Exploring the Mines of South Africa

By Samuel Block, Senior Analyst

Now in its 20th week, the strike against the big three platinum producers (**Lonmin**, **Anglo Platinum**, and **Impala Platinum**) have cost the companies approximately 20% of their combined 2013 revenue (15% of combined 2011 revenue)[1]. While the current strike may be costly, the industry has a long history of conflict, strikes, and safety issues that reflect a business model that remains as reliant on labor-heavy extraction methods as it was decades ago. Even in the event that the companies will reach a wage agreement in the near term, without structural changes the industry-wide **South African labor situation will remain unstable given continued poverty, private debt issues, and uncompensated physical risks of the mining workforces; which may prompt continued labor strikes and future state intervention, creating great uncertainty for investors**.

I joined our South Africa-based ESG team to visit several mining operations, including in the West Wits gold field, Bushveld platinum belt near Rustenburg, Cullinan diamond mine, and coal fields in eMalahleni, meeting both mining company representatives and community members to more closely evaluate the issues in the South African mining operations.

Many old South African gold mines in the West Rand of Johannesburg and platinum mines outside Rustenburg, where there have historically been labor issues, were designed during Apartheid years to utilize cheap migrant labor. Twenty years after the end of Apartheid, the basic labor model of the mines does not appear to have significantly changed. Most of the jobs in the industry remain low skilled manual labor in the absence of significant technological improvements in extraction methods; and the lowest paid jobs are often given to rock drill operators exposed to the most acute risks of rock falls. The circumstances have given rise to one of the highest rates of mining related fatalities in the world[1], and the ongoing strikes reflect the gap between the physical risks taken by the mineworkers and the compensation paid for taking those risks, with most living in continued poverty.

[1] MSCI ESG Research

FIGURE 1 **High Fatality Rates at Most Labor Intensive Operators**

Source: MSCI ESG Research

These risks are exacerbated by the growing depths of the generations-old mines in South Africa, many of which are reaching ultra-deep levels (below 2.5 kilometers) underground. Deep mining can destabilize rock, and the close proximity and size of many of the mines contributes to regular seismic events which may trigger mine collapses[2,3]. While I was in the country, a seismic event at the **Harmony Gold** Doornkop mine on the outskirts of Johannesburg led to nine fatalities of mine workers. This and similar incidents at the company contributed to a 12 to 15% drop in production in the first quarter of 2014 compared to the preceding quarter[4].

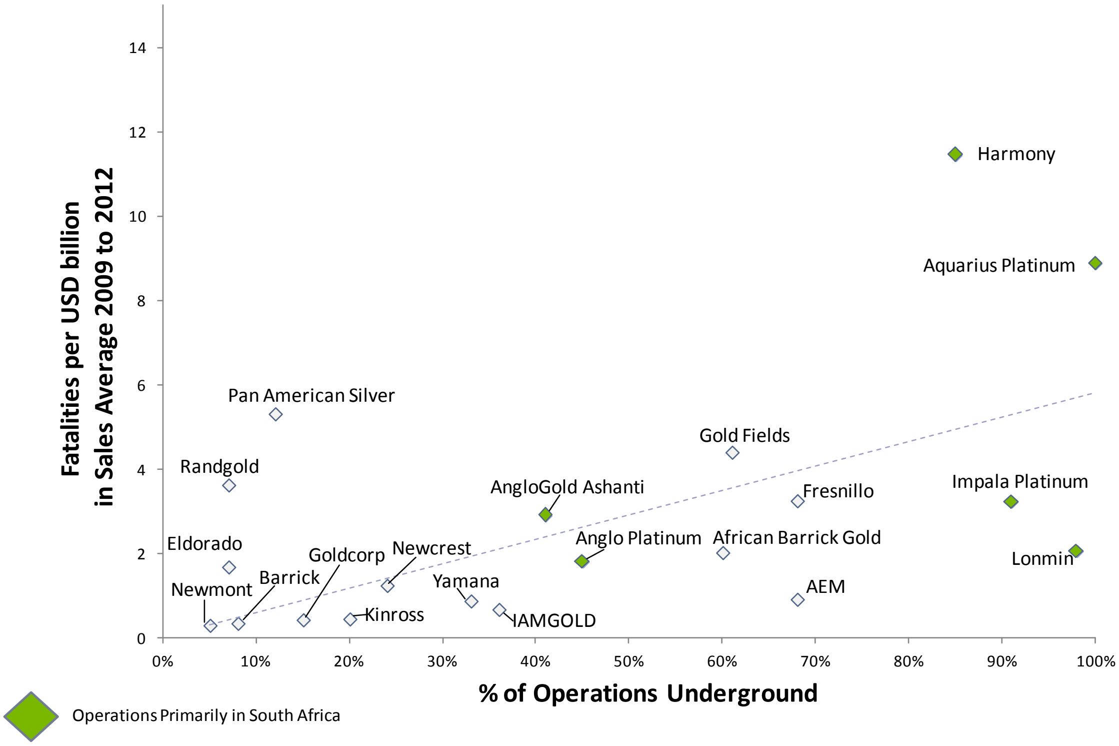
Across the mining sector, underground operations clearly correlate with fatality rates (figure 2). All mining presents hazards; but underground mines in particular have much higher safety risks than surface mines due to increased risks of roof collapse, fires, explosions, and poor air quality. Further, as the mines continue going deeper, temperatures and rock stress increase, making working conditions less hospitable (or costly to cool) and more dangerous.

