MINING IN SOUTH AFRICA: “A TRAGEDY OF THE COMMONS”
SUSTAINABILITY OF THE SA MINING INDUSTRY

The investment case in South African resource equities, as in all other equities, should be premised on sustainability. In other words, if factors responsible for economic value creation in mining are not renewable, then mining companies cannot sustain the valuations investors place on them, regardless of the level of those valuations. To elaborate, companies whose shares look cheap can in the medium to long term remain structurally challenged (value trap) or decline into bankruptcy while the value of expensively priced companies could fall. The former represents an opportunity cost of capital while the last two result in outright impairment of capital. At First Avenue, we don't concern ourselves with outcomes a year or two out because, as we all know, in the short term, share prices movements are random.

Factors of production as well as managerial decisions that lead to their acquisition and application are both sustainable and renewable if they can be improved on intellectually, technologically, or otherwise. By default, non-renewable and non-sustainable factors of production exhaust either physically or economically. There are a number of ways companies can create, renew, and sustain economic value. At First Avenue, we assign greater value to management ideas and behavior that can be explained by applying concepts from the most fundamental organizing principles of knowledge, namely natural and social sciences.

Companies whose activities lean heavily on the most rigorous principles of knowledge gain in value over the years as they go up the experience curve in a manner no different to leveraging heavier and heavier weight (force) on the fulcrum of a joint to build muscle mass over time. Like civilization, gains in corporate value occur because (i) the costs of discovery naturally drop with experience, a phenomenon commonly refereed to as “institutional memory”, and (ii) feedback thereof is incorporated into future activity, an operating phenomenon referred to as “continuous improvement”. This is an auto-catalytic process or positive feedback loop without which progress or forward movement simply does not happen.

To illustrate, cost efficiency, an attribute responsible for the successful commercialization of a commodity product such as iron ore, or service such as mass banking, is based on the concept of “critical mass” found in the organizing science of nuclear physics. As in nuclear fission, critical mass in a company’s development is the crucial stage where business activity acquires self-sustaining viability. In business, it relates to the level where production is sustainable and costs are minimized. Another example would be psychology through which a company can create, and maintain demand reflexes. Successfully commercializing brands requires investment into, and positive feedback from, operant/voluntary and classical/involuntary (or Pavlovian) conditioning. Of course, we should not give you the impression that the “invisible hand” works perfectly once the auto-catalytic process sets in. Psychological misjudgments known as the “invisible foot” naturally manipulate this auto catalytic process for personal gain and require government regulation to rein them in (e.g. mine safety laws).

So the question is: how do the activities of a mining company acquire viability if factors of production in mining are non-renewable due to their physical or economic exhaustion? Industries like this lose critical mass at some point and register diminishing marginal returns until closure. Secondly, and more importantly, is it wise to base the economic development of a country on them as has been the case for centuries starting with the Dutch, British, and then the Freedom Charter? Third, what is the profile of investment returns of such companies? Fourth and finally, is political will a renewable resource? We will provide and substantiate answers to these questions.
The concept, Tragedy of the Commons, is often cited in connection with sustainable development. It is a social dilemma as it refers to the depletion of a shared resource by individuals, acting independently and rationally according to each one’s self-interest, despite their understanding that depleting the common resource is contrary to the group’s long term best interests.

The idea dates back to an 1833 essay by British economist William Forster Lloyd wherein he details how in a common pasture owned by all of the villagers, each villager overgrazed the pasture, ruining it for everyone, including himself in the long run. While Garrett’s work concerned itself with the impact of population growth on resources which naturally deplete, the concept is as well applicable to ecological problems such as global warming caused by industrial air pollution and the nuclear arms race caused by national security. The more each company and country pollutes the air reaching for economic prosperity, the greater the environmental damage suffered by all. Likewise, each participant involved in the nuclear arms race is confronted with the dilemma of steadily increasing military power and steadily decreasing national security. Regardless of the size of each side’s stock pile, it really doesn’t take more than three nuclear bombs on each side to obliterate the other side.

