Dilemmas of distribution: financialisation, boom and bust in the post-apartheid platinum industry

By Andrew Bowman

working paper 6

JULY 2016

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WORKING PAPER: 6

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Acknowledgements

The author is indebted to the many people who assisted with this research, either through putting aside their time to be interviewed or assisting with access to data. Special thanks go to Gavin Capps, Gilad Isaacs, Sukhdev Johal and Karel Williams for comments on drafts. As a Working Paper, the conclusions reached are by no means definitive and indeed should be seen as provisional. I therefore welcome feedback and suggestions. This paper is a collective effort of the SWOP Mining and Rural Transformation in Southern Africa (MARTISA) research cluster.

About MARTISA

Mining and Rural Transformation in Southern Africa (MARTISA) is a comparative research project established by the Society Work and Development Institute (SWOP) to investigate the impact of new mining activity on evolving forms and relations of communal land, traditional authority and corporate community in mineral-rich rural areas of Southern Africa. In particular, it seeks to explore the interconnections between broader changes in the regional political economy of extraction, and the highly localised trajectories, patterns of differentiation and modes of contestation of these diverse configurations of rural property and power. MARTISA is thus concerned with the making and unmaking of rural social orders as mining capital expands out of its historic heartlands into the former homeland and labour-sending areas, which increasingly constitute the region's mineral-commodity frontiers and hence some of its most intensive sites of rural transformation and struggle.

As well as aiming to generate high quality research in its own right, MARTISA seeks to advance a pro-poor agenda by supporting local human-rights NGOs and community-based organisations active in these areas, and by building collaborative links with academic researchers and civil society organisations elsewhere in the Global South. The project is generously funded by the Human Rights and Governance Programme of the Ford Foundation.

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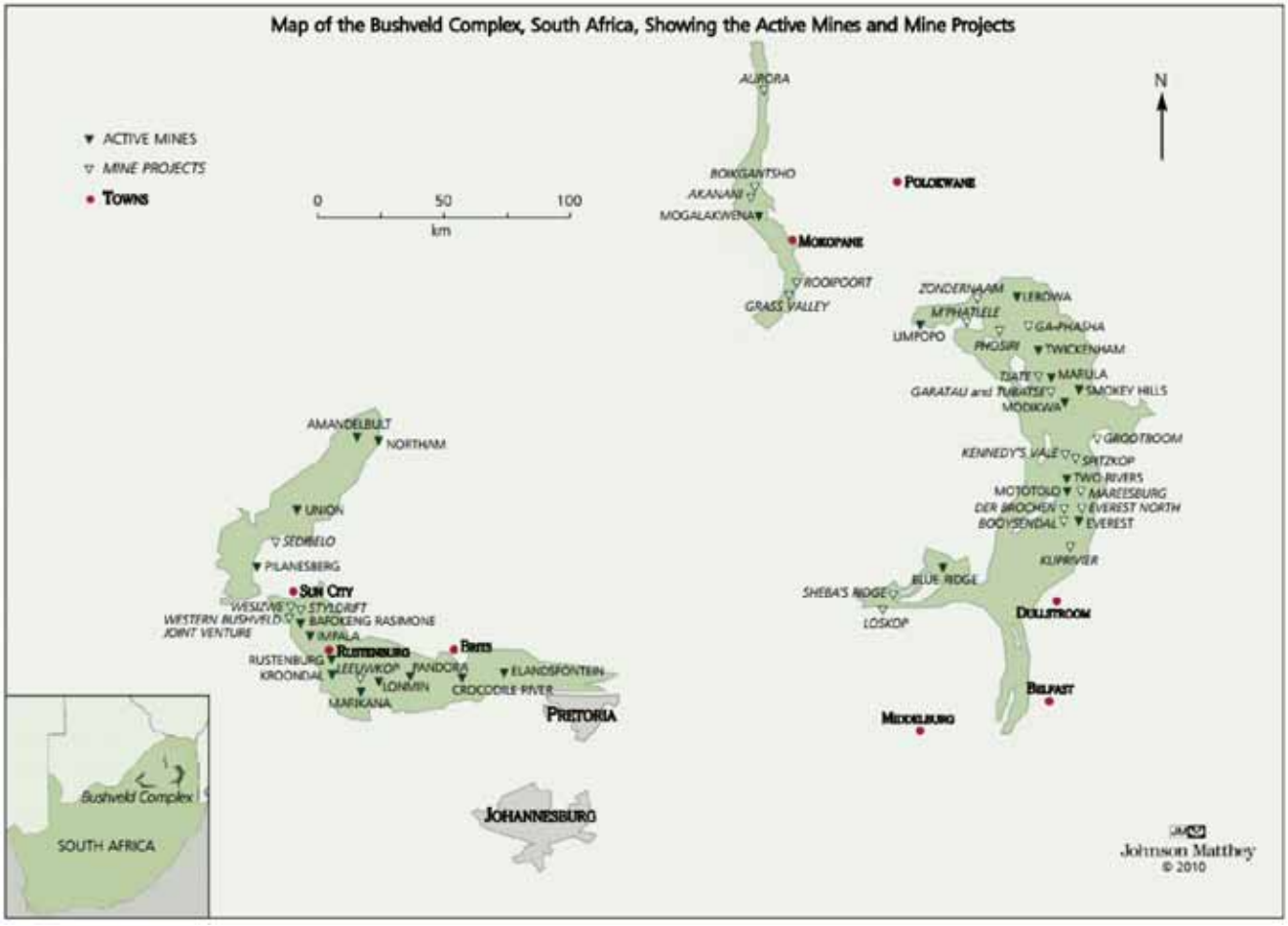
AMCU	Association of Mineworkers and Construction Union
BBBEE	Broad Based Black Economic Empowerment
BEE	Black Economic Empowerment
BC	Bushveld Complex
CoM	Chamber of Mines
DMR	Department of Mineral Resources
HDSAs	Historically Disadvantaged South Africans
JCI	Johannesburg Consolidated Investments
JSE	Johannesburg Stock Exchange
LOA	Living Out Allowance
LTIFR	Lost Time Injury Frequency Rate
MPRDA	Minerals and Petroleum Resources Development Act 2002
NUM	National Union of Mineworkers
OEAE	Once Empowered Always Empowered
PGMs	Platinum Group Metals
PIC	Public Investment Corporation
RDOs	Rock Drill Operators
RBN	Royal Bafokeng Nation
RPM	Rustenburg Platinum Mines

Map



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Introduction

This working paper is about the evolution of the South African platinum mining industry since the end of apartheid. It examines the impacts of the new distributional pressures arising from political democracy, economic globalisation and financialisation in the post-1994 era. In doing so, it seeks to contribute to the broader understanding of the overlapping social, political and financial tensions that have beset the platinum subsector in recent years. Other contributions have explored community struggles over land and traditional authority in mining areas (Mnwana, 2014; Mnwana & Capps, 2015), changing labour recruitment practices (Forrest, 2014), the politics of trade unionism (Chinguno, 2015; Sinwell, 2015), in-company inequalities (Forslund, 2015), living conditions and social relations in mining areas (Benya, 2015; Makgetla & Levin, 2016; Bezuidenhout & Buhlungu, 2015, 2010), and the political economy of the platinum industry during the political transition and in relation to post-apartheid mineral policy reform (Capps, 2012a; Capps, 2012b). The focus of this paper is on the platinum mining companies themselves, in the years since the promulgation of new mining legislation in 2002. Specifically, it follows the 'big three' vertically integrated platinum group metal (PGM) mining and refining companies, Anglo American Platinum (henceforth Amplats), Impala Platinum Holdings (henceforth Implats), and Lomin, which have produced the bulk of mined output during the period examined in this paper.

Though representing a tiny slither of the global mining industry, platinum has been the growth story of South Africa's post-apartheid extractive economy, partially compensating for the steady decline of its historical foundation, gold (Capps 2012a). The PGMs are platinum, palladium, rhodium, ruthenium, osmium and iridium. The most important in South African PGM mining is platinum, followed by its less valuable cousin palladium. PGMs have a variety of applications. Jewellery is a major source of demand for platinum. Industrial uses range from electronics to dentistry, and a nascent hydrogen fuel cell industry. Most important, though, are catalytic converters. Automotive industry efforts to clean exhaust emissions drove the industry's expansion under the impetus of ever more stringent environmental legislation across the globe (Figure 1).

South African platinum output jumped from 3 million ounces (moz) in 1994 to a peak of over 5moz in 2006 - over three quarters of the world's total - becoming the country's most valuable commodity export in some recent years (Figure 2).[1] Employment doubled from just under 100,000 in 1994 to a peak of 200,000 in 2008, while gold's fell from 400,000 to 165,000 over the same period.[2] This changed the geography of South African mining, drawing economic activity to areas in North West, Limpopo and Mpumalanga provinces overlying the Bushveld Complex (BC), the geological formation containing an estimated 80% of the world's PGM deposits (Cawthorn, 2010; 205). PGMs are mined on three 'limbs': the western limb, predominantly in North West Province but stretching north into Limpopo Province, the eastern limb which straddles Limpopo and Mpumalanga Provinces, and the northern limb in Limpopo Province (See map, p. 6). The industry's historical centre is around the town of Rustenburg on the western limb, which was one of the fastest-growing urban areas in the country over recent decades.

