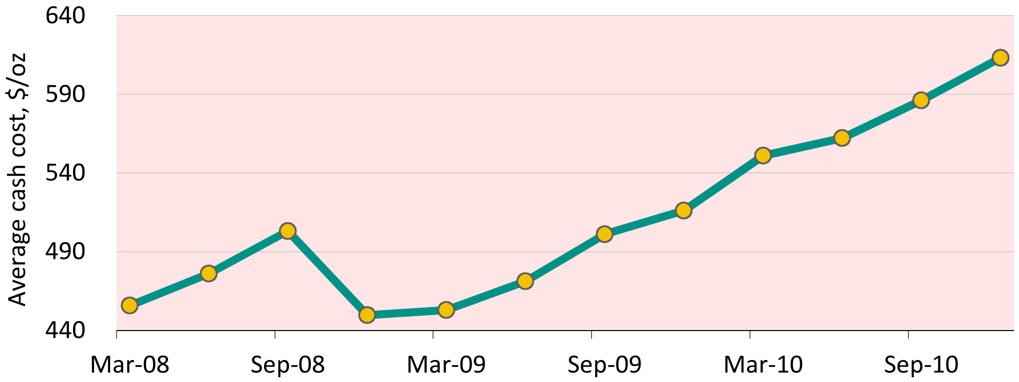
ABN AMRO Gold Mine Cost Report Q4 2010

VM Group/Haliburton commodity research - May 2011

- Q4 2010 cost roundup
- Yearly cost roundup
- Regional cost analysis

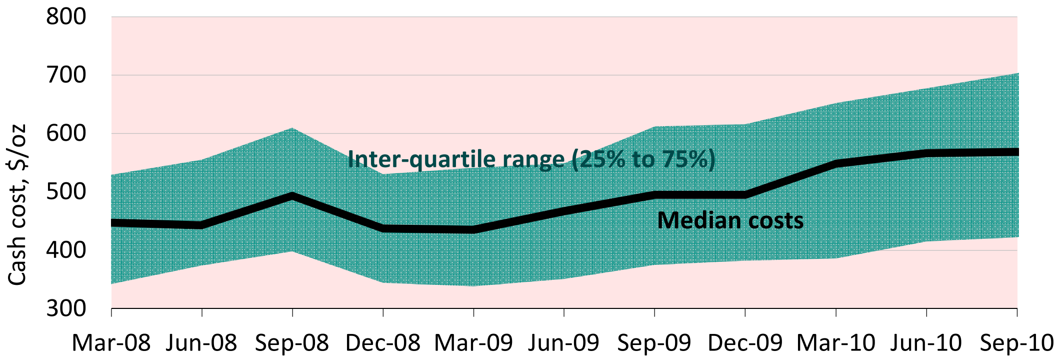
Average gold mine cash costs, Q1 08-Q4 10, $/oz



Q4 10 average gold mine cash costs rise $30/oz compared with Q3 10, to $616/oz

Source: VM Group, Haliburton Mineral Services

Median and inter-quartile cash costs, Q1 08-Q4 10, $/oz



Q4 10 median gold mine cash costs fall $6/oz Q-o-Q, while the inter-quartile range widens by $4/oz, to $285/oz

Source: VM Group, Haliburton Mineral Services

The Gold Mine Cost Report is produced as part of a joint venture between ABN AMRO Bank N.V. and VM Group/Haliburton Mineral Services. It surveys the gold production cash costs of 107 gold mining companies.

Analysts:

- **Carl Firman**
  E-mail: carl@vmgroup.co.uk
- **Ted Reeve**
  E-mail: tedreeve@sympatico.ca

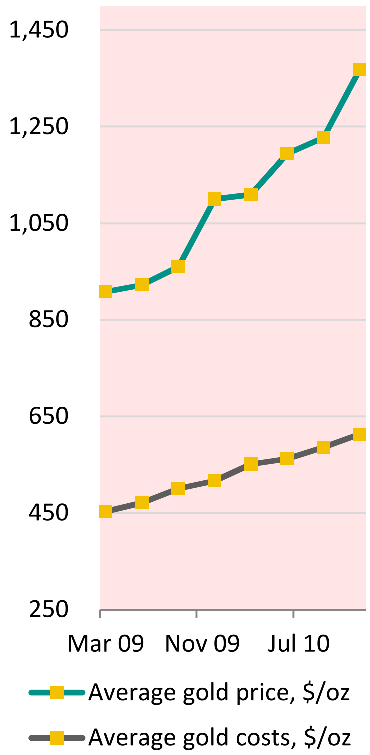
Contents

Methodology

Gold mine cash costs per ounce of production in this report are based on cost reporting from 107 gold mining companies, with a total of 266 mines in the most recent quarter. Although there is some variation in how companies report cash costs per ounce, most utilise the “Gold Institute Gold Cost Standard”. These costs include: direct mining and processing expenses; other onsite charges; third party smelting and refining charges; and royalties and production taxes net of by product credits. Where reporting does vary from the Gold Institute Standard, recalculations have been made and in some cases estimates have been calculated and included where reliable data is not available. In our analysis we have excluded mines where gold produced is not the principal source of revenue.