Mining companies are of course not Government owned. They are privately owned, and extract minerals from the ground on rights granted to them by the government. Yet the demands placed on the supply of economic profits by stakeholders (shareholders, management, workers, and the government) exceed the natural “carrying or profit capacity” of the mine. Further, just as continuous grazing of the pastures can compact and erode the soil, stripping the earth of nutrients that enrich new growth, the geological challenges of mining deeper into the ground render the activity costly beyond what you are able to sell the production for. Mines are thus restricted to a good one or two years at the peak of the economic cycle when the commodity price is so high as to produce extraordinary or windfall type profits.

Garrett referred to problems of this kind as social dilemmas because while they cause enormous human misery, they fall into a category or class that does not have a technical solution. History is replete with livestock rearing communities that have been wiped out due to failure to rotate grazing fields, leading to death in livestock. Consider the human misery unfolding in the mining industry in South Africa today caused by competing demands put on companies by mineworkers, government, shareholders, and management—who, due to enormous agency effects, act in their own best interests more often than not. The political will in national forums such as NEDLAC, Chamber of Mines, Commission for Conciliation Mediation and Arbitration, Marikana Commission, Inter-Ministerial Commission on the Marikana Tragedy has not proven renewable enough to relinquish legacy solutions in favor of untried but tested (elsewhere) solutions. As a result, we anticipate that human misery out of this failure will not just continue into the future, but intensify.

The income gap between workers is one way in which this social dilemma manifests itself. So far, negotiations premised on what the labor market can bear for executives relative to workers based on education and managerial experience have failed to narrow the income gap. Further, reasons advanced by workers for higher wages based on both the cost of living and conditions of work have also failed to persuade. We posit that in fact neither management nor workers are deserving of their wage demands unless they increase their contribution to society and civilization via increased productivity and marginal utility. We substantiate this with a review of the precious metals sector (mainly platinum with a read-through to gold). First, both sectors have suffered structural declines in economic value creation since the turn of the century (see Fig 1).
While there are many reasons for this, we believe all other reasons are secondary to the fact that platinum has a much higher marginal utility down the value chain than at production (see Fig 2). With the passing of each year, precious metals producers have struggled to overcome increases in the cost of mining caused by geological challenges of burrowing deeper into the earth’s crust. The prospect of using technology or mechanization, to mine deep down is inhibited by narrow seams in the platinum reef. Further, the incremental rate at which wages have lagged the cost of living has over the years accumulated to levels where labor unions are prepared to kill, and be killed, to extract higher wages.

Compounding, if not confounding, matters, this cocktail of cost related challenges is Government’s proposal of a mining tax - Mineral Resource Rent Tax - of 50% on profits above 15% of normal returns (read successful producers).
OPPORTUNITY COST OF FAILING TO MOVE UP THE VALUE CHAIN

We however attribute the structural decline in economic profits (“carrying profit capacity”) of the precious metals production industry to the decision each mining company made decades ago to sign away the responsibility for market intelligence on the marginal utility of platinum to international firms. For instance, in previous research we shared with you on platinum, Our Take on Platinum II, we point out that the various PGM producers appointed marketing agents to assist them in selling their production on annual evergreen (open ended) and long term contracts. The route to market for 95% of Amplats’ production is through Johnson Matthey of the UK (even sales of the remaining 5% to Tanaka or Ishifu would see Johnson Matthey play an indirect role of some sort). Implats does the same through BASF of Germany while Lonmin uses both BASF and Mitsubishi of Japan.

What mining companies did not know is that economic development (value creation) will always be sustained at the stage of the value chain where intellectually capital is greatly employed. While international marketing agents gave mining companies certainty of offtake, effectively taking on inventory risk, they were only limited by their imagination on how they would research, develop, and cultivate uses of the metal. Platinum is commonly used in the manufacture of auto-catalytic converters, where Johnson Matthey, BASF, and Umicore control 90% of the market in auto-catalytic converters in the light duty vehicles segment, and jewelry. Yet the platinum price is a very small component of the overall value of these products. In other words, what the product does is far more relevant to the price of an auto catalytic converter or a Swiss luxury watch than the price of platinum. A Swiss luxury watch will become cheap because its manufacturer has suddenly exhibited senseless behavior and not because the price of platinum or gold is depressed, as is currently the case. Figure 2 shows the profile of economic value created by Johnson Matthey and Umicore, both world renowned auto catalytic converter manufacturers.

