



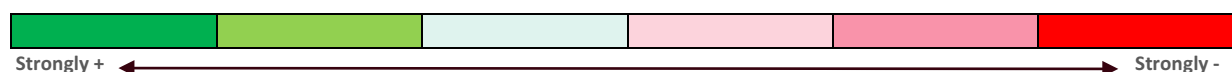
Thesis: Platinum will rise by 2020

Last Update: July 24, 2019

<p>Platinum prices:</p> <p>↑</p>	<p><i>Platinum has the characteristics of both an industrial metal (such as Nickel) as well as a precious metal. Thus, its demand is influenced by factors that would increase Gold demand as well as overall industrial demand such petrochemicals.</i></p> <p><i>We expect Platinum prices to rise as central banks continue lowering rates and potentially devaluing their currencies. On the industrial side, the trade war with China is likely to end by 2020 and renew Platinum demand for auto catalytic converters and chemical catalysts.</i></p>
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Platinum to rise (bull case):	Platinum declines (bear case)
<ul style="list-style-type: none"> Rates: The U.S. Fed has stopped raising rates and is set to lower rates. Several CBs, particularly the ECB, have recently become Dovish. 	<ul style="list-style-type: none"> Supplies of Platinum remain high (Supply > Demand). South African refined stocks are expected to rise as well as supplies from recycled cars (auto catalysts)
<ul style="list-style-type: none"> Futures: Sentiment among Producers is quite bullish, while sentiment among Speculators is quite bearish. 	<ul style="list-style-type: none"> A large portion of Platinum demand is from exchange traded funds, and subject to volatile "hot money."
<ul style="list-style-type: none"> Forex: The US Dollar, which has been strong, may begin declining in 2020 as the budget deficit and Debt/GDP grow larger. EMK currencies are rising. 	<ul style="list-style-type: none"> The cost curve for individual mines remains below current pricing. Thus, miners are not suffering and rationalizing production.
<ul style="list-style-type: none"> Trade Wars with China, etc. are likely to end by 2020 (election time) which would re-establish trade flow, thus increasing industrial demand. 	<ul style="list-style-type: none"> Long Treasuries (and rates) are a crowded trade amongst asset managers. Short-term, rates could rise suddenly, depressing all commodity prices.
<ul style="list-style-type: none"> Lower demand from Diesel-gate in Europe will begin stabilizing. Regardless, new emissions standards call for a higher concentration of Platinum in catalytic converters. Incremental demand from Chinese hydrogen fuel-cell electric vehicles. 	<ul style="list-style-type: none"> Auto sales remain weak, especially in China and Europe. Electric cars, if they are powered by Lithium batteries, may reduce Platinum demand.
<ul style="list-style-type: none"> Potential safe-haven buying of Gold, Silver and Platinum. 	<ul style="list-style-type: none"> There are plentiful reserves, mostly in South Africa and Russia.
<ul style="list-style-type: none"> Gold and Silver are rising: Platinum may play "catch up" with them as well as Palladium (a substitute product). 	<ul style="list-style-type: none"> Jewelry demand remains weak.
<ul style="list-style-type: none"> Futures are trading in Contango 	<ul style="list-style-type: none"> Truck sales (consumer and commercial) may decline

Heat Map legend



5 Year History



Long-term History



ETFs, Futures:

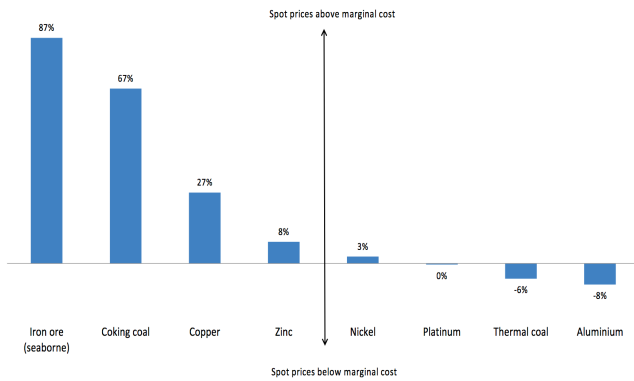
Ticker	Name	Comments
PPLT	Aberdeen	Purchases physical Platinum which is stored at JPM in London, Expense ratio: 0.6%, Very low counterparty or credit risk compared to Exchange Traded Notes. PPLT is by far the largest ETF in terms of total assets.
PLTM	GraniteShares	Similar to PPLT in design but with slightly lower expenses. Small asset size and possible liquidity (trading) risk.
PGM	iPath Series B	Issued by Barclays Capital, seeks to match performance of the Bloomberg Platinum Subindex, structured as an ETN (Exchange Traded Note) thus there is counterparty risk. Expense ratio of 0.75%. Small asset size and possible liquidity risk.
PLQ2019	Platinum futures	Futures for August 2019..., traded on the NYMEX