The reader is cautioned that cash costs are only one component of total mine costs which, in addition to cash costs, would include depreciation, depletion, amortisation and reclamation and closure costs. Additionally at the corporate level there would be general and administrative expenses, as well as exploration expenses, etc.

Average quarterly gold price and cash costs, Q4 2008-Q4 2010, $/oz



Source: VM Group/Haliburton Mineral Services

Q4 2010 cost roundup

Average gold mine cash costs rise 5.1% to $616/oz[1] in Q4 2010

The gold mining industry's average cash[2] cost of production in Q4 10 was $616/oz, up by $30/oz or 5.1% from the previous quarter. This follows the 4.2% quarterly rise in costs in Q3 10, which is due in part to the appreciation in raw material and parts prices, as well as the strengthening of producer currencies against the US dollar. On a year-on-year basis, the average cash cost advanced by 19.2%, continuing the double-digit year-on-year growth seen in every quarter since Q3 2009, when costs fell by 0.4%. In contrast, median costs of production fell by 1.1% quarter-on-quarter, to $562/oz, while 9th decile high cost producers saw costs a similar fall. Lower and upper quartile production costs climbed 9% and 6%, respectively, on the quarter, to $460/oz and $745/oz, which for the former is the second largest gain on record, apart from in Q2 08. The inter-quartile range thus grew by a modest 1.4% quarter-on-quarter in Q4 10, to a record of $285/oz.

The net result saw the cost curve move further to the right, continuing the general trend seen over the past several quarters. The weak US dollar – in which gold is priced – against producer currencies, where wages and other expenditures are generally paid, has been by far the primary factor in pushing up production costs outside of the US. So too has been the rise in the monetary base in most economies, which has fed directly and indirectly into commodity prices. That said, the difference between production cost appreciation and the rising gold price has seen producer margins nevertheless widen significantly. In South Africa, the difference between average South African gold mine production costs and the average gold price over Q4 10 grew to a record $542/oz, from $422/oz in Q3 10 and $87/oz higher than the previous record, set in Q2 10. For the rest of Africa,

Gold cash costs by year and quarter, $/oz unless stated

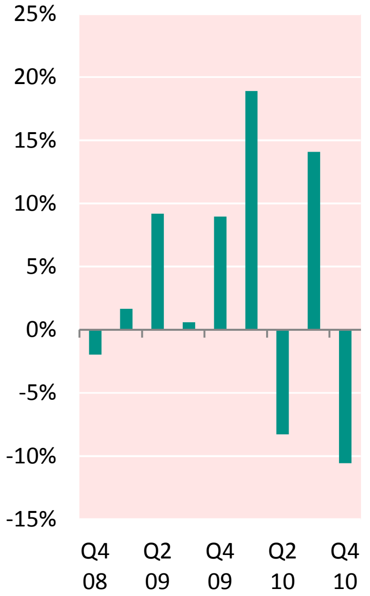
					2009				2010			
	2007	2008	2009	2010	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Average cost	**394**	**470**	**485**	**579**	**453**	**471**	**504**	**517**	**551**	**562**	**586**	**616**
Average gold price	695	872	972	1,225	908	922	960	1,100	1,109	1,194	1,227	1,368
Difference	*302*	*402*	*488*	646	455	451	456	583	558	632	641	752
Cost at various positions on curve												
25%	307	390	394	431	338	355	375	382	386	416	422	460
Median -50%	**385**	**460**	**476**	**565**	**435**	**467**	**495**	**495**	**548**	**566**	**568**	**562**
75%	458	560	574	699	544	549	614	625	646	672	703	745
90%	556	667	685	828	643	684	720	739	818	813	876	866
Costed production (Moz)	42.3	42.9	44.6	46.5	10.5	10.8	11.3	11.9	11.1	11.4	11.9	12.1
Costed production (tonnes)	1,315	1,335	1,388	1,430	326	336	351	372	346	356	370	378

Source: VM Group, Haliburton Mineral Services

[1] All costs are in US dollars per troy ounce unless otherwise indicated.