Figure 1: Gross platinum demand by application, 1975-2013
(Source: Johnson Matthey)

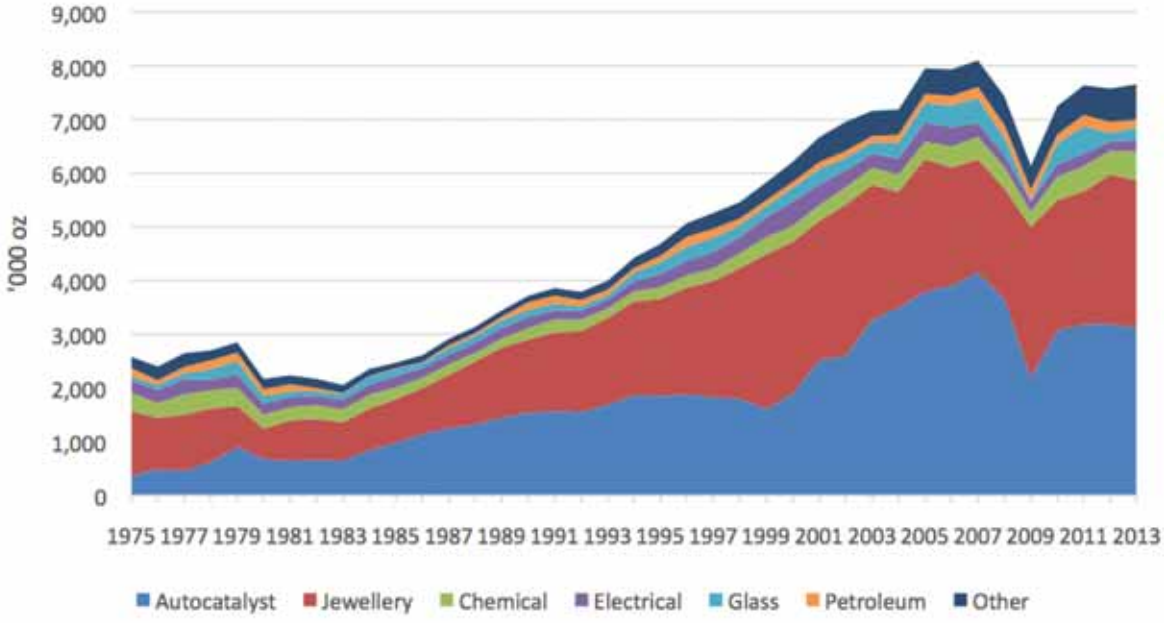
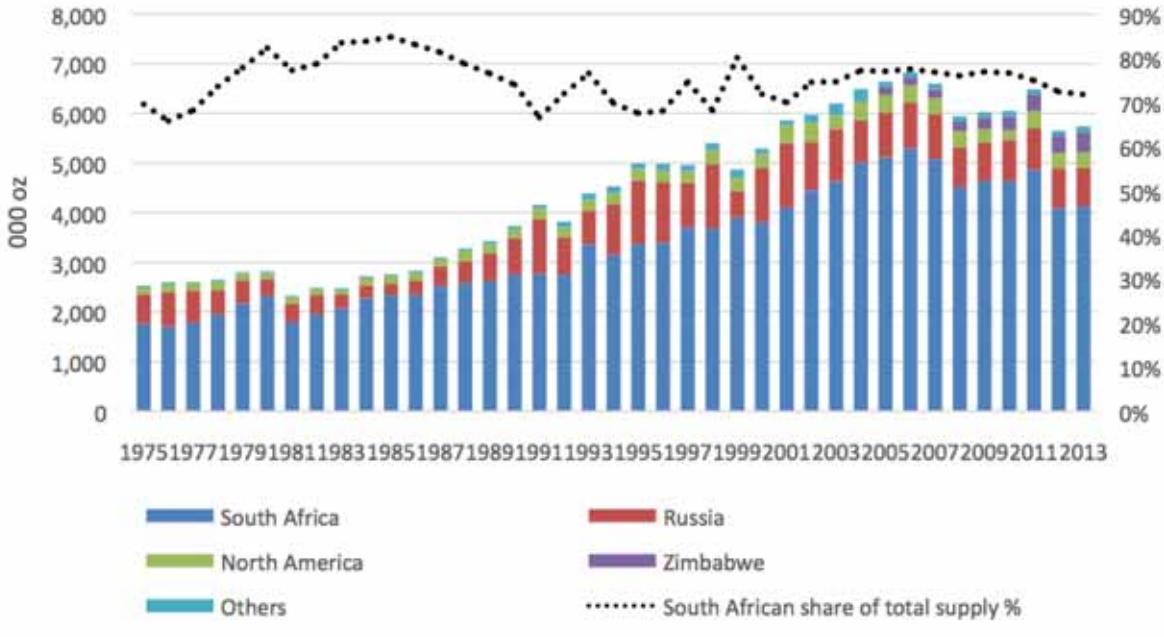


Figure 2: Global platinum supply by source, 000oz, 1975-2013
(Source: Johnson Matthey; author's calculations)



But PGM mining is now in a prolonged slump, and has become a lightning rod for discontent. Labour disputes and community protests have overlapped with a financial crisis among the mining companies as platinum prices have dropped. Analyst estimates have suggested that at points in time over the past year, only around a half to a third of South African PGM mines could cover production costs and capital expenditure (e.g. Townshend, 2015). Having accounted for more than 10% of the value of the Johannesburg Stock Exchange (JSE) in 2008, by early 2016 the five largest platinum miners made up just 1% of the market's value.[3] Dividends have not been paid for many years, and retrenchments are underway.

Superficially, platinum mining's difficulties look little different to those of the extractive industries worldwide over the past two decades. After the doldrums of the 1990s, mineral prices boomed during the 2000s, creating a euphoric period of high profitability and expansion (Humphreys, 2015: 12-60). This was interrupted by the global financial crisis of 2008, but decisively halted over the past two years from a combination of the slowing Chinese economy and over-capacity. Platinum spot prices fell from over $1400/oz in 2014 to less than $900/oz in January 2016, with the brief $2000/oz peaks in 2008 a distant memory (Figure 3).

The only comfort has been a favourable movement in the rand-dollar exchange rate, a key determinant of profitability since costs are primarily in rand and revenues in dollars. The history of mining in general - and platinum mining in particular - is defined by intense cyclicality, and littered with periods of boom and bust. Viewed in its specific context, however, there is a more complicated backstory to this crisis about the adaptation of an apartheid-era business model to the changing political economy of South Africa. The argument made in this paper is that the position of the industry has been shaped by three contradictory distributional pressures which have intensified in the democratic era.

In the first chapter, the paper considers distributional pressures from the state relating to the implementation of the Mining Charter (2004). It was imperative for the incoming ANC government to address historical inequalities in the ownership of mineral wealth. However, this was attempted not through generic means, such as forms of progressive taxation or public ownership, but through legislation seeking to transform the racial profile of mine ownership ('black economic empowerment') and facilitate the entry of new companies to the sector. The paper argues that the resulting fragmentation has created a mutual dissatisfaction over distributional outcomes, where the mining industry faces new forms of uncertainty and instability while redistributive demands remain largely unsatisfied. The second chapter of the paper focuses on the changing cost base of platinum mining, and the increased distributional pressures resulting from the

Figure 3: Annual market platinum price, 1926-2015
(Source: Bloomberg, 1987-2015/Edwards & Silk (1987) 1926-1986)

erosion of apartheid labour controls. The argument here is that the business model developed during apartheid rested on cheap labour and input costs, which have not been maintained during the democratic era. A unionised workforce empowered by new legislation has successfully pressed for higher wages, placing conventional mines under great financial pressure and leading to a shift in the geography of production. Questions now hang over the future of the large, labour-intensive mines in the industry's Rustenburg heartland. The third chapter considers raised expectations and heightened distributional pressures from an entirely different actor: shareholders. The integration of the industry into globalised financial markets following the liberalisation of the South African economy subjected mining companies to more intensive shareholder value pressures, with investors easily able to shift capital elsewhere to better yielding opportunities. During the boom which ended in 2008, this encouraged large cash distributions to shareholders and costly efforts to deliver output growth, propelled by a narrative of secular increases in platinum prices resulting from a 'commodities supercycle'. The argument made here is that financialisation - the deepening and intensification of capital market pressures - exacerbated the inherent cyclicality of the platinum industry.