[2] Hart, Michael."A Journey Into the World's Deepest Gold Mine." Wall Street Journal. December 2013: http://online.wsj.com/news/articles/SB10001424052702304854804579236640793042718

[3] Vella, Heidi. "Ultra-deep mining – overcoming challenges with industry collaboration." Mining-technology.com, April 2014: http://www.mining-technology.com/features/featureultra-deep-mining-overcoming-challenges-with-industry-collaboration-4210176/

[4] Harmony Gold. "Harmony's production guidance for the March 2014 quarter." March 2014: http://www.harmony.co.za/investors/news-and-events/company-announcements-2/announcements-2014/780-harmony-s-production-guidance-for-the-march-2014-quarter

FIGURE 2 **Underground Operations Correlation to Fatality Rates**



Source: MSCI ESG Research

Technological innovation may be needed to change this situation. One possible development that I saw firsthand was at an **AngloGold Ashanti** site visit.

2.7 Kilometer In-depth Analysis at the TauTona Anglogold Ashanti mine

I joined a team of investors and analysts on a tour of **Anglogold Ashanti's** TauTona gold mine outside Johannesburg. With current operations at 3.9 kilometers underground, it is touted as the deepest mine in the world. Production began at TauTona in 1961, and it has since produced over 1,170 metric tons of gold (current market value of almost USD 49 billion) and contains a labyrinth of over 800 kilometers (500 miles) of tunnels. The company began employing a newly developed extraction method of reef boring (mechanical stoping as opposed to traditional drill and blast methods) and backfill support technology in 2014 with a goal of optimizing reef extraction, decreasing downstream processing, improving rock stability, and removing labor from the highest risk activities. In other words, the new technology, if proven, may improve both yield and safety.

The visit focused on a section of mine 2.7 kilometers underground that had been abandoned for 30 years due to safety risks that culminated in a high number of fatalities before closing. The new technology developed at **Anglogold Ashanti** has allowed extraction of the gold-bearing ore to begin again – following extraction of the ore, the company backfills the bore hole with a high density, quick drying material designed to mimic the compressive strength of the surrounding rock, potentially limiting collapses going forward. While the company stated that the new technology is likely three to five years away from full deployment and even further away from being utilized at scale, the safety and yield gains could be substantial.

Future of South African Mining

The lower cost and efficient production could also provide higher paid jobs and prospects of upward economic mobility that may quell labor unrest in the long-term; however, higher technological operations may also trigger a major loss of low skilled jobs, a move that may be opposed by unions and the government. The loss of jobs would be especially costly in a country with deep economic inequality, unemployment around 25% and endemic issues of personal debt[5]. However, as the current platinum strike shows, continuing with business models reliant on cheap labor may not be sustainable. The current strike has cost the big three platinum producers over USD 1.9 billion in combined revenue losses, and as mining represents 6% of direct GDP for South Africa and accounts for 60% of exports[6], the current strike correlated with significant value drops of the rand in 2014. It also cost mineworkers as much as ZAR 9 billion (USD 860 million) in lost wages since the strike began in January 2014[7]. These factors are cited as major drivers of the contraction of the South African economy in the first quarter of 2014[8]. Further, the lost wages and impacts on the economy prompted Moody's to increase its non-performing loan forecasts across South Africa by nearly 14%[9]. Up to 15% of mineworkers at Lonmin and Anglo Platinum lose a portion of their paycheck to garnishee orders, and few now are paying back their loans. This contributed to the 2014 first half loss of **African Bank Investments**[10], which has provided about a third of loans to Anglo Platinum workers. The bank stated that about 71% of its first half loss was due to its customers unable to repay loans. As an illustration of the low wages and personal debt issues of platinum mineworkers, many continued living in shantytowns and signing up for predatory loans with interest rates reaching 80% APR[11] even after platinum producers increased worker wages by 22% in 2012 following strikes.