[2] The average cash cost of mine was calculated as follows: each mine's cash cost is multiplied by its production. This is determined for all 266 mines, and then divided by the total production of 12.15 Moz. For Q4 10 this gives a higher figure for average cash costs, $616/oz than the median, $562/oz.

Quarterly % change in inter-quartile range (upper quartile minus lower quartile), Q4 08-Q4 10



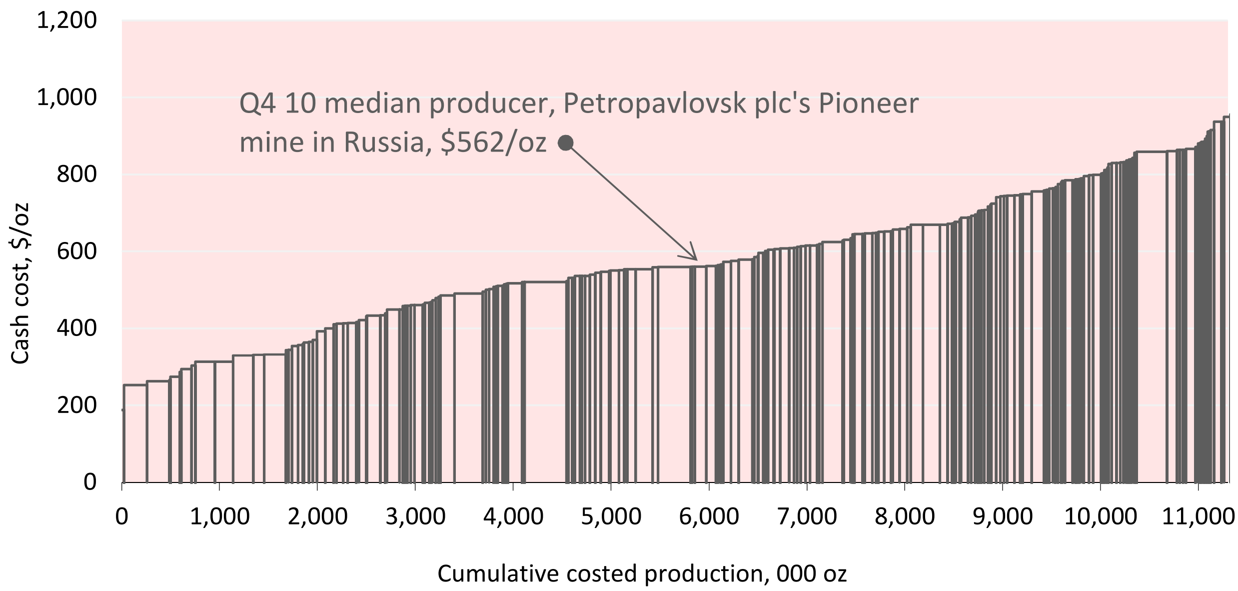
Source: VM Group/Haliburton Mineral Services

the difference between the average cost of production, of $676/oz, and the average gold price was $691/oz. No-where is the difference more stark than in Latin America, where producers enjoyed production margins of $884/oz, which is notably some 4% higher than the pre-2008 nominal record gold price. Overall the global differential between average production costs and the gold price grew by 17.3%, to a record $752/oz in Q4 10. It was the fourth such double-digit quarterly rise in the production cost:gold price differential in the past three years, and only falls short of that seen in Q4 09 and Q1 09.

The cost curve

On a distributional basis the cost curve for Q4 10 shows each mine in our database ranked in order of production cash costs, from low to high. The width of the bars represents the production of gold (in '000 ounces) by each mine in Q4 10 and the height represents the cash cost per ounce. The median mine[3] on the cost curve was Petropavlovsk's Pioneer-PV operation in Russia, which produced 98,500 oz of gold in Q4 10 at a cash cost of $562/oz, compared with 42,500 oz the previous quarter, at the same cash cost. The broader lines show the largest operations by output. These are dominated by the larger mines, such as Newmont's Nevada complex in first position, followed by its Yanacocha mine in Peru. Barrick Gold's Goldstrike and Cortez mines in the US were replaced in third position by Gold Fields' recently restructured Kloof/Driefontein complex (KDC) mine in South Africa, which produced 310,600 oz in Q4 10. On a cash cost basis, Medusa Mining's Co-O mine in the Philippines remains the lowest cost producer. Total gold produced below the first quartile was 3.0 Moz in Q4 10, compared to