One

Redress with redistribution? The state and black economic empowerment

1.1

This chapter examines government efforts to redistribute wealth from the platinum mining industry through BEE. It focuses on the impacts of the Minerals and Petroleum Resources Development Act (MPRDA) (2002) and the Mining Charter (2004), which were introduced to fulfil the ANC's Freedom Charter commitments to redistribute mineral wealth "to the ownership of the people as a whole". Before this, some brief context is necessary. Mining is an inherently risky enterprise. This is largely due to the unpredictable, highly cyclical nature of demand for minerals, and accompanying price volatility. Mining projects generally take many years to bring into full production, and high prices encourage expenditure on new capacity. If demand for the mineral drops, it's hard to simply dial down supply since it may take years to recover initial start-up costs for new mines, and running operations efficiently depends on capacity utilisation. The industry is vulnerable therefore to gluts, but undersupply is also a threat if it causes price spikes that make substitutes attractive. This delicate balancing of supply and demand is all the more difficult for platinum given its limited uses, its substitutability, its concentrated abundance within the BC, and, in the industry's earlier history, the unpredictability of supply from the world's other major producer, Russia. As Capps (2012a; 2012b) has argued, competitive pressures which might have exacerbated such imbalances were constrained in apartheid platinum mining by industry concentration. Its capital intensity, and the cost and complexity of refining operations, posed formidable barriers to entry and compelled economies of scale, but even more significant was the concentrated control of mineral rights by the platinum mining companies themselves.

Consequently, as South Africa entered the democratic era, production was almost entirely accounted for by three companies: RPM, Implats and Western Platinum.[4] It was also concentrated on the western limb of the BC, with the major operations centred around Rustenburg. The industry structure reflected the broader domination of the apartheid economy by a cluster of large cross-sectoral conglomerates. RPM, the largest producer, was controlled by Anglo American via Johannesburg Consolidated Investments. Besides its operations on the western limb, deals struck with the Lebowa homeland administration gave the conglomerate extensive resources on the northern and eastern limbs of the BC (Capps, 2003; 23-24). Implats operated inside the Bophuthatswana homeland, and was controlled by Gencor, itself controlled by the Afrikaner insurance giant Sanlam. Western Platinum meanwhile was controlled by Lonrho, a British conglomerate with interests across southern Africa, with Implats holding a 27% stake. With the unbundling of JCI, RPM was relaunched as Amplats in 1995, with Anglo holding a near-majority stake. Implats became Gencor's sole remaining major asset, but its stake was unbundled in 2003. Western Platinum meanwhile was spun out of Lonrho to form the core of the mining company Lonmin, which became fully independent of Impala from 2004. The trio accounted for 55% (Amplats), 25% (Implats) and18% (Lonmin) of platinum output respectively in 1997 (Figure 4). Amplats also dominated in terms of ownership of PGM reserves and resources. As Table 1 shows, in 2000-01, the eve of the introduction of the MPRDA, Amplats' total estimated resources and reserves were well in excess of other companies. Just as significant was the greater geographic spread of Amplats' resource base. While the bulk of Lonmin and Impala's were in their Rustenburg operations, Amplats held a far broader range of both operating mines and prospecting rights.

The ANC's challenge was to create redistributive policies for the mining sector which would address this legacy of concentrated, racialised ownership without resort to nationalisation - ruled out after 1994 over concerns this would deter foreign investment and prove legally complicated (Capps, 2012a, 325; Cawood, 2004; 55). The party therefore sought diversification of private

Table 1: Reserve and resources by platinum producer, 2000/2001 (Source: company annual reports)

	Amplats		Implats		Lonmin		Aquarius		Northam	
	4E Mt	Grade g/t	5E+Au Mt	Grade g/t	4E Mt	Grade g/t	5E+Au Mt	Grade g/t	3E+Au Mt	Grade g/t
Reserves (prove and probable)	1495	4.8	266	4.96	515	5.0	0	0.0	47	5.3
Resources	1624	5.34	515	8.59	204	5.3	96	4.8	131	6.0
Total Reserves and Resources	3119	-	781	-	719	-	96	-	178	-

sector ownership through black economic empowerment (BEE). This was intended not only to undermine white economic domination but create a 'patriotic bourgeoisie' motivated by collective rather than personal interests (Southall, 2007; 80). Platinum was crucial to this project given its excellent prospects and the scale of its unutilised reserves (Capps, 2012a; 323). Additionally, it was hoped foreign mining companies would invest to ensure full utilisation of the nation's mineral endowment. In the Department of Minerals and Energy's (DME) view, however, the established mining companies' extensive control of mineral rights was an obstacle to both aspirations (Capps, 2012a). A 1998 Minerals Policy White Paper accused them of "hoarding" and "sterilisation" of mineral resources (DME, 1998).

Four years of negotiation culminated in the 2002 MPRDA. The Act effectively nationalised mineral rights, forcing mining companies to apply for 'new order' licenses granted by the Minister of Minerals and Energy. This was in turn subject to meeting targets outlined in the 2004 Mining Charter scorecard. The most important related to ownership by historically disadvantaged South Africans,[5] either of equity or "attributable units of production" (market share of the physical mineral), subject to offsetting against beneficiation, with targets of 15% by 2009, and 26% by 2014 (DME, 2004). As an alternative to 26% HDSA equity ownership at holding company level, mining companies could include HDSA owners at operating company level as joint venture partners, or through outright asset disposals. All transactions would have to be undertaken on a willing-buyer-willing-seller basis, at fair value, with the government playing a "facilitating role" in a market-driven process (DME, 2004: 7). Besides conventional corporate entities, owners could include employee or community shareholding trusts. Equally important in the MPRDA was the application of a 'use it or lose it' principle: companies perceived by the minister as not making use of their mining or prospecting rights risked confiscation (Cawood, 2004; 59-60). While avoiding more radical redistributive policies like nationalisation, these measures opened the sector to new competitors and, as Capps has argued, weakened the most formidable barrier to entry in mining, the near-monopoly control of the resource base by the platinum corporations (Capps, 2012a; 321).

Amplats had the most to lose. Its' wide spread of mining and prospecting rights was key to its competitive strategy (Amplats, 1996; 7). After initial opposition to reform (Amplats, 1996; 7: Amplats, 2000; 18), the company agreed to relinquish eastern limb mining rights to government, while proactively pursuing BEE deals in advance of the Mining Charter. The first came in August 2000, with Amplats underwriting former Gauteng premiere Tokyo Sexwale's Mvelaphanda Resources' purchase of a 22.5% stake in Northam Platinum. A 50:50 joint venture to develop the Modikwa mine with mining entrepreneur Patrice Motsepe's African Rainbow Minerals (ARM) was agreed the following year, and after that a 2002 deal with an entirely different partner, the Royal Bafokeng Nation (RBN). The tribal authority entered a 50:50 joint venture for the Bafokeng-Rasimone Platinum Mine and Styldrift project, laying the basis for the subsequent 2010 listing of Royal Bafokeng Platinum (Amplats, 2014a: 84). This set the pattern for the unfolding process of fragmentation during the 2000s, the details of which there is insufficient space to discuss here (But see Gqubule 2011; 2016). This drew in a combination of BEE mining entrepreneurs, traditional communities seeking to mimic the RBN's successes, and later on to a lesser extent, employee share-ownership trusts.[6] These were joined by international mining companies, both juniors from the key mining capital markets of Toronto, London and Sydney, and larger companies like Xstrata seeking to broaden their portfolio.