Charts supporting or contradicting the above thesis (charts are retained given the evolution of the data over time)

	Spot		2019e	2020e
Platinum	810 \$/oz	Morgan Stanley	816	860
		Consensus	870	934
Palladium	1,332 \$/oz	Morgan Stanley	1,525	1,465
		Consensus	1,284	1,040
Gold	1,284 \$/oz	Morgan Stanley	1,311	1,295
		Consensus	1,297	1,320
Rhodium	2,425 \$/oz	Morgan Stanley	2,953	3,000
		Consensus		
Nickel	12,355 \$/tn	Morgan Stanley	12,354	14,106
		Consensus	12,975	13,573
ZAR/ US\$	14.40	Morgan Stanley	14.26	15.00

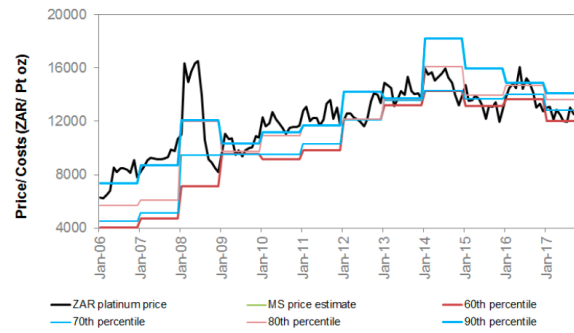
Source: Bloomberg, RMB Morgan Stanley Research estimates (e)

Spot Prices vs. 90th Percentile Marginal Cost



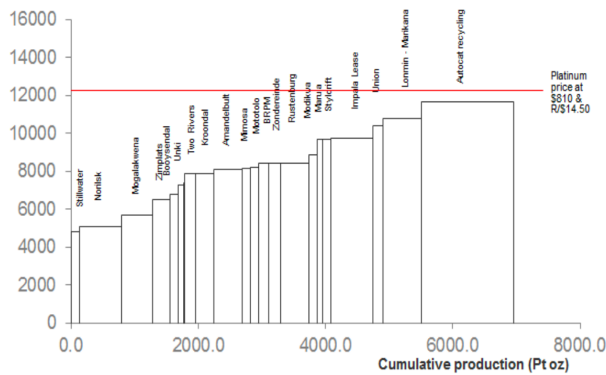
Source: Wood Mackenzie, Bloomberg, Morgan Stanley Research. Note: Marginal cost - year 2019 Dataset Q2 2019. For coal, the dataset is as of May 2019. C1 cash costs for zinc, copper and aluminium. Total cash cost for iron ore, coking and thermal coal.

Exhibit 5: ZAR platinum price has tracked 60-80th percentile on the cost curve



Source: Datastream, RMB Morgan Stanley Research

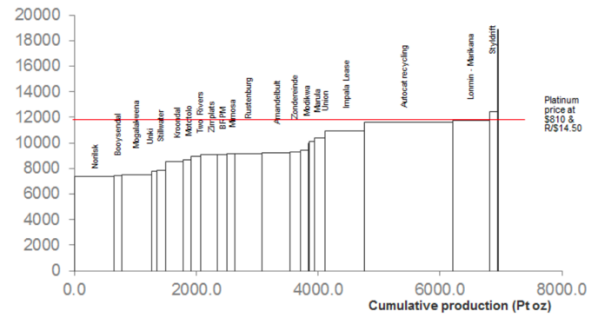
2019 Cash cost ZAR/ Pt equi oz (excl. capex)