Figure 2: Profile of Economic Profits: Johnson Matthey and Umicore (German)

While the South African platinum industry has had to “shake the money tree” (raise capital) to stave off losses induced by the credit crisis and the ensuing economic recession, Johnson Matthey has in fact never recorded better economic profits! In retrospect, it is obvious from the long term profile of economic profits of both Anglo American Platinum and Johnson Matthey that specialization of labor between the mines and fabricators has also led to specialization of emotion, namely, human misery and joy respectively. Anglo American Platinum, which feeds Johnson Matthey with raw material, is launching what one would think is a last ditch effort or recovery plan it hopes will see its economic profits snap back from below zero today to cyclical peak of 15% for a value creation spread of no more 3% at best in 2016. Such optimism still pales in comparison to Johnson Matthey who has all along recorded more than a very healthy spread between economic profits and the cost of equity, in Pounds Sterling for that matter.
We can say with certainty that Johnson Matthey has enjoyed enormous compensation for assuming inventory risk. No law or moral virtue was broken in this instance. Berenger Equity Research of Germany estimates that The Anglo American Platinum’s marketing contract nets Johnson Matthey an 80% profit margin worth GBP 35m (cR560m at current rates). Contrast this with Anglo American Platinum’s headline loss of R1.5bn in December, 2012. Having focused on growth for decades (doing more of the same thing) and not development (continually moving up the sophistication ladder) in its negotiations with international marketing agents, it was simply a critical lapse in judgment on the part of the mining industry not to purchase equity (in the open markets) in areas of high marginal utility such as jewelry or auto catalytic conversion. Likewise, while all market participants are unanimous that the depression in economic profits mirrors that of the platinum price, luxury jewelry companies have never had it so good! See figure 3.

Figure 3: Average Operating Margins for Watch and Jewelry (2010-2012)

Source: Company Filings, Morningstar

On the weight of this evidence, does it not behoove the South African platinum companies to mitigate wildly cyclical swings in its “carrying profit capacity” by investing along the value chain (development) rather than more of the same (growth)? This would correct the critical lapse in judgment that led to the current state of misery for everyone (workers, shareholders, and government) bar management. Harry Winston, a Canadian diamond mining company with haute jewelry stores (recently sold to Swatch Group) in world capital cities, is a great example of this. There is not even a hint of human misery in Canada caused by mining (the potash mining in Canada is in fact an emblem of prosperity across minerals and metals).

We should shed more light on this critical lapse in judgment by expounding on how the activities of platinum producers and beneficiators (Johnson Matthey, Umicore, and BASF) lend themselves to economic growth and economic development respectively. Economic growth can be generated by producing an increased amount of the same set of goods. Economic development, on the other hand, is a process requiring not only continuously improving the production of the same set of goods but also acquiring more complex sets of capabilities (transferable skills) to move toward new activities associated with higher levels of productivity. A critical implication is that there are products or services which are delivered through capabilities that can be easily redeployed into the production and export of other products, facilitating economic development. By implication, the less connectedness the skill used in the production of various goods in an economy, the slower the economic development in a country, regardless of its growth (in fact, rendering that growth unsustainable).