1.2

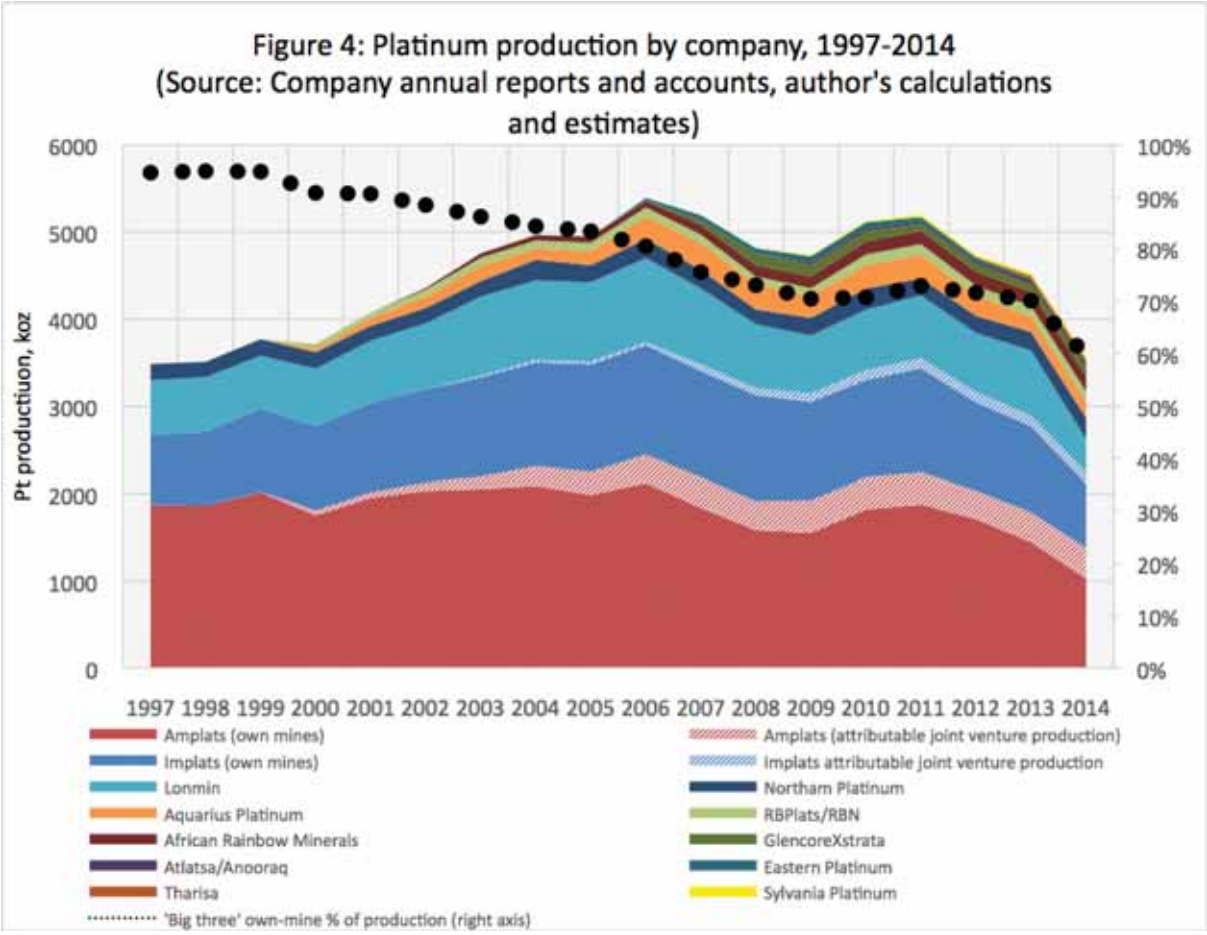
Within a decade the structure of the industry had altered significantly. The big three's share of platinum production from wholly-owned mines fell from over 90% to 60% (Figure 4). Alongside numerous new economic stakeholders (see endnote 6), 12 separate companies were mining significant quantities of platinum, either independently or in joint ventures with Amplats or Implats, with a further six in the process of developing

mines.[7] New entrants were relative minnows, and the joint ventures small compared to the big three's flagship Rustenburg operations. The big three also retained control of refining. However, taken together they were responsible for a combined attributable production of over 900koz in 2010 (Figure 4): equivalent to adding a new Lonmin to the market.

How significant these changes are in terms of adequately addressing historical injustices remains a matter of heated debate. From the industry's perspective, mining companies have gone beyond Mining Charter HDSA ownership requirements, and achieved this meaningful redistribution of wealth - to BEE entrepreneurs, mining communities and employees - at considerable expense to shareholders and broader competitiveness.
A Chamber of Mines (CoM) (2015: 2) study calculated all of its members had hit the 26% target, with the PGM sector at 39.5%, and as the Davis Tax Committee (2014: 116) argued, the "compulsory transfer of equity [for BEE] ... comes at an undeniable cost to business, a cost which from the perspective of business is akin to a tax". These costs include the financing of empowerment transactions and the dilution of existing shareholders, and have gone alongside the introduction of a new royalty and a variety of levies and charges akin to indirect taxation. The IMF argues that these measures "result in a rising cost structure, and in the absence of cost offsetting commodity price increases tend to sterilize otherwise exploitable ore reserves" - a view echoed by many mining companies (IMF, 2015: 45-46).[8]

The industry's key complaint, however, relates to ambiguities in the Mining Charter around the issue of 'once empowered always empowered' (OEAE): whether a company's Charter ownership obligations are permanently settled once qualifying deals are completed, or whether the company must take on new black shareholders - 're-empower' - should BEE partners exit the investment. For example, in 2012 Northam Platinum's BEE shareholders, Mvelaphanda and Afripalm, were forced to relinquish shares to their bank following a breach of debt covenants (Northam Platinum, 2014). This left Northam with only 4% BEE ownership credits, and the DMR demanded another deal to restore the 26% level - a process recently completed (Northam Platinum, 2012: 2015; 4 & 102). Implat's empowerment status is uncertain after the RBN's decision this year to

Figure 4: Platinum production by company, 1997-2014
(Source: Company annual reports and accounts, author's calculations and estimates)



sell almost half their stake in the company (Seccombe, 2016). Mining companies argue a requirement to continually re-empower would have a severe impact on investment. Alongside continual uncertainty over the mining license, shareholders could face repeated dilution.

However, government's take on the redistributive outcomes of the Charter is starkly different, and it has repeatedly criticised the industry's approach to ownership transformation. Much of this relates to how BEE deals tended to be structured and financed. BEE purchases were frequently debt financed with loans either from the vendor, banks, or a mixture, and the share capital as collateral. Debt repayment depended on dividend flows. Many BEE vehicles were therefore leveraged and exposed to the volatility of mining returns. Early deals struck when mining equity valuations were lower, and ahead of a period of high profitability, have worked relatively well. Deals later in the cycle faced difficulties from high purchase prices and dwindling dividend payments (Gqubule, 2016). This has in some situations necessitated refinancing, most notably with Lonmin's key empowerment partners, Incwala and Cyril Ramaphosa's Shanduka.

A 2009 DMR review of ownership argued leverage meant many BEE vehicles had a negative net value (debts higher than assets), that benefits were concentrated among "a handful of black beneficiaries", and that empowerment at operating company rather than holding company level shut beneficiaries out of decision making (DMR, 2009; 17-18: see also Gqubule, 2012). The Charter was subsequently revised in 2010 to try and ensure empowerment deals secured more "meaningful economic participation".[9] However, similar criticisms were re-stated in a 2015 review, with figures on "meaningful" empowerment that contrast significantly with the CoM's (DMR, 2015).[10] Such views are not confined to government. Discussing the platinum industry in 2013, J.P. Morgan analysts commented:

> *...What is increasingly clear to us is that the BEE plan has not delivered as it was intended. A few entrepreneurs have made large fortunes, but it seems to us that the breadth of "the benefits" from BEE has reached very few of those that it had been intended to uplift. And this fact has not escaped the public at large (2013; 15).*

Some critics go further. Gqubule (2016; 9-14) argues the Charter's requirements are considerably less stringent and sophisticated than the Department of Trade and Industry's (DTI) BBBEE Codes of Good Practice applicable in other sectors of the economy, given the relative lack of clear numerical targets, independent verification, and noncompliance penalties. The DTI Codes score companies on ownership net of debt, and explicitly address ownership transformation as a process - involving re-empowerment if necessary - not an event as in OEAE interpretations (*Ibid*).

In sum, more than a decade on from the MPRDA, the result is a kind of mutual dissatisfaction: new distributive pressures on the industry have not resulted in satisfactory distributive outcomes for government. As a result of these disappointments, mining regulation remains unsettled. At the time of writing, the DMR and the CoM are negotiating around a new draft of the Charter unexpectedly released in April 2016, (without prior consultation as in previous iterations) which seeks to bring the Charter into line with the Codes by requiring companies to maintain 26% black ownership at all times, per mining right, with a minimum threshold for worker and community ownership (DMR, 2016: 2).

1.3

As this final section discusses, while the MPRDA's effective nationalisation of mineral rights lowered barriers to entry in the platinum industry, it also introduced an important 'barrier to exit' as government could threaten revocation of mining licenses to prevent mine closures and thereby preserve jobs in the short term (Nicholson, Bregman & Mnguni, 2013: 3). This has complicated the longstanding historical challenge in platinum, discussed at the start of this chapter, of balancing supply and demand.

Oversupply has been a persistent problem for the platinum industry in recent years. The global market tipped into a sustained deficit from 1998, the onset of a boom period (Figure 5). However, from the late-2000s this was closed by the rise of recycled supply facilitated by the scrapping of earlier generations of vehicles using catalytic converters. Amplats said in 2014 that the market had been permanently oversupplied since 2005 (Barclays, 2014: 8). This, alongside persistent negative sentiment around global economic growth and uncertainties regarding over-ground stocks has meant prices being persistently lower than forecast.

