,768	101,853	10,348	801,969						
Dec	644,951	92,740	10,176	747,867						
Full Year Total	8,310,362	1,209,224	109,334	9,628,920	1,893,499	278,447	25,755	2,197,701		
YTD Total thru April	2,840,346	395,388	36,818	3,272,552	1,893,499	278,447	25,755	2,197,701	-32.84%	(1,074,851)

Source: Japanese Automobile Manufacturers Association, JAMA Active Matrix DB System

Platinum is less levered to auto production than is palladium with net demand attributable to autocatalyst for platinum and palladium at 34% versus 53% respectively. Further, total platinum demand as a percent of global world supplies, inclusive of recycling are 40% versus the 60% of palladium (Johnson Matthey). Platinum is also more levered to diesel auto production than is palladium so despite the events in Japan, **platinum should not be as significantly impacted relative to palladium and should outperform in the near to**

medium term. The ratio charts above also show that in relation to palladium, platinum is near all-time lows at 2.27x versus 2009 highs of 5.49x. Gasoline engines are driving demand in emerging markets, still favorable for palladium in the medium to long term. See below the regional platinum autocatalyst demand. The diesel demand component is evident with the majority of platinum being **consumed by European manufacturers.** Diesel engine penetration remains a key variable for platinum demand. By contrast, see comparative palladium figures.