Source: Company data, RMB Morgan Stanley Research estimates

Exhibit 48: At a platinum price of \$810/oz and R/\$14.50, we estimate that it is only the 2 projects in development (Styl drift and Booyssendal S) that are cash flow negative based on our forecast 2019 cost structure

2019 Cash cost ZAR/ Pt equi oz (incl. capex)



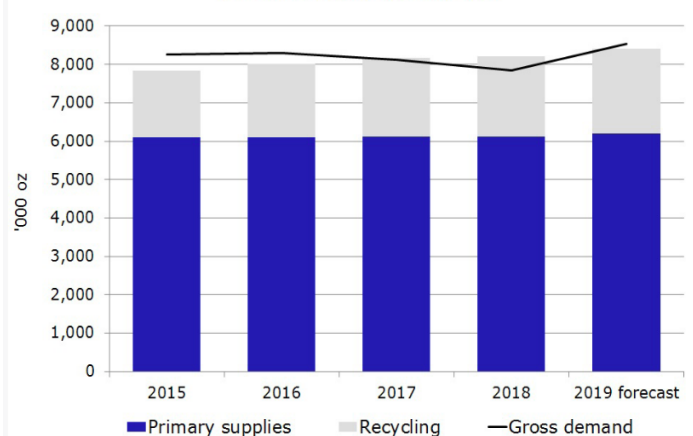
Source: Company data, RMB Morgan Stanley Research estimates

Charts below are sourced from Johnson Matthey PLC

Platinum Supply and Demand '000 oz

Supply	2017	2018	2019
South Africa	4,450	4,467	4,565
Russia	720	687	668
Others	953	959	956
Total Supply	6,123	6,113	6,189
Gross Demand			
Autocatalyst	3,248	3,051	3,128
Jewellery	2,400	2,269	2,227
Industrial	2,117	2,459	2,322
Investment	361	67	858
Total Gross Demand	8,126	7,846	8,535
Recycling	-2,047	-2,105	-2,219
Total Net Demand	6,079	5,741	6,316
Movements in Stocks	44	372	-127

Platinum supply and demand



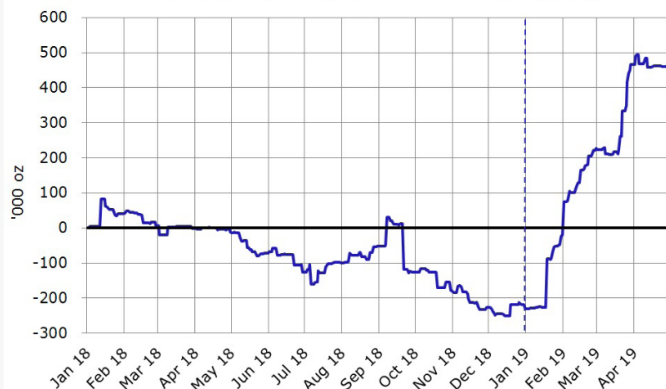
Platinum Demand: Autocatalyst '000 oz (Gross)

	2017	2018	2019
Europe	1,711	1,468	1,407
Japan	358	354	353
North America	348	352	363
China	157	146	229
Rest of World	674	731	776
Total	3,248	3,051	3,128

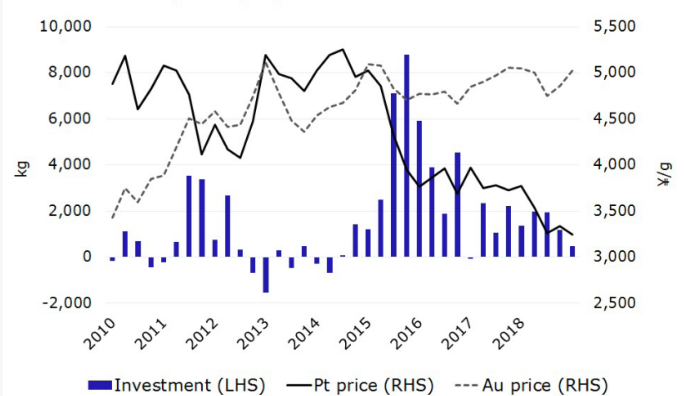
Platinum Demand: Industrial '000 oz

	2017	2018	2019
Chemical	463	540	569
Electrical	233	266	269
Glass	366	478	376
Medical & Biomedical	218	221	227
Petroleum	230	372	288
Other	607	582	593
Total	2,117	2,459	2,322