As an example, it is estimated that for each US Dollar invested in the NASA space program, USD 10 was produced in benefit to the economy – the majority from commercial goods and services created by companies related to space technology. Johnson Matthey and BASF for instance use the same skill of reducing pollutants car emissions (auto catalytic conversion) to reduce pollutants from emissions of other processes such as using hydrogen to remove sulfur and improve the quality of fuel (process catalyst) -- whereas, there aren't many transferable skills related to mining, not even between coal and platinum mining. Figure 4 shows that auto catalytic conversion is just one of many products carried out using process catalyst skills.
Through constant innovation, process catalysis (the workhorses of chemical transformations) helps companies save money by improving the efficacy of the materials they use and minimizing waste production. Because process catalyst companies invest part of their sales in research and development (5.3% for Johnson Matthey, 7.2% for Umicore, 2.1% BASF) to aid in the process of continuous improvement, they charge a premium for their products. Consequently, the process catalyst segment grows substantially faster than the underlying industries. In essence, process catalysts, along with end consumers, capture the bulk of cost savings from technological improvements undertaken by companies buying improved solutions. For example, in 2009, Mazda Motor Corporation launched a single-nanocatalyst technology in automotive catalytic converters which required 70% less PGM material than previous models. Both the nanotechnology provider, and the end consumer, would have enjoyed premium pricing from this solution and price deflation in auto prices respectively.

Sadly, the industry in South Africa has continued to invest new capital in new mines. For instance, Impala issued a convertible debenture worth R5.5bn in 2013 to invest in a new shaft, in the face of industry oversupply. So far we have witnessed how a critical lapse in judgment confined the industry to areas of low marginal utility. Next, we posit that a critical lapse in governance by way of agency effects or conflict of interest is the reason for management decisions to continue to allocate capital to the production process.
INTRINSICALLY HAZARDOUS WORK

Upon review of the safety track record in the mining of precious metals mining relative to other metals, it is clear that it is the most injurious, if not murderous, mining activity in South Africa. The magnitude of difference in safety rates between precious metals (gold and platinum group metals) and non-precious metals (bulk and base metals) as depicted in Figure 5 corroborates BHP Billiton’s assertion that it is impossible to mine platinum safely.

Figure 5: Top 10 Companies Lost-Time-Injury-Rates (LTIR) Per Million Man Hours 2010-2012

Source: Company Sustainability Reporting

Next, the difference in productivity between precious metals (circled in Figure 6) and non-precious metals (the rest) is yet more disconcerting evidence of the industry’s failure to intervene intellectually to raise the marginal utility of its work. It is clear that most South African mining companies are simply failing to integrate their activities with the best of those occurring around the world (incorporate best practice and create institutional memory out of it).

Figure 6: Annual Production per Employees 2007-2011

Source: Citi, First Avenue
Shareholders, Unions, The South African Government, and all sorts of commentators point to the replacement value of platinum mines as the reason for their uniqueness because they quite simply do not exist and cannot be replicated anywhere in the world. Indeed, because the mines are old, depreciation on the mines is low which in fact understates the cost of replacing these mines (meaning the replacement cost is a lot higher than you think). This fact alone, however, has so far not been a license to print money. Meanwhile, as we observed earlier, greater intrinsic value lies in the intellectual intervention on the metal as the Johnson Matthey – Anglo American Platinum Contract evidences. So, it should behoove shareholders to ask what then will in fact drive economic value creation in new investment (e.g. Impala’s shaft 20 and Northam’s Booyensdal) given levels of output announced by each company.

Figure 7 shows the pattern of value destruction that will occur well into the foreseeable future if platinum prices remain in the vicinity of current levels. It reasons therefore that both management (justifying and driving new investment) and investors (buying the shares) are implicitly presuming highly optimistic platinum prices to drive economic value creation. That such cyclical bounces or boom bust cycles in economic returns will in any case occur within the pattern of structural decline evident in Figure 1 does not seem to bother them.

Figure 7: Economic Value Created by Investment Capital at Replacement Cost

![Figure 7: Economic Value Created by Investment Capital at Replacement Cost](Source: Citi Research, Bloomberg, Company reports)
MISALIGNMENT OF INCENTIVES AND OUTCOMES

Why, in the face of such an injurious, unproductive, and value destructive activity in structural decline does management continue to allocate growth capital to the part of the platinum value chain with the lowest marginal utility, production?