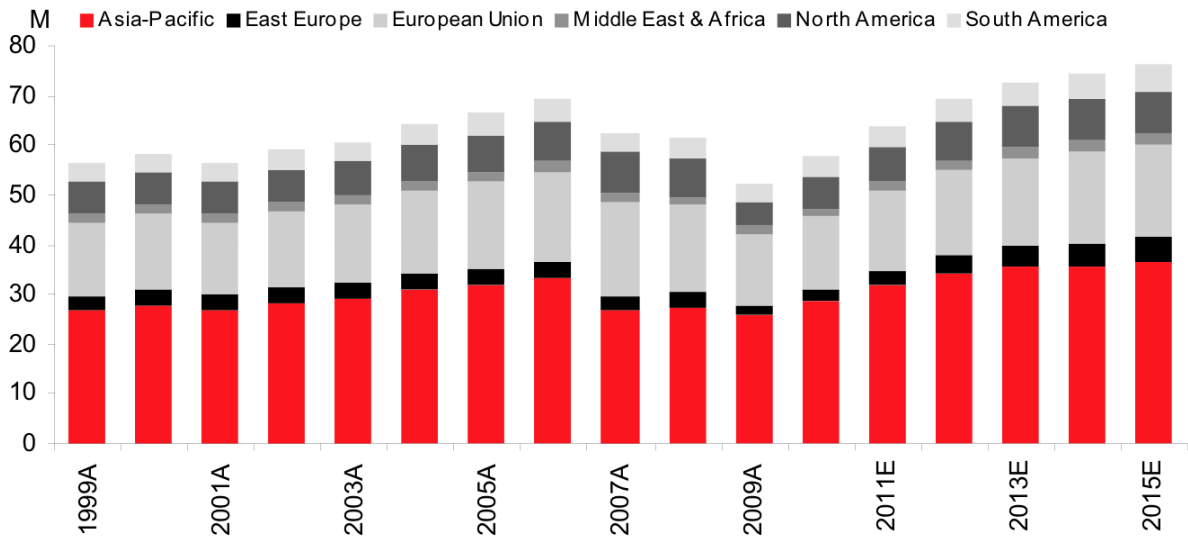


Source: Johnson Matthey

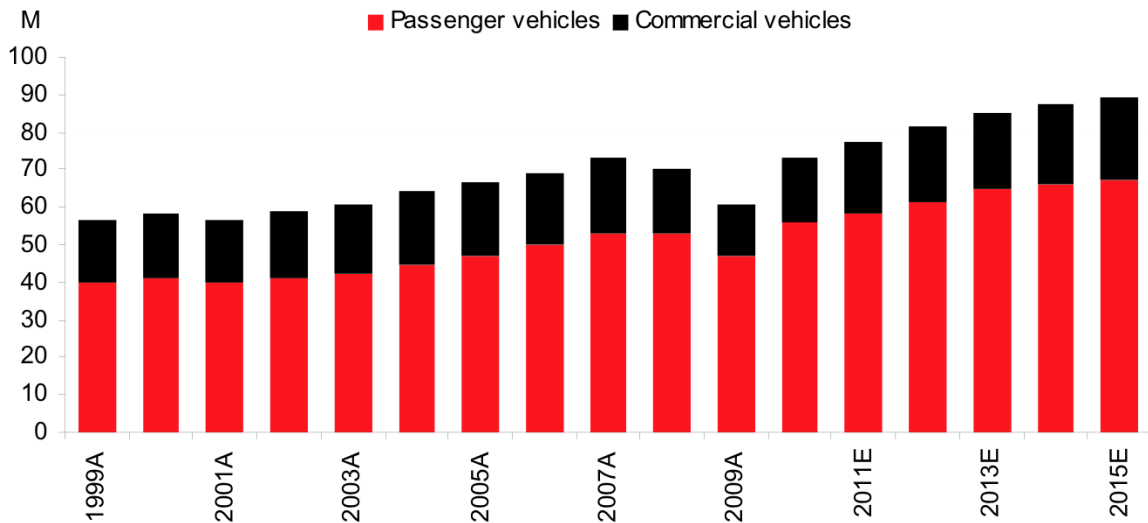
The **long-term** recovery of global auto production is not expected to be significantly impacted by damage to Japanese auto production plants. Previous UBS estimates that overall impact on global auto production is estimated to be a 'loss' of 700,000 vehicles foregone by 2012 equate to an equivalent loss of 40,000 ounces of platinum and 60,000 ounces of palladium, or 800 platinum contracts and 600 palladium contracts on NYMEX. To put this into perspective, for the week ending May 31, total combined open interest on platinum sat at 39,078 contracts. It would seem more conservative based on recent data to double this number and its ensuing impact on platinum and palladium but nevertheless we remain optimistic on platinum prices. We believe the pent up demand for cars will suddenly show in the demand creating sudden upside potential.

Moving to historical and forward looking production, in 2009, 47.5 million light passenger vehicles were **assembled** globally. There were 56 million assembled in 2010. During the month of May, Macquarie estimated 2011 levels will be up still again to 58 million despite the events in Japan. Please see below charts for vehicle production.

Global light vehicle assembly by market



Global vehicle assembly by type



Source: Macquarie, Autofacts—May 2011

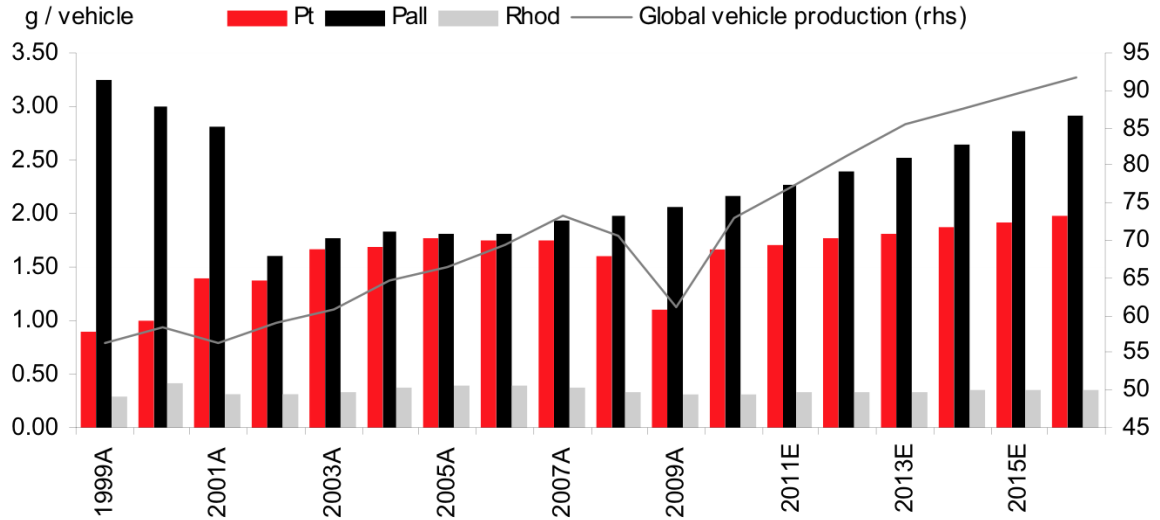
Emerging markets continue to support demand, particularly the BRIC region. Despite the recent fall in auto sales in China during the month of May, a second Chinese “cash for clunkers” program will **further spur platinum and palladium demand** given the fact that many of the older vehicles being scrapped do not have catalyts. A general lack of catalyts will mean no additions to platinum or palladium supply from recycled vehicles. A slowdown in Chinese vehicle sales is to be expected from the previous decade’s break-neck pace but consensus forecasts going forward continue to predict low double digit growth for the region. See below table of passenger vehicle sales (light vehicle) changes year over year with forward looking estimates by Macquarie.