Cost curve for gold mines worldwide: Q4 10

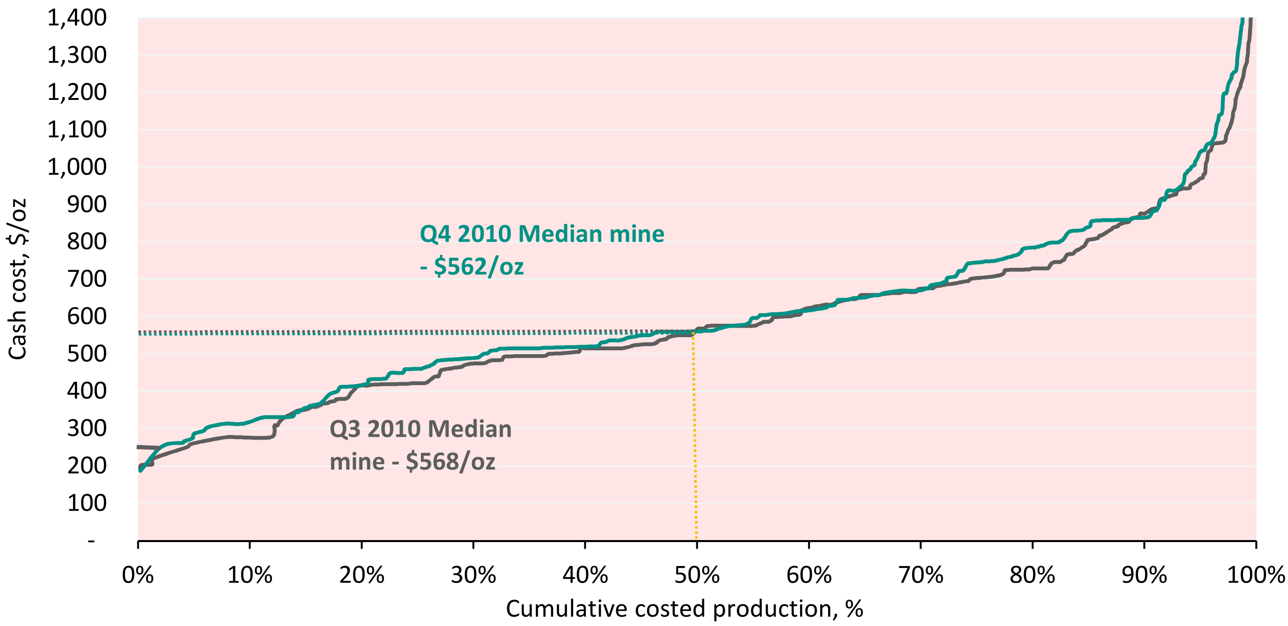


Source: VM Group/Haliburton Mineral Services

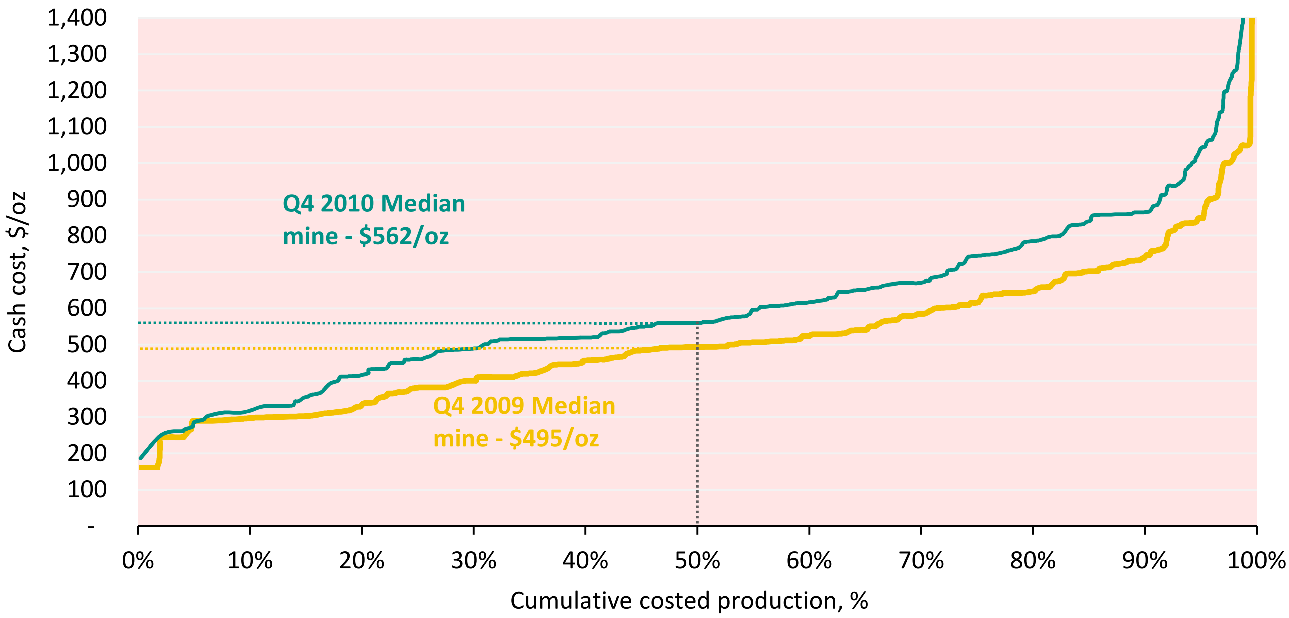
[3] The median cost ounce is the one that falls halfway along the horizontal axis, which - as total production from these mines was 12.15 Moz during the quarter – is calculated from the mine that produced the 6.08 millionth lowest cost ounce.