Figure 8 provides us with the answer. Executive management compensation! The platinum industry is so beset with human misery that one is perplexed by executive pay. Calling out Lonmin, where the greatest of human misery occurred in 2012, namely, loss of life at Marikana, one is even more perplexed at the CEO’s remuneration. Consider Figure 1 which shows that even in the best of times (1998-2000), Lonmin’s value creation was inferior to that of Anglo Platinum and Impala, and was the worst at the cyclical trough of 2012. Yet the CEO, Ian Farmer, made the: (i) highest salary two years before Marikana, (ii) second highest salary a year before, and (iii) third highest salary in 2012, the year of Marikana. What did he do so well in each of the two years leading up to Marikana that ended in the tragic events the country is now infamously known for today?

The answer can only be that the Remuneration Committee of the Board of Directors of Lonmin approved of Ian Farmer’s compensation on the basis of either weak or extremely short term criteria. For instance, shouldn’t the safety criterion used to compute CEO remuneration be higher than 15% (see figure 7) given the injurious nature of platinum mining? Isn’t the injurious nature of their work relative to their compensation exactly what labor unions protested about during the Marikana event? How do shareholders tolerate such emoluments for Amplats and Lonmin management given the low safety hurdle required of the top man, and how frequently both firms have come back from the brink of bankruptcy to raise capital to stay in business? Is it a wonder then that, despite both an egregious miscarriage of governance and shareholder activism, management continues to develop plans to invest and operate these mines?

By the way, it is also clear the only two bases of demands for higher wages by labor unions are related to executive management compensation and the cost of living when it really should be productivity and economic value creation. Ideas and behavior demonstrated by both management and labor are not in line with what civilization attempts to compensate. The rule is simply: deliver to the world what you would like to be delivered to you if you were on the receiving end. Neither of these parties has demonstrated superior behavior to the world despite the hardship and misery open for all to see.

Figure 8: CEO Remuneration at Major Platinum Miners in South Africa (2010 – 2012)

Yet all parties critical to the successful existence of the industry (NEDLAC, CCMA, Bargaining Councils, etc.) keep advancing routine solutions based on either capitalist or socialist rhetoric as if people exist to serve systems and not the other way round. The disadvantage of routine solutions or “known knowns” is that they rely on the political ancestry of the parties at odds. The inertia of legacy based solutions is almost always at the expense of new solutions. As Albert Einstein, the consummate man...
of science whose obsession was solving human problems said, “We cannot solve our problems with the same thinking we used when we created them”.

Parties then have to move to the next category of problem solving, namely, “known un-knowns.” In other words, what have we not attempted (but has been attempted elsewhere) in our quest to introduce equity into compensation while ensuring the rewards of our labor are commensurate with what we deliver to civilization? There is a point on the continuum of problem solving at which imagination begins to become more important than knowledge – as you leave the routine for the complex, it is simply important to know that there is another human being somewhere whose thinking you can immerse yourself in and improve upon.

In November 2013, Switzerland put this same matter to society by way of what was known as the “1:12 Referendum”. The ratio refers to the maximum remuneration the top earner in a company can make relative to the lowest earner. Two points of interest. First, Switzerland has no minimum wage, yet it has both the highest income per capita and the lowest unemployment rate in the world. There is a stylized fact to this relationship by the way – countries with no minimum wage also have the lowest unemployment rates. But it is the income content of the work floating around society that negates the need for a minimum wage. Second, the current income gap in the country is 1:194 caused mainly by the fact that Switzerland is home to a quarter of the top 20 paid CEOs in Europe. On November 24, 2013, 65% of Swiss voters rejected the proposal. Upon review of the outcome of the vote, those that rejected the proposal said they were opposed to the ratio but not the idea. In other words, the outcome may have been materially different had the ratio proposed by higher – say 1:20.