Global light vehicle sales														
'000 units	2007	% YoY	2008	% YoY	2009	% YoY	2010	% YoY	2011	% YoY	2012	% YoY	2013	% YoY
US	16,149	-2.5%	13,242	-18.0%	10,410	-21.4%	11,500	10.5%	13,000	13.0%	15,120	16.3%	15,749	4.2%
Japan	5,203	-6.7%	4,939	-5.1%	4,480	-9.3%	4,859	8.5%	4,334	-10.8%	4,607	6.3%	4,539	-1.5%
Germany	3,382	-8.0%	3,318	-1.9%	3,982	20.0%	3,100	-22.1%	3,330	7.4%	3,408	2.3%	3,525	3.4%
France	2,526	3.5%	2,510	-0.6%	2,666	6.2%	2,500	-6.2%	2,300	-8.0%	2,400	4.3%	2,500	4.2%
Italy	2,739	6.7%	2,388	-12.8%	2,339	-2.1%	2,140	-8.5%	2,040	-4.7%	2,200	7.8%	2,250	2.3%
UK	2,750	2.7%	2,430	-11.6%	2,192	-9.8%	2,158	-1.6%	1,900	-12.0%	1,961	3.2%	2,100	7.1%
Spain	1,890	-1.0%	1,327	-29.8%	1,060	-20.1%	1,025	-3.3%	950	-7.3%	1,025	7.9%	1,050	2.4%
Other W. Europe	3,566	3.6%	3,406	-4.5%	2,750	-19.3%	2,977	8.3%	2,980	0.1%	3,106	4.2%	3,075	-1.0%
Western Europe	16,853	0.8%	15,379	-8.7%	14,989	-2.5%	13,900	-7.3%	13,500	-2.9%	14,100	4.4%	14,500	2.8%
Other developed	2,682	4.9%	2,622	-2.2%	2,374	-9.5%	2,586	8.9%	2,661	2.9%	2,746	3.2%	2,822	2.8%
All developed markets	40,887	-1.3%	36,182	-11.5%	32,253	-10.9%	32,845	1.8%	33,495	2.0%	36,573	9.2%	37,610	2.8%
Russia	2,590	35.2%	2,925	12.9%	1,461	-50.1%	1,804	23.5%	1,909	5.8%	2,238	17.2%	2,584	15.5%
Other Eastern Europe	2,607	14.7%	2,579	-1.1%	1,744	-32.4%	1,759	0.9%	1,843	4.8%	2,072	12.4%	2,366	14.2%
Europe	22,050	5.5%	20,883	-5.3%	18,194	-12.9%	17,463	-4.0%	17,252	-1.2%	18,410	6.7%	19,450	5.6%
China*	6,177	28.4%	6,611	7.0%	10,315	56.0%	12,985	25.9%	14,543	12.0%	16,288	12.0%	18,080	11.0%
S Korea	1,220	5.1%	1,178	-3.4%	1,413	19.9%	1,457	3.1%	1,495	2.6%	1,538	2.9%	1,579	2.7%
India	1,722	18.4%	1,753	1.8%	2,040	16.4%	2,623	28.6%	2,983	13.7%	3,275	9.8%	3,537	8.0%
Other Asia	3,803	-0.3%	4,155	9.3%	4,586	10.4%	5,726	24.9%	5,393	-5.8%	6,986	29.5%	7,405	6.0%
Total Asia (ex Japan)	12,922	14.9%	13,697	6.0%	18,355	34.0%	22,791	24.2%	24,414	7.1%	28,087	15.0%	30,601	9.0%
Brazil	2,380	29.1%	2,722	14.4%	3,076	13.0%	3,309	7.6%	3,803	14.9%	4,286	12.7%	4,605	7.4%
Other ex-Asia	8,954	10.7%	8,690	-2.9%	6,926	-20.3%	7,544	8.9%	8,042	6.6%	8,651	7.6%	9,143	5.7%
Other emerging markets	12,757	7.2%	12,845	0.7%	11,512	-10.4%	13,270	15.3%	13,435	1.2%	15,637	16.4%	16,548	5.8%
All emerging markets	29,453	16.1%	30,613	3.9%	31,562	3.1%	37,207	17.9%	40,011	7.5%	45,334	13.3%	49,299	8.7%
Global light vehicle sales	70,340	5.3%	66,795	-5.0%	63,815	-4.5%	70,052	9.8%	73,506	4.9%	81,907	11.4%	86,909	6.1%

