

Productivity across the global mining sector is starting to improve

Our latest data show an upward trend—from a low base.

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Over the past year, several indicators of different aspects of the global mining sector’s performance have confirmed that it is now turning around after the dark days of 2014, 2015, and early 2016. The Bloomberg World Mining Index shows that the sector’s return on capital has rebounded strongly from the bottom of the trough it reached in 2016. The S&P GSCI Industrial Metals Index of commodity prices has risen by nearly 60 percent from its low, in January 2016. The MSCI Metals and Mining Index of company share prices has rebounded even more dramatically—up more than two-and-a-half times from its low point, in January 2016.

What is happening on the productivity front? Our research shows that the sector’s performance is rising in this area too—albeit modestly so far. The MineLens Productivity Index (MPI), McKinsey’s proprietary indicator of the global mining sector’s productivity (see sidebar, “About the MineLens Productivity

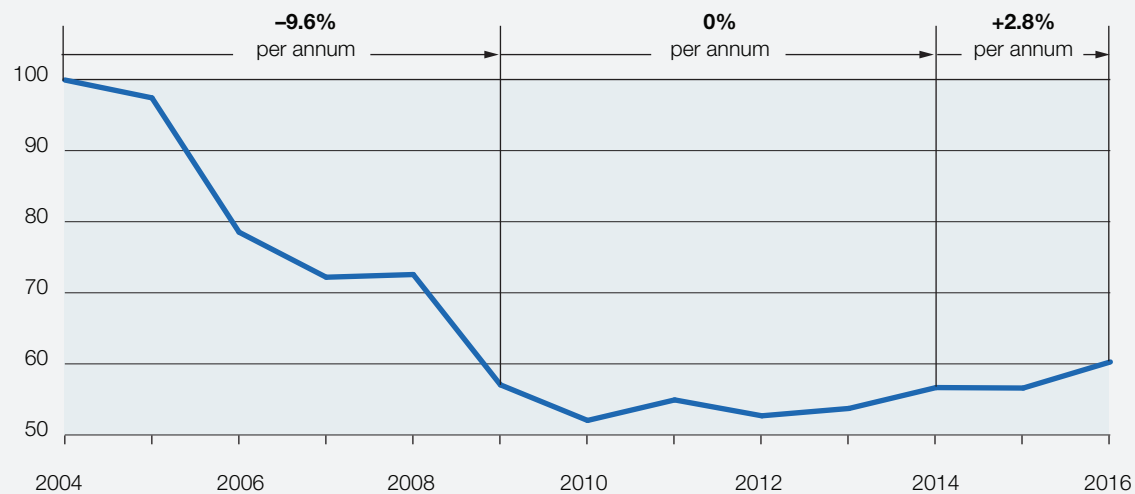
Index”), shows an increase of 2.8 percent a year in productivity performance for 2014 to 2016 (the most recent period researched). While productivity performance remains far below the levels reached before the demand supercycle struck, MPI data show that the sector is making some headway: its 2014 to 2016 MPI score is starting to move up from the period of stagnant productivity in the five-year period from 2009 to 2014 (Exhibit 1). Observations from our work in the field, as well as news of productivity gains from major mining companies, suggest that the trend is continuing.

Raising productivity by limiting spending and reducing head counts

Our research shows that the biggest contributions to higher mining productivity have come from a sustained push to reduce mine workforce head counts and boost labor productivity while modestly increasing output (Exhibit 2). Employment has

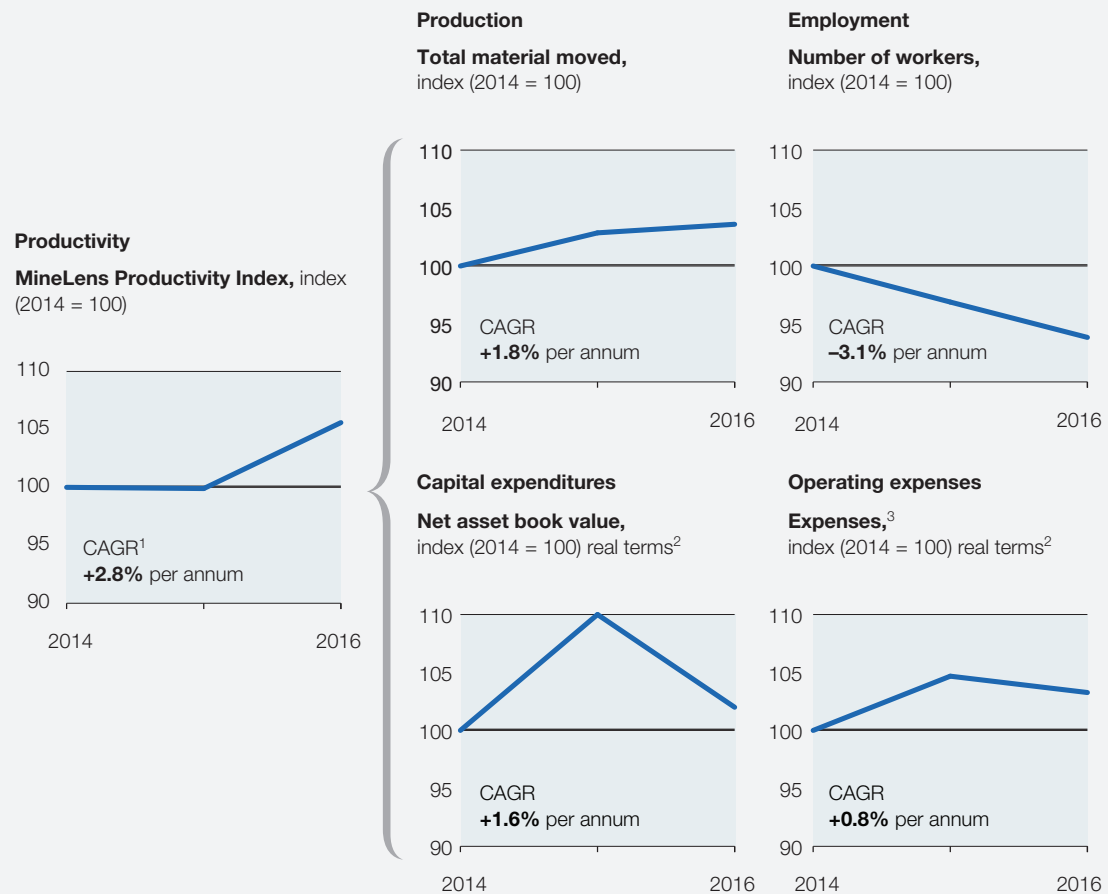
Exhibit 1 Since 2014, mining productivity has begun to reverse course with a gradual increase.