The overarching question for South Africa to ponder from the Swiss example is as follows: Does the country have enough social capital (agreement on social and economic values) to even contemplate allowing the market (and not the government) to set a minimum wage while effectively legislating a maximum wage through a ratio? If the income content of the goods and services of a company is high (world beating) then the ratio is not as important as the fact CEOs make more because workers make more. The ratio only becomes important to rein in due to: (i) CEOs making more despite delivering inferior productivity and value creation to the world, and (ii) workers wanting to make more because CEOs make more and that the cost of living is leaving them behind. This better incentivizes workers and management to both accelerating and sharing growth. You can in fact imagine how you can raise competitiveness of all seaborne traded products and not just one sector!

Consider empirical work by Jesus Felipe et al linking product complexity to economic development. In an investigation of export share of the top 100 most complex products and services, Felipe et al found the productive structure of wealthy nations is highly skewed toward the most complex of these while the opposite is true of poor nations (see figure 7). In essence, this is a measure of relative comparative advantage of the breadth and depth of capabilities in a global market place. Felipe et al also found a strong relationship between the complexity of the productive structure and GDP per capita.

Two points stand out. At 36 out of 124, South Africa’s ranking in the global trade sweepstakes is respectable. You may say it has the 36th highest market share in the production of the top 100 most complex products. However, it derives most of that rating from a productive structure skewed toward lower complexity (where commodity extraction falls). The country can shift the skew toward more complexity by doing things the world will want to pay more for – raising the income content of what the country produces. Should there be those that are compensated as if they have achieved this herculean feat -- causing income inequality and envy -- in companies and industries that fail make the shift?
Using the platinum industry to illustrate the point, in 2011 (pre Marikana), the CEO of Lonmin made R17.8m per annum while a rock drill worker made R88 800 for a ratio of 1:200. The average minimum wage for all other mine laborers was R48 000 for a ratio of 1:370. In 2012 (post Marikana), CEO total compensation at Lonmin relative to rock drillers dropped to 1:107. These ratios are astounding in an industry where intellectual intervention in mining and processing platinum pales in comparison to the micro technology contained in a Swiss luxury watch with a platinum case and strap.

The key to this argument, and indeed the existence of the platinum sector is not a reduction in CEO pay but rather an increase in the income content of the workers such that whatever ratio society decides it: (i) affords a mine worker compensation to keep up with, if not surpass, the cost of living because of what he’s delivering to world civilization and (ii) does not inhibit the CEO from making what he feels also values his delivery to the world. Failure to increase the income content of the work performed at the mines will cause both executives and unions to revert to the status quo – a view of the world informed by their legacies or political ancestry. Therein lays the problem. The income content (marginal utility) of anything to do with platinum is lowest at the production phase where executive management, Unions, shareholders, and government do not deserve what they are each demanding. In fact, the status quo will see the entire industry shut down on its own over time. The loss of jobs and relevance to the economy (contribution to GDP) are not only well documented (see Chamber of Mines Industry Snapshot 2012) but are as sure as the march of time. If we all agree that eventualities that are forced upon you are far more devastating and calamitous than those you initiate, then political will simply has to become a renewable resource. It is infinitely more difficult to find solutions to the next category on the problem solving continuum, namely, “unknown unknowns”.