3.1 Moz in Q3 10. The volume of gold produced above the fourth quartile was also 3.0 Moz and there were 1.2 Moz in the 9th decile. Costed production totalled 12.15 Moz, or 378t, up 2.2% from the previous quarter, and the highest cost producer covered in this report stood at $2,437/oz in Q4 10. There were 47 mines, of those analysed in our database, with cash costs above $1,000/oz, totalling more than 0.7 Moz of production in Q4 10, as opposed to 35 mines totalling 0.5 Moz in Q3 10.

Cost curve, % of production: Q4 10 and Q3 10, $/oz



Cost curve, % of production: Q4 10 and Q4 09, $/oz



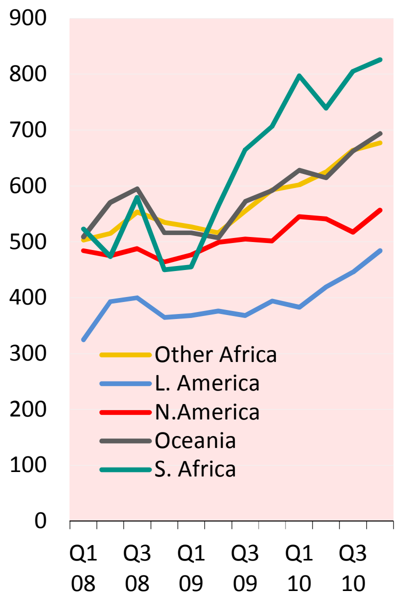
Source: VM Group/Haliburton Mineral Services

Average exchange rates v US dollar

	$/rand	$/Aus$	$/C$
Q4 10	6.88	1.01	1.01
Q3 10	7.30	1.10	1.04
Q2 10	7.53	1.13	1.03

Source: VM Group/Haliburton Mineral Services

Average cash costs of gold mine production by region over time, $/oz



Source: VM Group/Haliburton Mineral Services

Regional cost analysis

The US dollar weakened further against most major gold producing currencies in Q4 2010, putting upward pressure on production costs for miners. In South Africa the average cash cost of production rose 2.6%, to $826/oz, while lower and upper quartile costs fell 1% and 3%, respectively, narrowing the interquartile range by 8.5%, to $257/oz. Marginal (i.e. 9th decile) costs reached a record $1,114/oz, from $1,046/oz in Q3 10, and just half the costs of Q4 2008. Furthermore, the rising gold price saw even these marginal producers realise increased margins of $253/oz after production costs. Upper quartile mines also saw margins improve to a record $453/oz and median operators realised margins of more than $500/oz for the first time.

In the ‘other Africa’ region of our report, the average cash cost of production was $677/oz in Q4 10, up 2% from the previous quarter and 14% on the year. The interquartile range grew 44% as lower quartile costs fell 9% and upper quartile costs grew 3% during the period, while marginal costs declined by 3.3%. The highest cost operation in the region was Golden Star’s Bogoso mine in Ghana, at $1,548/oz, on lower recovery rates due to transitional ore and poor weather conditions. This was followed by Lihir/Newcrest’s Bonikro mine in the Ivory Coast, IAMGOLD’s Mupane operation in Botswana and SEMAFO’s Samira Hill mine in Niger. In Oceania the average gold cash cost rose by 4.8%, to a record $694/oz, and lower and upper quartile production by 10% and 11%, respectively. Straits Resources’ Mt Muro mine was the highest cost mine due to a planned recapitalisation program and to the development of new resources. Several other mines also recorded production costs in excess of $1,000/oz during Q4 10. Average cash production costs in the North America region in Q4 10 increased for the first time since Q1 10, with Canadian-based production costs faring the worst. Average North American production costs grew 7.7%, to $557/oz, following declines in the previous two quarters. Lower and upper quartile costs rose 33% and 7%, respectively, narrowing the interquartile range to $157/oz, down 34% quarter-on-quarter. 9th decile mines saw production costs rise 9.1%, to $790/oz during Q4 10.