However, reducing mined supply has proven complicated for a number of reasons. Firstly, there are the difficulties anticipating future prices and demand, and most companies have proven overly optimistic. Secondly, given high fixed costs, reducing overall unit

costs of production depends on high capacity utilisation, therefore platinum miners have been encouraged to maintain high production (Engelbrecht, G., Olsha, A., 2015: 3). As Sibanye Gold's Justin Froneman put it in 2016, platinum miners "kept the foot on the pedal to manage cost of supply, but it kept us back for longer than it should have. It's the one commodity where we haven't seen the kind of discipline that we should have seen" (McKay, 2016). Thirdly, in a competitive context it poses a basic collective action problem, given the opportunity to free ride on a competitor's output reductions (Liberum Capital, 2012: 6). One exchange between an industry analyst and ex-Lonmin chief executive Ian Farmer in mid-2012 encapsulates the issue:

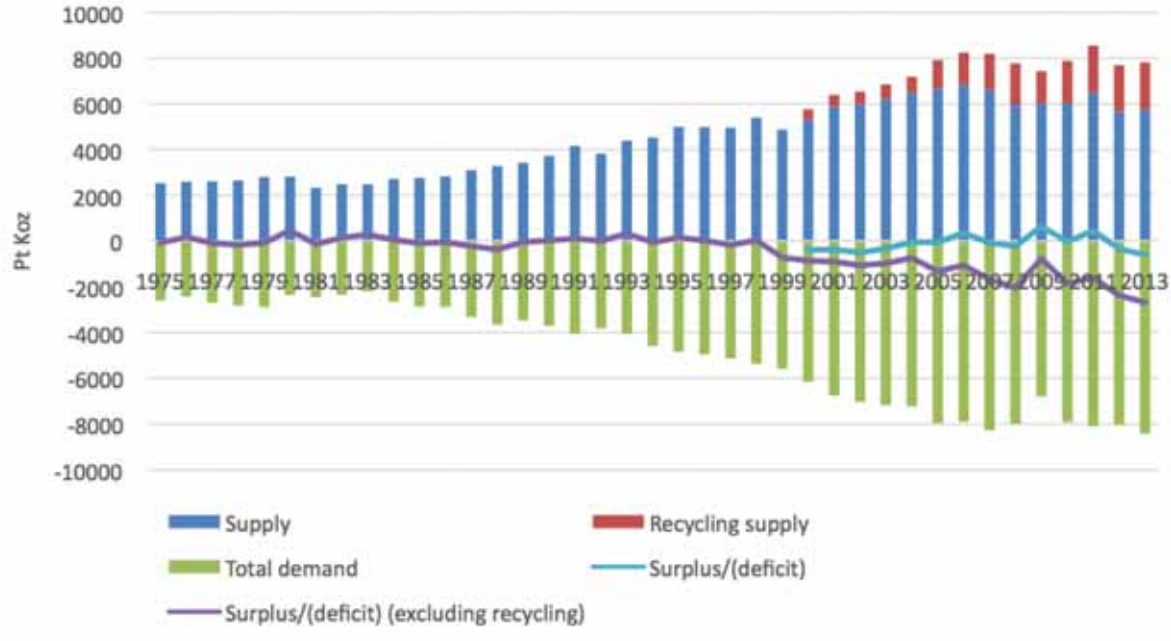
> *You [Lonmin] are not the only guys suffering ... But everybody, including Impala and Anglo Platinum, still stands up there and says we're going to expand. It just doesn't make any sense. Everybody needs to stand up at some point and say well, look at this price, we can't expand. And I'm not getting that. So can you tell me why? Why is nobody acknowledging that simple fact? (ThomsonReuters, 2012).*

Farmer's response was:

> *[I]f I take out 50,000 ounces out of the marketplace and really harm my company in the short term, and harm it in the long term, I won't move the market dial by enough to actually make a difference ... if you really want to see a marked change in the short term, it's not going to have to come from Lonmin; it's going to have to come from somewhere else (Ibid).*

Farmer's point that larger companies should lead on cuts would have resonated with smaller entrants to the industry: reliant on fewer, but generally newer and shallower mines. As mentioned above, while individually small, these have brought the equivalent of another Lonmin to the market, with several more companies attempting to bring shallower, more mechanised mines online in the coming years.[11] Amplats' strategy in the earlier phases of the crisis, however, was to expand in what one analyst called "a full-blown effort to force the competition into submission" (Esterhuizen, van Graan & Low, 2008; 2009; Thomson Reuters, 2012: 10). This strategy changed with a 2013 portfolio review which proposed mothballing four shafts at its ageing Rustenburg operations to cut unprofitable ounces and focus capital expenditure on more profitable operations. In the short term it would remove 325koz of high-cost platinum production from the market - beneficial for an over-supplied market (Amplats, 2012: 8 & 42). Amplats did not want to abandon the assets, stressing the importance of "retaining flexibility for long term growth options ... should demand increase above expectations" (Ibid: 2-3). The social cost, however, would be 14,000

Figure 5: Global platinum supply and demand
(Source: Johnson Matthey data; author's calculations)



jobs - albeit subject to redeployment and mitigating expenditure (ThomsonReuters, 2013a: 9) - and government reportedly threatened the revocation of mining licences (J.P. Morgan, 2013: 33).

Amplats relented, reducing redundancies to 6,000 while seeking instead to sell its Rustenburg and Union operations (the former subsequently to Sibanye Gold). Production would still be lowered, with shafts placed on care and maintenance, but it was widely perceived as a step down that would perpetuate over-supply problems (Byrne, Rossouw, & Huchison, 2013; Nicholson & Bregman, 2013). Besides weakening barriers to competitive entry, the MPRDA had thereby essentially created a new barrier to exit, in the form of government seeking to preserve jobs (Nicholson, Bregman & Mnguni, 2013: 3). Some have argued that such interventions mean the industry has been effectively "operating in a quasi-nationalised manner" (Liberum, 2012: 6). This may be too far, but it is clear that the MPRDA means social and political concerns can now enter corporate decision making in new ways, and entails a loss of autonomy. Alongside the weakened barriers to entry, it represents a significant loss of control over the industry's assets. As the next chapter discusses, this has been accompanied by a simultaneous loss of control over the production costs, in particular labour.

Two

Change without adaptation? Labour and production

2.1

This chapter discusses an additional distributive pressure on the platinum industry in the post-apartheid period in the form of the rising wage demands of a unionised and increasingly militant labour force. South African platinum mining developed as a highly labour-intensive activity, and for most of the industry that is still the case today. According to calculations by Renaissance Capital, a typical platinum mining employee typically produces about $50,000 of revenue annually (2007-2013 average), less than a fifth of that created by a coal miner at Exxaro or an iron ore miner at Kumba (Friedman & Pretorius, 2014: 6). This is partly due to the geology of the industry's traditional centre around Rustenburg. The two PGM-bearing reefs, the Merensky and UG2, are less than 1m thick and disrupted by faults, potholes, dykes and intrusions which disrupt the continuity of the mining process (Hochreiter et al, 1985: 167-68). Narrow stoping widths make it difficult to fit bulkier mechanical equipment at the mine face (*Ibid*, 172). Conventional mining methods therefore involve workers drilling holes in the rock, which are filled with explosives, and the debris removed after detonation (drilling and blasting) (Stewart, 2015). Geology and mining techniques are not the only factor: until recent decades, there was little urgency to pursue technological solutions given sufficient cheap labour.

As with gold mining, platinum mining was historically founded on the "spatial strategy" of apartheid labour control, employing migrants from impoverished homelands and neighbouring countries (Bezuidenhout & Buhlungu, 2011: 238-245). In a system of mutually reinforcing controls, migrant workers were generally accommodated in ethnically defined hostels adjacent to mine shafts, subjected to stringent discipline and restrictions on freedom of movement (Ibid). All of this was underpinned by restrictions on trade unions and other basic political freedoms, and the absence of protective workplace legislation. Fatality rates were higher even than the notoriously dangerous gold industry - almost double in the late-1980s (Ferreira, 2012: 446). The effectiveness of this system in tempering wage inflation is reflected in Table 2. Data on platinum pre-1980 is unavailable, but gold forms an illustrative proxy. During most apartheid decades, gold sector wages barely increased above inflation - the important exception being the 1970s (See Forrest, 2014, p. 152). Matters changed after the democratic transition, with large above inflation increases in the 1990s, and even more so the 2000s.