[5] Slabbert, Antoinette. "Five million South Africans drowning in debt." Moneyweb, November 2013: http://www.moneyweb.co.za/moneyweb-economic-trends/five-million-south-africans-drowning-in-debt

[6] Maylie, Devon; McGroarty, Patrick. "Strike Halts Platinum Mining in South Africa." Wall Street Journal, January 2014: http://online.wsj.com/news/articles/SB10001424052702304856504579337873764752480

[7] Platinum Wage Negotiations. May 2014: http://www.platinumwagenegotiations.co.za/home

[8] Grootes, Stephen. "Ngoako Ramathlodi: Straight into the platinum fire." Daily Maverick, May 2014: http://www.dailymaverick.co.za/article/2014-05-27-ngoako-ramathlodi-straight-into-the-platinum-fire/

[9] "South African banks face rising bad loans." Moody's, May 2014: http://www.theafricareport.com/Southern-Africa/south-african-banks-face-rising-bad-loans-moodys.html

[10] Bonorchis, Renee. "Why Record Loss Isn't Freaking Out Market: South Africa Credit." Bloomberg News, May 2014: http://www.bloomberg.com/news/2014-05-19/why-record-loss-isn-t-freaking-out-market-south-africa-credit.html

[11] Wild, Franz; Cohen, Mike; Bonorchis, Renee. "Mineworker Debt Mounts as South African Lending Booms." Bloomberg News, January 2013: http://www.bloomberg.com/news/2013-01-09/mineworkers-buried-in-debt-as-s-african-unsecured-lending-booms.html

Despite the desperate conditions of many mineworkers, both financial analysts and companies in the industry are estimating that the financial impacts of the current wage demands are not implementable while maintaining profitability. **Anglo American** CEO, Mark Cutifani stated in Q2 2014 that operations not delivering at least a 20% return may be sold[12] and publically announced consideration of selling the old Rustenberg mines. However, without implementing structural changes companies may have a difficult time selling their operations near intrinsic values. Moreover, even in a situation where the Association of Mineworkers and Construction Union (AMCU), the union leading the strikes, collapses under the plight of its members and operations get back to work, the fundamental issues that led to the labor unrest will remain without a major overhaul.

The importance of the jobs and mines may put the African National Congress (ANC) led government in a position to consider wrestling control of the mines; the government has already begun to step in to mediate between industry and labor. As it is the early days of state intervention, it remains unclear who will benefit. Nationalization risks seem far off since taxes from mines contribute a substantial amount of the government budget, but the current stalemate has added political fodder to calls by the youth league of the ANC to nationalize the mines.

On the upside, some South African mining companies have begun to transition to more modern processes, albeit on a difficult path. For instance, **Gold Fields** hired a team of 15 Australian experts at the beginning of the year to train employees and adopt mechanized processes at its ultra-deep South African South Deep mine. However, following several fatal accidents and a Section 54 “stop-work” order, inspections identified critical infrastructure in need of repair, forcing the company to suspend operations at its “most important value driver” for up to four months[13]. The transition in the platinum industry also comes with risks. The newest platinum mines being developed by Anglo American subsidiary **Anglo Platinum** and **Impala Platinum** in the northern and eastern limbs of the Bushveld complex afford greater mechanization of extraction and employ better educated and higher skilled people. However, these greenfield projects also face risks of stakeholder opposition due to their larger land footprint in areas with vulnerable ecosystems and traditional cultures that may trigger delays or cancelations of projects.

The future of mining will continue to face an uphill battle even if the wage dispute and strike ends given increasing competition for use of natural resources, particularly water and land, and skilled labor pools. Ultimately, the companies investing in technologies, communities, and their workforces to improve safety, increase efficiency, reduce land disturbances, increase employee skills, educate local workforces, and gain local support may be in the best position in the future.

---

[12] Kayakiran, Firat. “Anglo American Sees 20% Returns After Rejigging Assets.” Bloomberg News, May 2014: http://www.bloomberg.com/news/2014-05-18/anglo-american-sees-20-returns-after-rejigging-assets.html

[13] “Gold Field shuts South Deep after deaths.” Business Report, May 2014: http://www.iol.co.za/business/companies/gold-fields-shuts-south-deep-after-deaths-1.1696005

Contact Us

esgclientservice@msci.com

Americas	Europe, Middle East & Africa	Asia Pacific
+1.212.804.5299	+44.207.618.2510	+612.9033.9339

Notice and Disclaimer

About MSCI ESG Research

MSCI ESG Research products and services are designed to provide in-depth research, ratings and analysis of environmental, social and governance-related business practices to companies worldwide. Ratings and data from MSCI ESG Research are also used in the construction of the MSCI ESG Indexes. MSCI ESG Research Inc. is a Registered Investment Adviser under the Investment Advisers Act of 1940.

About MSCI

MSCI Inc. is a leading provider of investment decision support tools to investors globally, including asset managers, banks, hedge funds and pension funds. MSCI products and services include indexes, portfolio risk and performance analytics, and ESG data and research.

The company's flagship product offerings are: the MSCI indexes with approximately USD 8 trillion estimated to be benchmarked to them on a worldwide basis[1]; Barra multi-asset class factor models, portfolio risk and performance analytics; RiskMetrics multi-asset class market and credit risk analytics; IPD real estate information, indexes and analytics; MSCI ESG (environmental, social and governance) Research screening, analysis and ratings; and FEA valuation models and risk management software for the energy and commodities markets. MSCI is headquartered in New York, with research and commercial offices around the world.

[1] *As of September 30, 2013, as reported on January 31, 2014 by eVestment, Lipper and Bloomberg*