Gold mine production: cash costs by region, Q4 10, $/oz unless stated

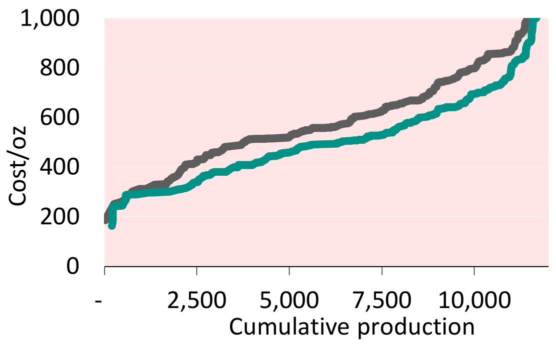
	South Africa	Oceania	Other Africa	North America	Asia	CIS/ Europe	Latin America
Average cost ($/oz)	**826**	**694**	**677**	**573**	**628**	**491**	**484**
Cost at various positions on curve							
25%	658	607	517	490	517	313	365
Median -50%	859	669	676	520	676	553	460
75%	915	785	765	647	765	562	559
90%	1,114	880	837	790	884	646	692
Costed production (Moz)	1.4	2.3	1.7	2.2	0.8	1.4	2.3
Costed production (tonnes)	45	72	53	68	25	43	70

Source: VM Group/Haliburton Mineral Services

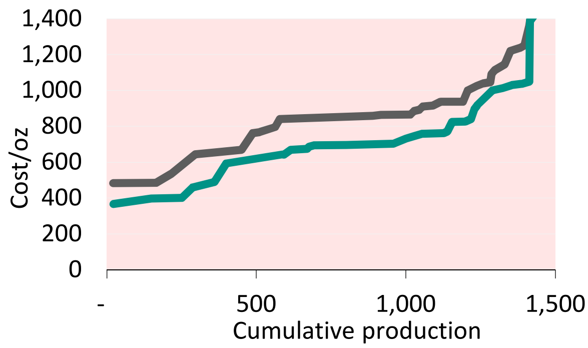
The differential between average production costs and the gold price rose to a record $811/oz, up more than $100/oz from the previous quarter and $200/oz from the same quarter a year ago. Latin American mines saw the largest rise in average production costs in any region under review, apart from Asia, yet the price differential between the average cost and the average gold price in Q4 10 meant that margins stood at a staggering $884/oz – much more than any other region and up 13% quarter-on-quarter and 25% on the year. Both lower and upper quartile costs climbed higher in the period, rising 4% and 16%, respectively, to $365/oz and $559/oz.

Cost curves by region, year-on-year (Q4 10: grey line, Q4 09: green line)