Source: ACEA, Macquarie Research, May 2011

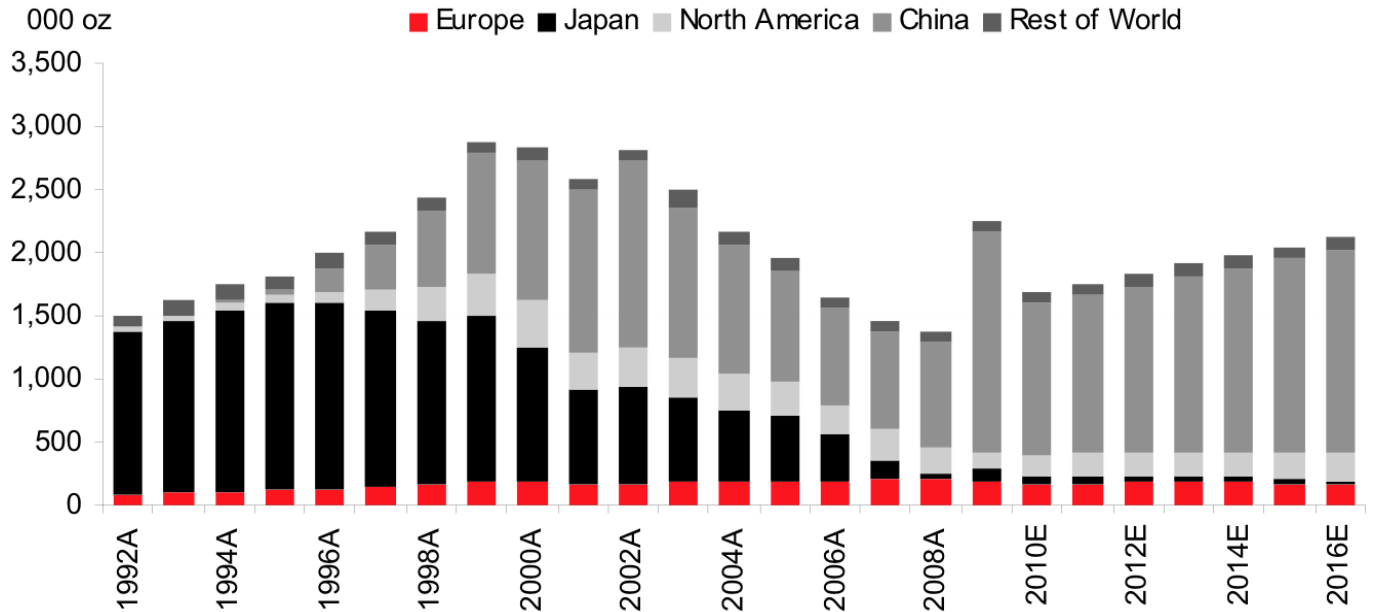
Increases in global auto production in the medium to longer term are bullish for both platinum and palladium. Downside risks are ever present but fewer longs in the market are encouraging. Increasingly stringent emissions legislation in the US and Europe and tougher global standards going forward also bode well for PGM. Engine types and sizes will affect platinum and palladium independently with diesel benefitting platinum more than palladium; however, both are equally set to benefit from the overall picture of global auto production/sales, as well as, the rise in combination with more stringent environmental standards.

See below Macquarie's forward-looking model for PGM loadings per vehicle. The chart below does **not take into account legislation for heavy duty and off-road emissions which is imminent in Europe and the US. This stringent legislation will be additionally beneficial for platinum and palladium.** Overall, autocatalysts are an increasing source of demand and should benefit prices.