Table 2: Real decadal wage inflation in gold and platinum mining (Source: DMR, Department of Mines; author's calculations)

	Gold	Platinum
1950 - 1960	1.7%	NA
1960 - 1970	8.4%	NA
1970 - 1979	83,6%	NA
1982 - 1992	-0.15%	-0.5%
1992 - 2002	62.3%	40.9%
2002 - 2012	72.1%	104.0%

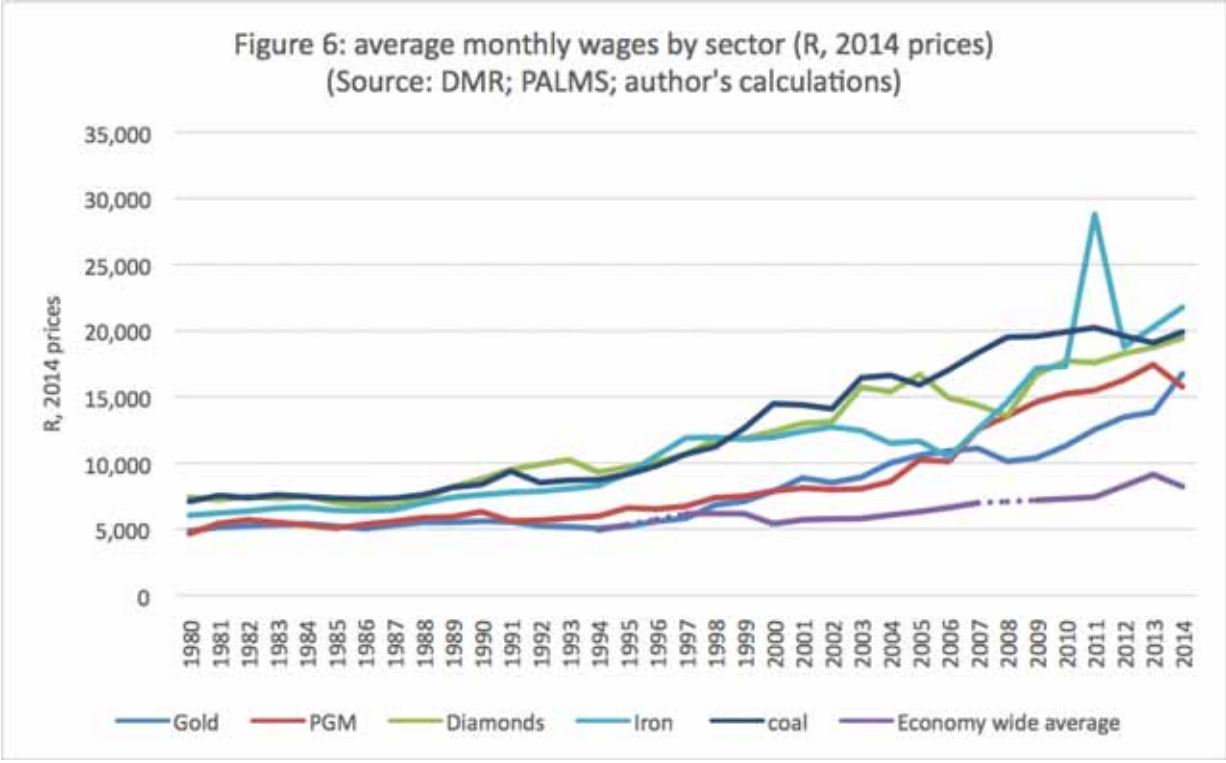
These increases coincided with the erosion - though not disappearance - of the controls outlined above. This erosion began before the formal democratic transition, with trade unions unbanned in 1982 and liberally-minded business elites, particularly at Anglo American, seeking alternatives to the migrant-hostel system: both on the grounds that labour relations would become more manageable (see Chinguno, 2015; Moodie, forthcoming). The complex, changing politics of organised labour in platinum has been written about elsewhere (See Chinguno, 2015; Moodie; 2015; Sinwell, 2015). With mines inherently vulnerable to strikes due to the spatial concentration of the workforce, the National Union of Mineworkers (NUM) - and its rivals - effectively pressured for improved wages (including the social wage), safety standards and working conditions (Forrest, 2015: 512).

This was supported by new legislation introduced during the democratic transition, such as the Labour Relations Act (1995), the Mine Health and Safety Act (1996), the Basic Conditions of Employment Act (1997) and the Employment Equity Act (1998). They were viewed as a threat by the industry given the effect on labour costs. Former Amplats Chairman, Leslie Boyd, argued a "pro-labour bias" carried "the grave risk of sacrificing the need for business efficiency on the altar of affirmative action" - globalization called for greater labour 'flexibility' in the name of competitiveness, not less, he argued (Amplats, 1998: 13; 1999: 12-13; Implats, 2001: 3). The continued move away from the migrant-hostel system added to labour cost pressures since workers now faced living expenses previously provided for with exacting frugality through hostels.

Adding to this have been inadequacies in municipal service delivery, in particular housing, compounded by apartheid legacies of homeland under-provision and migrant influxes as the platinum industry boomed (Makgetla & Levin, 2016: 12-28). Living Out Allowances (to support miners' living expenses, such as housing) were introduced to assist, alongside other social security benefits - wages now only comprise around two thirds of a typical pay package. Conditions have remained difficult. Makgetla and Levin (2016: 16) found residents in a sample of three Rustenburg mineworker communities to be four times more likely than the average South African to live in a shack, and seven times as likely to buy water from a vendor. Simultaneously, while mining companies have reduced overall reliance on migrant labour, it has remained important for key categories of workers - notably rock-drill operators (RDOs) (Forrest, 2015, 516). Workers with origins in North West province accounted for only 30% of the total at Lonmin in 2014, and 57% at Implats' Impala mine, with non-South Africans accounting for 17% and 12% respectively.[12] These workers carry responsibilities to distant relatives in areas which have remained economically disadvantaged in the post-apartheid era (Makgetla & Levin, 2016: 35).

These interlocking changes have combined with increased worker militancy, manifesting in large strikes in 2012 and 2014 for a R12,500 entry-level 'living wage' and a shift in union affiliation from the NUM to the its more radical rival AMCU (Chinguno, 2013; 2015). This has driven upward pressure on wages. Having remained flat in real terms during the 1980s and early 1990s, average wages in the platinum sector increased, in real terms, from just over R6,000 per month in 1992, to just under R16,000 per month in 2014 (Figure 6). Aside from a brief period in the mid-2000s, annual wage increases for unionised staff have been above the rate of inflation. This is broadly in-line with other mining sectors, but contrasts to the wider economy where manufacturing, construction and agriculture saw more modest increases (Finn, 2015: 16-20). The PGM average wage was around 20% more than the South African

Figure 6: average monthly wages by sector (R, 2014 prices)
(Source: DMR; PALMS; author's calculations)



average in 1994, but roughly double in 2010 (Figure 6). Typically, workers in coal, iron ore and chrome still earn 25% - 35% more on average. However, wage increases matter more in PGM mining because of its labour intensity - labour typically accounts for over half of on-mine production costs, so even small increases have large impacts on profitability.

It is important to note these averages conceal considerable inequalities, particularly with regard to the increased use of contract labour post-apartheid (Kenny & Bezuidenhout, 1999: 185-188; Forrest, 2014: 155-156; Bezuidenhout & Buhlungu, 2010: 251). Almost half of Amplats' workforce was comprised of contractors at a 2007 peak (Figure 7). While it subsequently reversed this policy,[13] Lonmin and Impala continue to employ around one third of their workforce on a temporary basis (Figure 7) - though this remains relatively low compared to other mining sectors apart from gold.[14] This likely enabled PGM mining companies to temper the inflationary pressures emanating from the full-time, unionised workforce. DMR data shows contractor wages to be about 60% of full time employee wages, and other research suggests use of contract labour for core functions as a means of lowering costs - not simply wages but other benefits and legislative requirements relating to full-time employees (*Ibid*).

Inequalities aside, the problem from the mining companies' perspective remains that of a rising cost base in an industry whose business model is predicated on control of labour costs. The added concern is that rising wages have not been matched by commensurate productivity increases. Productivity varies mine to mine, and indeed from mining team to mining team. It also varies in terms of the measure used. The overarching trend is clear, though. As industry employment doubled between 2000-2008, kilograms of PGM per employee fell 40% to 1.4kg and have there remained (Figure 8). Concurrently, while PGM production peaked in 2006, labour cost per kilogram produced has shot upwards (Figure 9).

In the early 2000s, PGM labour was still considered low-cost (McTaggart, Lun, & Fernandez, 2002: 24). During a 1998-2002 boom, gross profit margins at the big three were 50%-60%. However, as labour costs rose, margins were compressed. Even the spectacular price increases of 2007/08 did not bring a return to this level. It also meant that despite prices recovering 2009-2013, profitability did not (Figure 10). Over the past two years as prices have crashed below $1,000/oz, key sections of the platinum belt have become almost uneconomic to mine.