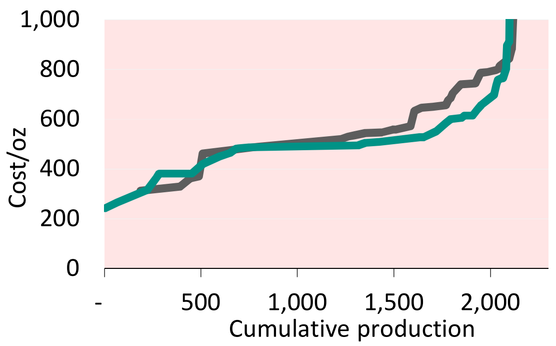
World



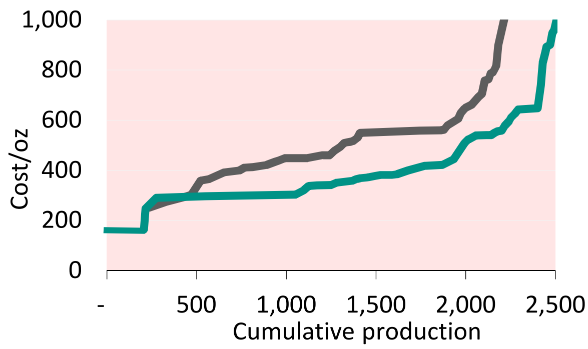
South Africa



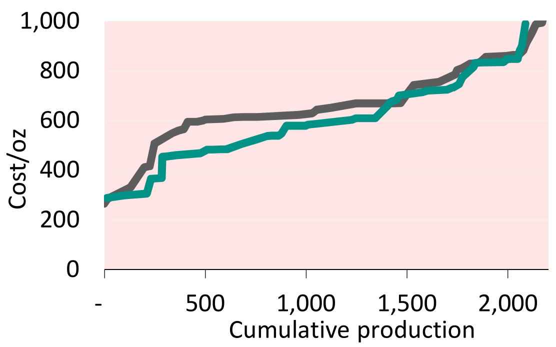
North America



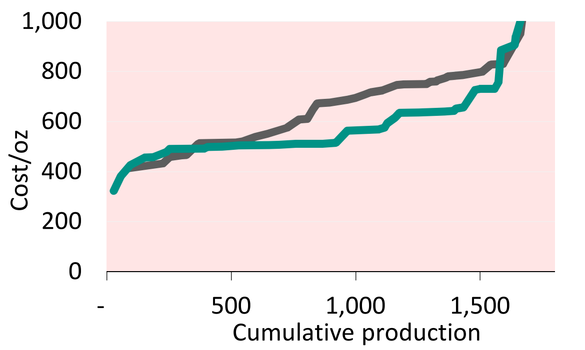
Latin America



Oceania

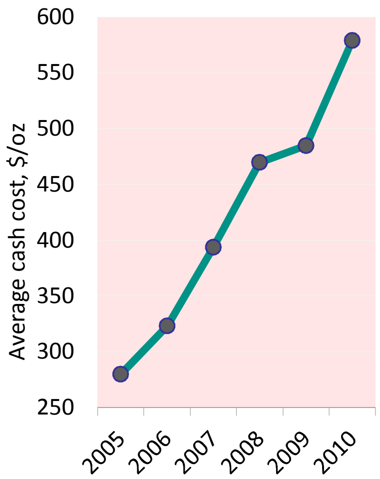


Other Africa



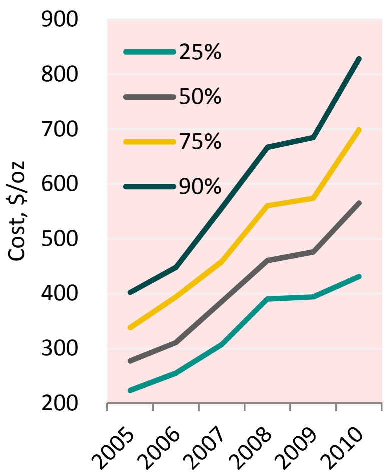
Source: VM Group/Haliburton Mineral Services

Average production costs, 2005-2010, $/oz



Source: VM Group/Haliburton Mineral Services

Gold production costs, 2005-2010, broken down into quartile, median and 9th decile, $/oz



Source: VM Group/Haliburton Mineral Services

Yearly comparison

Average costs of gold mine production have more than doubled in the period 2005-2010, to $581/oz. During this same period of time, the gold price has trebled – and with that, gold miners' margins, after production costs are taken into consideration, have also risen markedly. These margins have rocketed to as high as $884/oz in Latin America in Q4 2010, and even to $542/oz in the high cost South African region. Although there is no link between the gold price and cash production costs, this widening differential could be interpreted as a sign that the gold price has over-extended itself. Having said that, gold's physical supply and demand scenario has much less impact on the price than it does for base metals or bulk materials, so the price drivers are quite independent to what happens in the actual mines. Gold miners therefore have enjoyed and should continue to enjoy record profits, since we believe that the gold price will find plenty of support in the medium-term, due to currency debasement, inflationary pressures, and the continued importance of gold as a hedge against risk.

Since 2009 South African production costs have accelerated faster than in any other region, due to chronic power supply problems, the strengthening rand, and geological and mining-related issues. Costs in 'other Africa' and Oceania have also risen and diverged from costs in North America since 2006-2007, tracking broadly the weakening US dollar index over this period. We expect to see North American costs remaining competitive in the year ahead, as will those of Latin America, while costs in Oceania and elsewhere will continue to accelerate in comparison.

Gold cash costs by year, $/oz - unless stated

	2005	2006	2007	2008	2009	2010
Average cost	**280**	**323**	**394**	**470**	**485**	**581**
Average gold price	445	604	695	872	972	1,225
Difference	***165***	***281***	***302***	***402***	***488***	**644**
25%	223	255	307	390	394	431
Median -50%	**277**	**311**	**385**	**460**	**476**	**565**
75%	338	394	458	560	574	700
90%	402	448	556	667	685	828
Costed production (Moz)	43.5	43	42.3	42.9	44.6	46.0
Costed production	1,352	1,339	1,315	1,335	1,388	1,430

Source: VM Group, Haliburton Mineral Services

About the authors

VM Group

VM Group is a commodities research consultancy that covers not just precious metals, but also base metals, energy, renewable energy, carbon, and agricommodities. The VM Group comprises a uniquely skilled team that is highly experienced in the analysis of the fundamentals of commodities and their geopolitical impact and contexts.