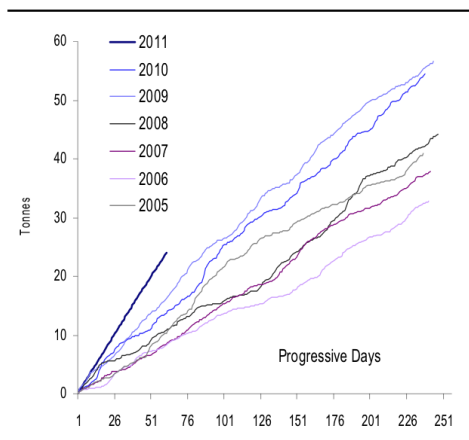
II. Jewelry, while not as significant as autocatalysts, represents a significant portion of demand. For the year 2010, jewelry-related gross platinum demand was 2.42 million ounces which represented a 14% decline from unusually high 2009 levels. Chinese demand represented 1.65 million of those ounces which was a 21% reduction in volumes compared to 2009. Recent surveys indicate that the share of platinum as a percentage of total jewelry sales is on the rise with **over 40% of the total value of jewelry sales** spent on platinum.

Platinum jewellery demand by region



Jewelry makes up an important part of demand for platinum **at 29% of net global demand**. Platinum jewelry spending is highly elastic with price and also correlated to GDP growth/GDP per capita. Europe and North America are experiencing depressed volumes while Chinese buying has been strong on price dips, evidenced in February and March as volumes on the Shanghai Gold Exchange **set record highs**. China remains the largest consumer of platinum jewelry. Strong volumes and buying for platinum on price dips in China is creating a floor on demand levels.

Shanghai Gold Exchange Platinum Turnover



Source: SGE, UBS

III. Industrial and other sector demand: Chemical sector demand increased by 53% in 2010 to the highest levels since 1975, in sympathy with the overall restocking theme across the globe. India and China were bright spots with an **increasing need for lightweight polymers** in the automotive and packaging sectors. China's chemical manufacturing industry remained the world's largest and fastest growing in 2010.

Petroleum refining demand was down from previous year's levels as spare capacity remained in the sector and little new capacity was built out as was any corresponding need for platinum catalysts. Electrical demand for platinum was up year over year by 30,000 ounces with increases in consumer electronic devices and also business restocking of computer equipment. Glass demand was up by 335,000 ounces for 2010 with an increase in new and replacement glass manufacturing facilities. Increases in consumer demand for flat panel displays and also a recovery in the construction sector helped demand for both glass and glass fiber resulting in **increased demand for platinum fabrications and components**.

Medical and biomedical demand was slightly higher than 2009 continuing the upward trend over the long term. New demand came from cardiac stents, electrophysiology catheters and neuromodulation devices. Anti-cancer drug demand also remained robust (Johnson Matthey).

Fuel cell technology demand almost doubled in 2010. Stationary power systems where electricity generation is combined with heat generation are the leading area of demand within the fuel cell sector and a **potentially increasing source of platinum demand** which though currently small has room to grow. Both Japan and Korea are subsidizing consumer purchases of stationary power systems. Increasingly stringent emissions legislation and concerns over the environment are expected to encourage broader attention to fuel cells as a source of clean and efficient energy.

- IV. Investment demand while near highs in the ETF market is not at previously seen levels in the futures market. Please see below tables showing speculative net long interest in platinum futures as well as platinum in relation to gold and silver in both ounces and dollar size of the market. With ETF ounce holdings at 1.25 million for the week ending May 31, it is clear that **any significant uptick in investment demand would affect platinum prices** where annual net platinum demand is just over 6 million ounces.

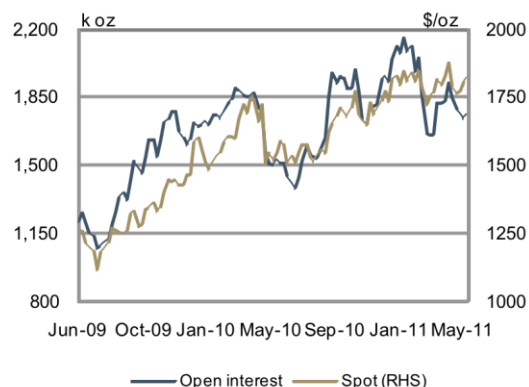
PLATINUM SPECULATIVE NET LONG AS A PERCENTAGE OF TOTAL(COMBINED) OPEN INTEREST--WEEKLY DATA							
	3/95-	12/99-	12/04-	12/06-	12/08-	12/09-	12/04-12/07
HI	73.4%	73.4%	73.4%	72.1%	72.1%	72.1%	73.4%
LOW	-35.4%	-21.1%	5.3%	16.2%	32.2%	48.6%	5.3%
AVERAGE	34.6%	41.9%	49.9%	51.4%	55.1%	60.3%	47.9%