Implats, for example, estimates that its reserves decline from 30moz at a PGM basket price of R25,000/oz, to less than 5moz as this breaches R19,000/oz - as of June 2015, the spot basket price was just under R20,000/oz, and such lows have been touched over the past year

Figure 7: Full time employees as % total employees
(Source: company annual reports and accounts)

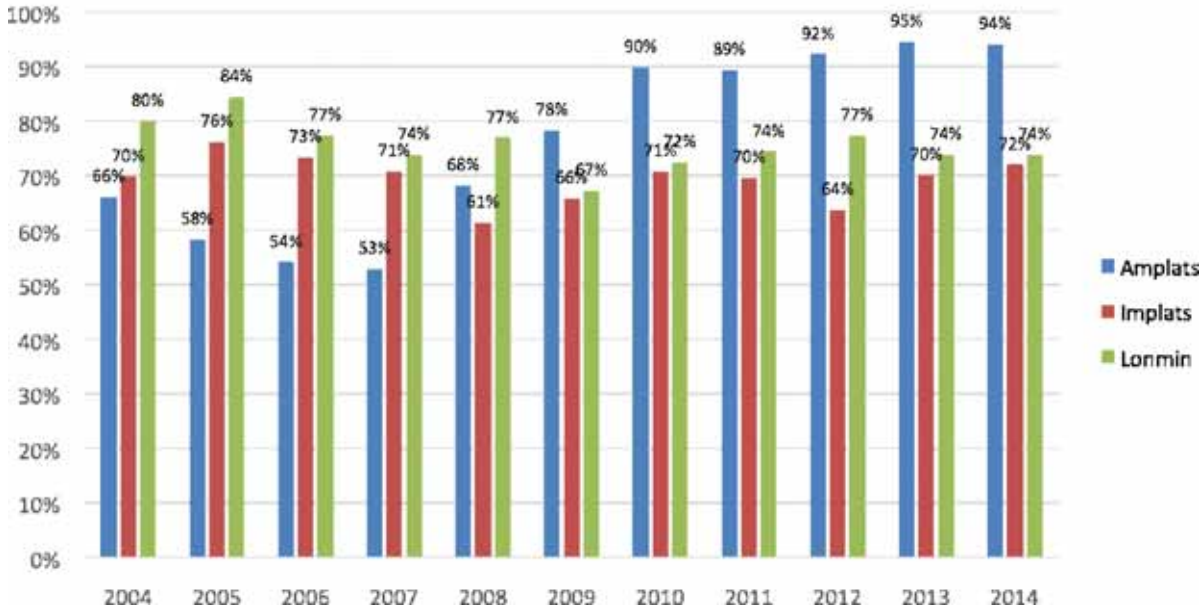


Figure 8: PGM sector employment and employee productivity
(Source: Department of Mineral Resources; author's calculations)

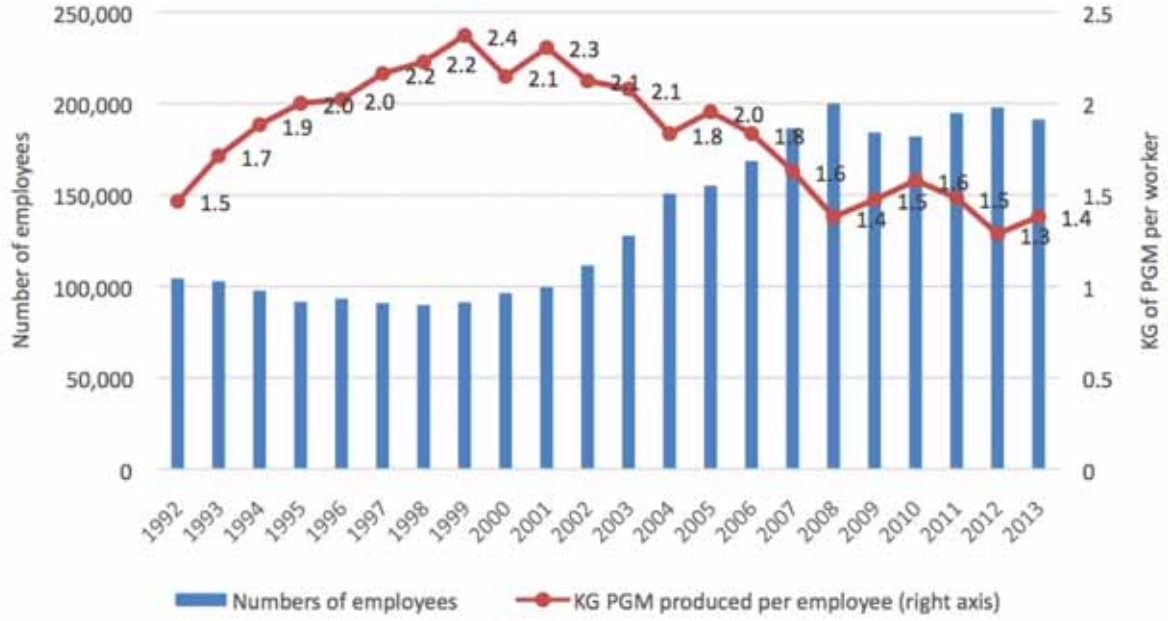
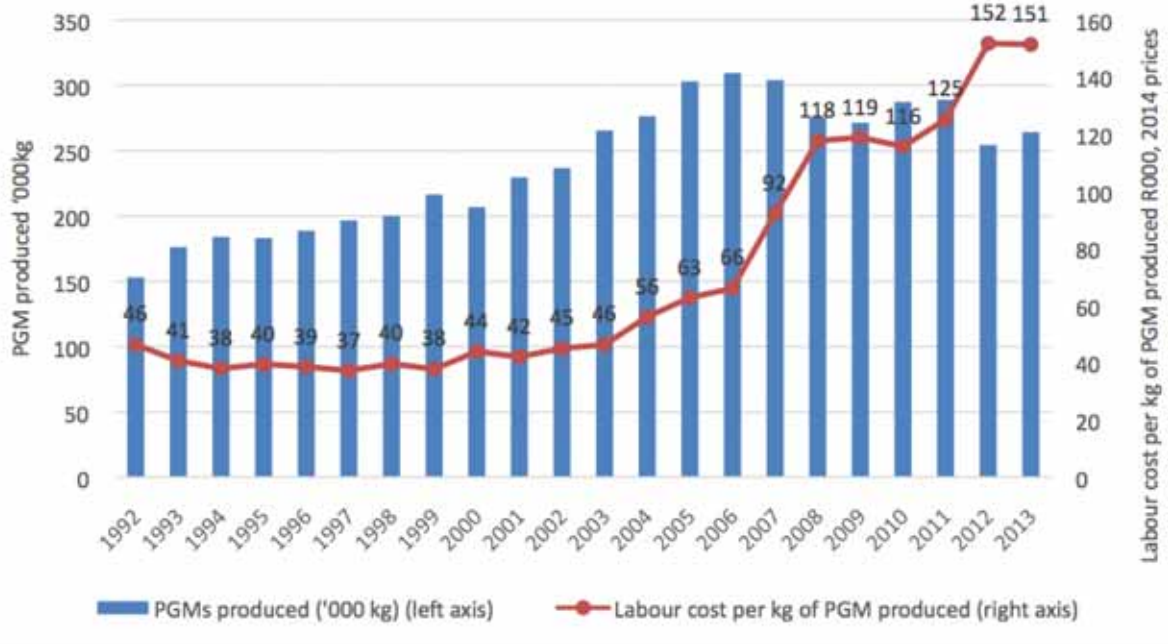
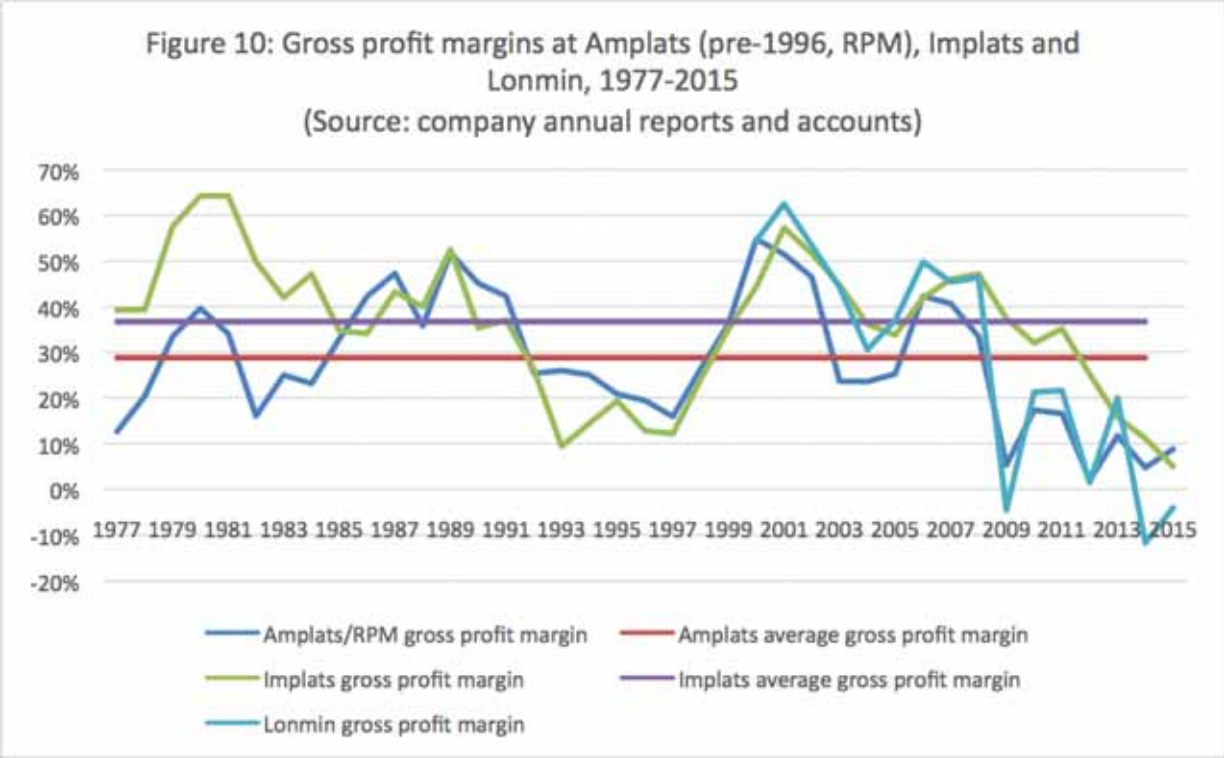