MineLens Productivity Index (MPI), index (2004 = 100)



Source: Company reports and websites; MineLens by McKinsey; McKinsey analysis

Exhibit 2 Since 2014, mines have increased their productivity by limiting spending and improving labor productivity.



¹ Compound annual growth rate (2014-16).

² Capital expenditures and operating expenditures have been adjusted for mine cost inflation. Capital expenditures include book value of plant and equipment.

³ Not including labor costs.

Source: MineLens by McKinsey

fallen by around 3.0 percent a year, while production (or output) has increased by 1.8 percent a year. At the same time, mining companies have tightly controlled capital spending and expenditures for nonlabor operations—particularly in the most recent year of the period researched, when outlays on both items fell.

These performance dynamics differ significantly from what happened during the period of stagnant productivity, from 2009 to 2014. During those years, the industry managed to raise production by 4 percent a year while holding the increase in its capital expenditures to 3 percent a year. That represented a major change in conduct from

About the MineLens Productivity Index

McKinsey's MineLens Productivity Index uses a simple but comprehensive methodology to measure aspects of productivity that operational managers can control. MPI's basis is the well-established Cobb-Douglas production function, used to measure productivity in national economies. We have adjusted the function so that we can measure productivity in mining operations. The MPI comprises four elements: physical mining output, employment at the mine site, the value of assets at the site, and nonlabor costs. Physical mining output is measured as total material moved, so changes in ore grades, stripping ratios, or commodity prices don't affect the MPI.

We have developed an extensive data set to conduct analyses using the MPI, which covers mines representing all major mining geographies around the world, all major mining commodities, and a range of company sizes. Detailed data have been gathered for each mine from publicly available sources for all of MPI's four components: production volumes, number of employees, net assets, and costs not related to labor.

For more information about MineLens and MPI, see minelens.com.

the pre-2009 peak of the supercycle, when the sector's capital expenditures rose by 24 percent annually. Despite these efforts, overall productivity performance for the period was hurt by substantial increases in employment (over 8 percent a year) and operating expenditures (around 6 percent a year).

The industry's productivity performance is arguably the key determinant of its long-term ability to translate higher commodity prices into increased earnings. The MPI is specifically designed to track true underlying productivity: how much total material (ore and waste) is being shifted by using what amount of resources. It thus not only disregards the influence of grades, strip ratios, and mining commodity prices but also takes into account the rising cost of mine supplies, such as diesel fuel.

These latest trends signaling a small uptick in productivity are all the more important in today's context. The reason is that as demand picks up and

metals and minerals prices recover, the mining sector again confronts some of the same dynamics that led to the collapse in productivity performance during the supercycle. The sector has been seeing strong growth in demand and substantial price increases for battery-related mining commodities such as cobalt, nickel, lithium, and, to a lesser extent, copper. Prices for other commodities, however, have remained flat or, in some cases, declined. The sector must therefore be careful to stay on track toward better productivity regardless of commodity by nurturing today's first green shoots of what remains, so far, a fragile recovery in MPI.

How to improve productivity performance

What steps should mining companies take to ensure that they continue to improve their productivity? In the short term, they will need to guard against relaxing their discipline on capital and operating expenditures (including head counts) in the face of the demand and pricing rebound. Mining companies have to ensure that they extract each ton of dirt

at the best possible cost, so that they can pocket a greater portion of the higher prices currently seen in the market as demand gains momentum.

At the same time, as our previous articles on MPI and mining productivity have suggested,¹ mining companies should continue to address the causes of declining productivity. First, they should embed effective management operating systems at mines, which will make performance more transparent and help identify areas for improvement. Second, they should make a priority of cost reduction and throughput improvement, and work on building the capabilities that will enable them to achieve this. Third, they should focus on innovative approaches to help them in the productivity battle, and most notably, take advantage of what digitization can offer.²



The MPI's return to positive territory marks a significant achievement for the global mining industry. But it is important to recognize that the recovery in productivity remains fragile. Mining companies must continue to increase their underlying productivity. Instead of becoming distracted by short-term spikes in prices and by pockets of demand growth, they should remain

focused on improving their productive operations in the long term. As the dramatic changes in the sector's fortunes over the past decade have underlined, mining companies should stay focused on productivity initiatives that can help them control their destiny throughout the demand cycle. ■

¹ See Ajay Lala, Mukani Moyo, Stefan Rehbach, and Richard Sellschop, "Productivity at the mine face: Pointing the way forward," August 2016, McKinsey.com.

² For a more extensive discussion of how digitization can help mining productivity, see Hugh Durrant-Whyte, Ryan Geraghty, Ferran Pujol, and Richard Sellschop, "How digital innovation can improve mining productivity," November 2015, McKinsey.com.

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