*Note: "-"=Current=May 31, 2011

	Total(Combined) Open Interest ,000s oz.	Size of Platinum Market Relative to other Precious
Platinum	1,953.9	100.00%
Gold	71,585.8	2.73%
Silver	936,505.0	0.21%

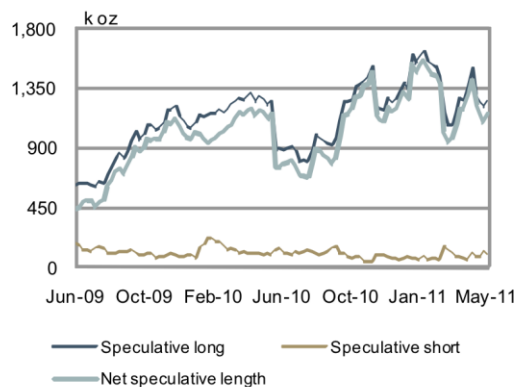
	\$/oz.	Total Combined Open Interest ,000s oz.	Platinum Market Relative to other Precious Metals(Ounces)	Total Combined Open Interest \$ (in ,000s)	Platinum Market Relative to other Precious Metals(\$)
Platinum	\$ 1,752.10	1,953.9	100.00%	\$ 3,423,428	100.00%
Gold	\$ 1,538.60	71,585.8	2.73%	\$ 110,141,912	3.11%
Silver	\$ 35.74	936,505.0	0.21%	\$ 33,470,689	10.23%

Figure 1: Platinum price vs. NYMEX open interest



Source: NYMEX

Figure 2: NYMEX speculative longs and shorts



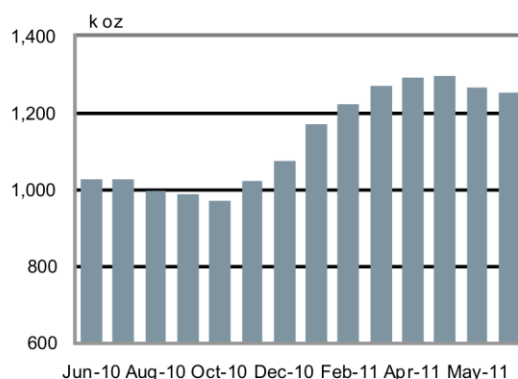
Sources: NYMEX; Standard Bank

Figure 3: NYMEX net spec length as a % of open interest



Sources: NYMEX; Standard Bank

Figure 4: ETF Holdings



Sources: Various ETFs; Standard Bank

Source: CFTC, NYMEX, Standard Bank

V. **We turn now to the supply side.** It is important to address the question of world platinum reserves and supply as well. Generally speaking, platinum ‘reserves’ and ‘resources’ numbers shown by mining companies are smaller numbers than ‘identified’ reserves estimated by geologists. Reserves and resources have been quantified in the short to medium term by mining companies, and identified deposits are generally unproven given the high cost of doing so, yet geological evidence suggests they do exist. There is little need for mining companies to go through the expenditure to prove those reserves given current proven reserves are sufficient for the near/medium term to meet world demand.

In a 2010 report by Johnson Matthey, R. Grant Cawthorn more closely examines the reserves and resources of the Bushveld Igneous Complex of South Africa. Among the four largest

mining companies in the region a rounded number of 800 million ounces of platinum is being reported with nearly half – or 350 million of those ounces - having already been mined with most from depths of less than 1km. It is geologically assumed that approximately 200 million ounces remained in the upper 1 km of mining area and 350 million ounces in the second km (2010). As mentioned previously, **the Bushveld contains approximately 80% of world reserves**. The easy reserves have been mined and while not infeasible to mine at depths of greater than 2km, doing so will encounter both high temperatures and also serious rock stress according to Cawthorn. **Such depths would also increase mining costs and subsequently the cost of platinum.**

In a recent May 9, 2011 release of interim results, Lonmin PLC CEO Ian Farmer posits that given current South African Rand (ZAR) strength and a ZAR/USD exchange rate of R6.91, incentive prices to bring new platinum **production online will need to be above \$2,100/oz or \$2,185/oz** on a weighted average. He further mentioned that nearly all brownfield and greenfield projects need higher prices than today's levels. Some new generation deep shafts could require even higher prices to take into account significant capex inflation over the last few years (Source: Lonmin Interim Results May 9, 2011). Supply side increases in mining costs due to ZAR strength, wage inflation and increasing safety standards are on the rise. Recall that current price levels are near the \$1,750/oz range.