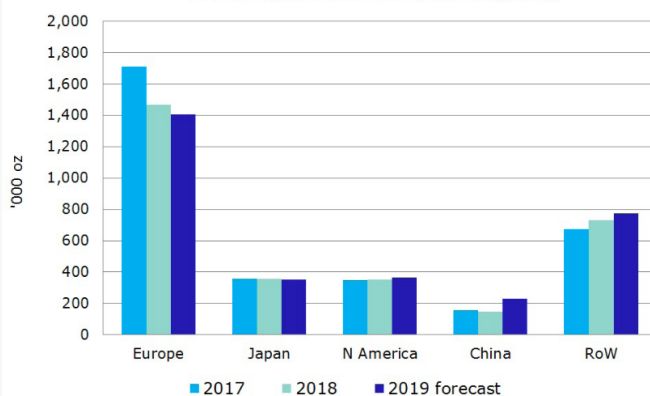
Net Investment in platinum ETFs in 2018 & 2019



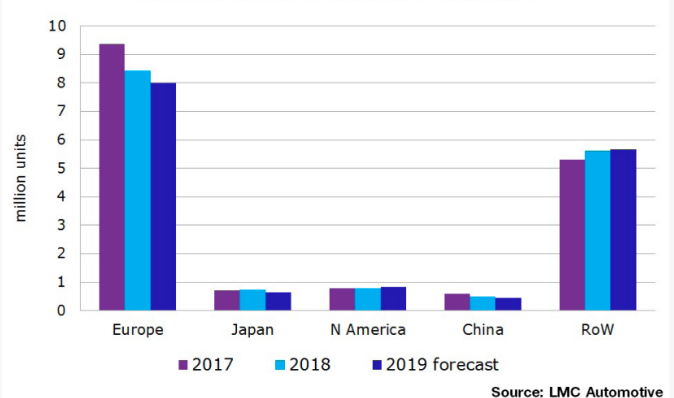
Quarterly Japanese bar investment



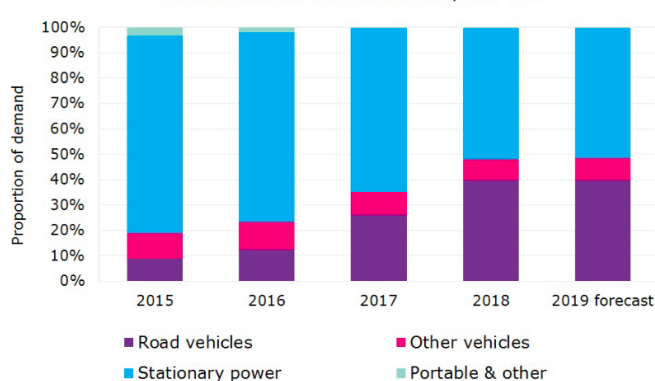
Autocatalyst demand for platinum (gross)



Light duty diesel vehicle production by region

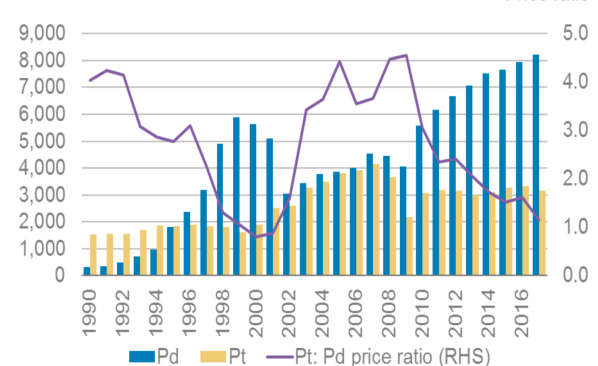


Platinum in fuel cells: demand by end-use



Autocat demand (koz)

Price ratio



Source: Johnson Matthey, Bloomberg, RMB Morgan Stanley Research