VM Group work excels in macro-economic analysis, the generation of supply and demand scenarios, cost analyses, derivative research and price forecasting. Confidentiality, experience and independence are key elements in this advisory capacity. We deliver excellence to those in need of external expertise, as well as those who wish to supplement their own in-house resources. Our extensive international contacts mean we are able to span the globe.

To see further how we can meet your research and consulting requirements, please email: info@vmgroup.co.uk

VM Group
100 Ashmill Street
London NW1 6RA
Tel: +44 20 7569 5930
Fax: +44 20 7569 5931

Haliburton Mineral Services

Haliburton Mineral Services
46 Hemford Crescent
Toronto, Ontario
Canada M3B 2S5
Tel: +1 416 447 7524
Fax: +1 416 447 7750

Founded in 2002, Haliburton Mineral Services is a private mining research and advisory business based in Toronto, Canada. The company's President, Ted Reeve, has a background as a mining analyst and has published quarterly gold producer hedge surveys since 1990.

VM Group disclaimer and copyright

ABN AMRO disclaimer and copyright

The contents of this document are confidential and proprietary to ABN AMRO Bank N.V. and its affiliates ("ABN AMRO") and may not be disclosed to a third party without ABN AMRO's prior written consent. This document is provided for information purposes only and as an accommodation to you. The information contained herein (the "Information") is current as at the date of issue and ABN AMRO shall be under no obligation to notify you of any changes to the Information or otherwise to update the Information after this date. Any material contained herein is for information purposes only and should not be regarded as an offer, recommendation or solicitation to buy or sell securities or derivative products. It does not contain a complete description of any particular product or transaction and any investment decision should be based upon the final documentation prepared in relation to any particular product or transaction. Information may have been obtained from, and/or based upon information obtained from sources that ABN AMRO believes to be reliable, however the accuracy and completeness thereof and the computations based thereon cannot be assumed. No representation or warranty, express or implied, is or will be made, and no responsibility or liability is or will be accepted by ABN AMRO or any of its officers, servants, agents, employees or advisors in relation to the accuracy or completeness of this document or the Information. The Information must be considered in conjunction with all other publicly available information. This document may include various forms of performance analysis, characteristics and pricing estimates. Such information and any opinion, estimate or projection contained in this document is illustrative only and is not intended to predict actual results which may be expected to differ substantially from those described in this document. Past performance is not necessarily indicative of future results.

ABN AMRO is not providing you with investment advice or a personal recommendation nor will it be deemed to have done so. The Information is being provided to you because we believe, based upon statements and other indications you have provided, that (i) you have sufficient knowledge, experience and professional advice to understand and make your own independent evaluation of the merits, risks and suitability of making an investment in the type of products or transactions described herein; (ii) you are not relying on ABN AMRO for information, advice or recommendations of any sort, except factual information, about the terms of any product or transaction; and (iii) you have sufficient financial means to accept the risk connected with any product or transaction described herein. ABN AMRO acts as principal in transacting with you and does not owe any fiduciary duties to you. You must determine the suitability of any products or transactions described herein. The products and transactions described herein may not be suitable for all investors. ABN AMRO is not providing you with financial, legal, tax, regulatory or accounting advice. It is your responsibility to seek your own advice in these respects and to satisfy yourself that you are aware of any such risks associated with the products or structures described in the Information. ABN AMRO expressly disclaims any responsibility for any uses to which you put this information.

This document does not purport to identify or suggest all of the risks, direct or indirect, which may be associated with any products or transactions described herein. ABN AMRO may have positions in trades and securities similar to the products and transactions described herein. There may be no market for products described herein, therefore investors should be prepared to hold any product until maturity. If you unwind a transaction early you may receive less than the stated redemption amount. Any transaction is subject to approvals, procedures and policies determined by ABN AMRO and prevailing market conditions. The Information does not constitute research and as such may differ from published views. ABN AMRO Bank N.V. is authorised by De Nederlandsche Bank N.V. in the Netherlands and regulated by the Financial Services Authority for the conduct of investment business in the United Kingdom. Registered Office: Gustav Mahlerlaan 10, Amsterdam, Amsterdam, 1082 PP, Netherlands. ABN AMRO Markets (UK) Ltd. is regulated by the Financial Services Authority for the conduct of investment business in the United Kingdom. Registered Office: 5 Aldermanbury Square, London, EC2V 7HR, United Kingdom (Company number 02706278).