<table>
<thead>
<tr>
<th>Country name (ISO Code)</th>
<th>Rank</th>
<th>1</th>
<th>Top 100</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Japan (JPN)</td>
<td>1</td>
<td>39.7</td>
<td>10</td>
<td>19</td>
<td>21.9</td>
<td>11.4</td>
<td>6.6</td>
<td>1.5</td>
</tr>
<tr>
<td>Germany (DEU)</td>
<td>2</td>
<td>39.8</td>
<td>7.9</td>
<td>24.5</td>
<td>16</td>
<td>10.9</td>
<td>5.6</td>
<td>3.4</td>
</tr>
<tr>
<td>Sweden (SWE)</td>
<td>3</td>
<td>34.6</td>
<td>4.9</td>
<td>27.7</td>
<td>16.2</td>
<td>12</td>
<td>4.6</td>
<td>4.8</td>
</tr>
<tr>
<td>Switzerland (CHE)</td>
<td>4</td>
<td>28.6</td>
<td>6.8</td>
<td>25.8</td>
<td>13.9</td>
<td>12.4</td>
<td>10.1</td>
<td>9.2</td>
</tr>
<tr>
<td>Finland (FIN)</td>
<td>5</td>
<td>30.1</td>
<td>6.1</td>
<td>32</td>
<td>15.2</td>
<td>13.1</td>
<td>4.5</td>
<td>5.1</td>
</tr>
<tr>
<td>USA (USA)</td>
<td>6</td>
<td>28.1</td>
<td>7.2</td>
<td>21.5</td>
<td>22.8</td>
<td>12.9</td>
<td>9.4</td>
<td>5.2</td>
</tr>
<tr>
<td>United Kingdom (GBR)</td>
<td>7</td>
<td>27.7</td>
<td>5.2</td>
<td>22.1</td>
<td>17.2</td>
<td>13.1</td>
<td>6.5</td>
<td>13.4</td>
</tr>
<tr>
<td>Austria (AUS)</td>
<td>8</td>
<td>30.4</td>
<td>6.2</td>
<td>23.3</td>
<td>19</td>
<td>15</td>
<td>8.8</td>
<td>3.5</td>
</tr>
<tr>
<td>Belgium (BEL)</td>
<td>9</td>
<td>27.8</td>
<td>3.8</td>
<td>20.3</td>
<td>15.5</td>
<td>11.3</td>
<td>12.1</td>
<td>13</td>
</tr>
<tr>
<td>France (FRA)</td>
<td>10</td>
<td>26.2</td>
<td>3.2</td>
<td>22.3</td>
<td>12</td>
<td>10.1</td>
<td>7.5</td>
<td>5.9</td>
</tr>
</tbody>
</table>

South Africa

Angola (AGO) 115 0.1 0.0 0.1 0.1 0.1 0.6 99.0
Madagascar (MDG) 116 0.4 0.1 0.8 1.7 2.2 4.3 90.6
Bangladesh (BDI) 117 0.3 0.0 0.6 0.6 0.9 4.9 92.7
Guinea (GIN) 118 0.3 0.0 0.3 4.1 0.5 15.3 79.5
Lao People’s Dem. Rep. (LAC) 119 0.3 0.0 0.5 1.0 10.6 8.5 79.1
Congo (COG) 120 0.1 0.0 0.1 0.3 0.2 2.9 96.4
Haiti (HTI) 121 0.2 0.0 0.5 0.7 0.6 3.0 55.0
Nigeria (NGA) 122 0.1 0.0 0.2 0.3 0.6 1.6 57.2
Papua New Guinea (PNG) 123 0.2 0.0 0.2 0.2 0.4 0.9 2.7 95.5
Cambodia (KHM) 124 0.1 0.0 0.2 0.2 0.2 0.5 2.2 96.7

Source: J. Fellow et al. Structural Change and Economic Dynamics, 2012
DISCLAIMER

The content of this report and any information provided may be of a general nature and may not be based on any analysis of the investment objectives, financial situation or particular needs of the client (as defined in the Financial Advisory Intermediary Services Act). As a result, there may be limitations as to the appropriateness of any information given. It is therefore recommended that the client first obtain the appropriate legal, tax, investment or other professional advice and formulate an appropriate investment strategy that would suit the risk profile of the client prior to acting upon such information and to consider whether any recommendation is appropriate considering the client’s own objectives and particular needs.

Any opinions, statements and any information made, whether written, oral or implied are expressed in good faith.

Lead Author: Hlelo Giyose, Chief Investment Officer
Contributors: Nadim Mohamed, Bonolo Magoro, Matthew Warren

© 2014 First Avenue Investment Management
All rights reserved
www.firstavenue.co.za

First Avenue Investment Management (Pty) Limited which is approved as an Authorised Financial Service Provider in terms of the Financial Advisory and Intermediary Services Act, 2002. (FSP 42693)

Registration Number 2008/027527/07

Registered Offices
Address: 21 Fricker Road, Illovo, 2196
Telephone: (+27-11) 772-2480