Further possible disruptions to the supply chain in the near term may come from labor negotiations which typically occur in during the South African winter months. Labor unrest, protests and strikes have been obstacles to maintaining production levels in the past and are typically tumultuous events. Canadian miner, Eastern Platinum, lost 17% of PGM production in the first three months of 2011 due mainly to labor unrest. On May 24, 2011, Lonmin served 9,000 workers with letters of dismissal because they had disrupted operations since the prior week. **Wage inflation** is a cost of doing business with the increasing strength of South Africa's National Union of Mineworkers. The union is pushing for 14% wage increases this year. Production disruptions both in the form of striking workers or those non-union sanctioned mining protests are likely. We have already seen this with Lonmin's recent dismissal of 9,000 workers. An increasing number of **safety stoppages** subsequent to a 20% rise in year over year mining deaths for the first months of 2011 could further disrupt supply. South Africa's Department of Mineral Resources is stepping up safety monitoring and an increased level of safety standards are a possible outcome of recent events.

Further possible speed bumps to the supply side of the equation come from ZAR strength as mentioned previously. Also, increasing shaft depths with resulting higher capex requirements and power disruptions lie ahead of us. South African state utility Eskom is struggling to keep up with power demand and projects, and this will be the case for **at least the next several years until additional power plants come online**. In early 2008, the grid practically collapsed and forced mines and smelters to shut down for days costing billions in lost output. In May of 2011, Eskom has already disrupted power supplies to BHP's aluminum smelters. Electricity demand typically peaks in South Africa from June through August, the winter months.

Zimbabwe's 2011 Indigenization and Empowerment Act signed into law in March 2011 is also worthy of mention. Under the terms of the act, foreign miners have until June 2011 to show how they will **divest 51% of their ownership** to black Zimbabweans. The act compels all foreign and white-owned companies to sell 51% of their shareholdings to black Zimbabweans within five years and applies to all companies with assets over \$500,000 (Latham, Bloomberg). Mugabe's recent legislation combined with his volatile regime will serve to **discourage further foreign investment in the mining sector**. Supplies could be disrupted, though there is talk of China coming in and making purchases for reserves in the \$3-4bn range prior to Mugabe's upcoming election. It is unclear how and whether the China deal will transpire but China is certainly known to be a friend of Zimbabwe and Mugabe in the past.

What we can say is there is probably a significant supply disruption coming in the near to medium term. We believe **this will be the catalyst** that draws the world's attention to platinum.

Section Three—Parting Thoughts

While recent news and worries of global macro growth certainly merit close attention, generally speaking, **we believe that in the medium to longer term, both platinum itself and those equities where the carrying cost of reserves is not fully appreciated, will prove to be good value**. While the events in Japan have certainly impacted auto production in the near term, medium to longer term auto production should be higher and resulting platinum and palladium **demand should increase late in the year and early next year**. With global demand fundamentals strongly in place in the automotive sector, prices should benefit.

There are many factors that could disrupt near term supply of PGM which would be cause for concern. There are also new demand centers which are increasing their long term trend, most especially medical/biomedical uses which are less tied to macro growth. Increasingly stringent emissions legislation coming down the road in the form of heavy duty and off-road legislation should further boost demand as will any further increase in the use of fuel cell technology in the form of stationary power systems. Increasing diesel engine market share will be especially beneficial for platinum. It is also worth noting that the ratio of platinum to palladium from a price perspective is near an all time low. This should **prove beneficial for platinum after palladium's almost 100% price run up** for 2010 as switching may take place with platinum's superior efficiency characteristics in autocatalysts.

Overall, we feel the long term trend is in place and pent up demand as a result of near term auto production problems puts risk to the upside. **Watch for your catalyst** and while you are at it post a guard on your garage.

Mari Kooi and D'Artagnan Balink

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