Figure 9: PGM production (kg000) and labour cost per kg of PGM produced (R000, 2014 prices) (Source: DMR data; author's calculations)



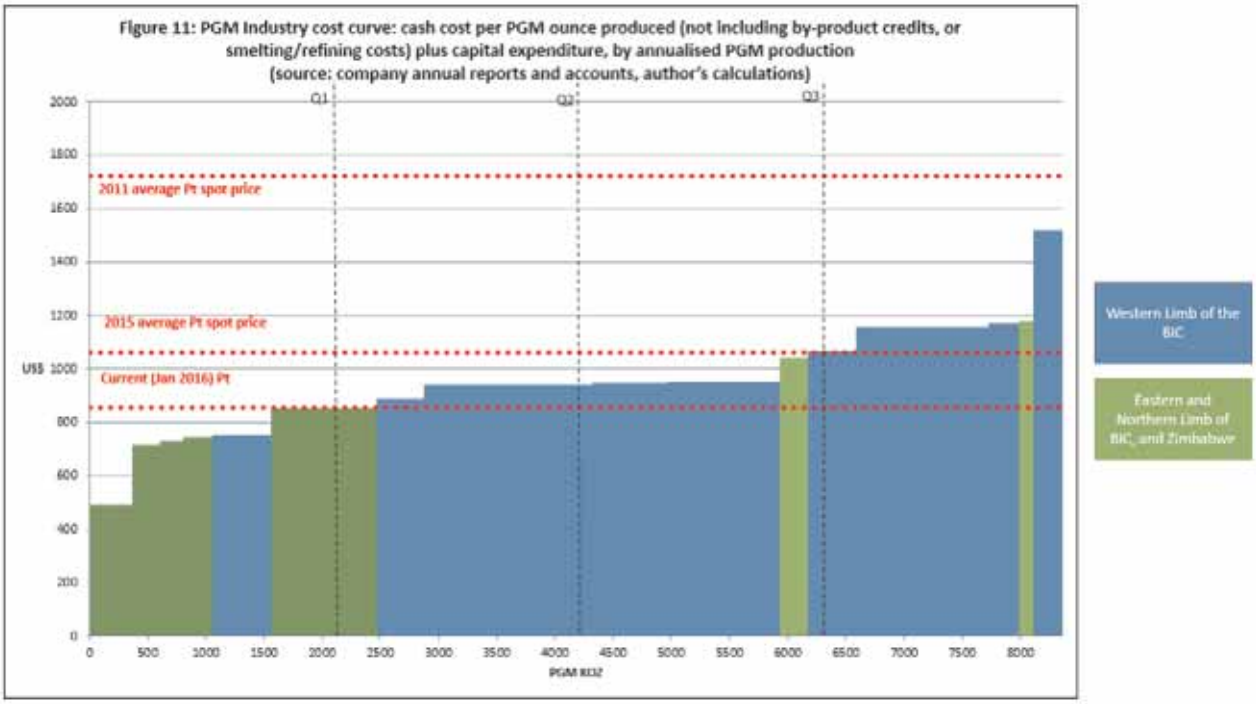
(Implats, 2015: 21). The cost curve in Figure 11 shows reported cash costs of production and capital expenditure per-PGM ounce at the major PGM mines, in comparison to January 2016, 2015 and 2011 platinum spot prices. While not a formal breakeven analysis (requiring smelting and refining costs, alongside PGM basket prices and by-product credits, with which, for example, the cost at Mogalakwena mine on the northern limb and Unki in Zimbabwe is dramatically lower), it nonetheless illustrates the extent of the challenge. Mines at the upper end of the cost curve are struggling. These are predominantly the larger operations on the western limb, with the more profitable mines being on the BC's northern and eastern limbs, and in Zimbabwe. Deposits there tend to be



shallower and mines newer, meaning greater levels of mechanisation. The older, deeper, labour intensive mines in the industry's Rustenburg heartland have been in severe difficulties.

2.2

It is undoubtedly true that organised labour has successfully applied upward pressure on PGM-industry wages over the past two decades. But it would be an over-simplification to attribute the difficulties around rising production costs solely to trade unions - as is frequently the case in public discourse. A variety of other factors have been at work, the most significant of which are fourfold. Firstly, wage inflation also derived from skill shortages. The commodities boom of the mid-late 2000s generated intensified demand for skilled workers. Major engineering projects for the 2010 World



Cup and Eskom did likewise. Big three company management highlighted fierce competition in recruitment and retention, resulting in inter-company poaching and high turnover rates at supervisory levels (Amplats, 2007: 6 & 13; CIBC, 2012: 21; Macquarie, 2007: 30). In 2007, for example, Lonmin CEO Brad Mills bemoaned the "arms race" for skilled staff:

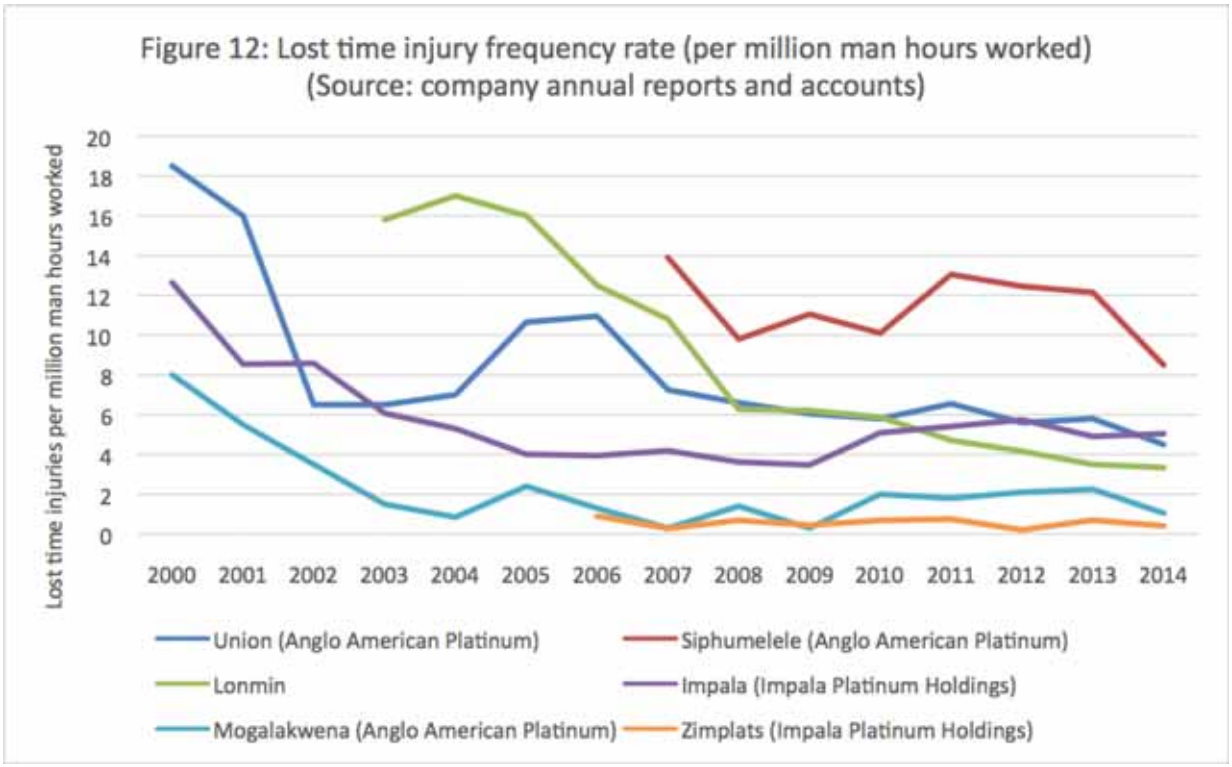
> *[There is an] extremely competitive environment for people in South Africa particularly. The global mining boom has had a big impact on skilled metallurgists ... We've had entire concentrator crews, for instance, purchased by other mining houses who came in and given a 50% bonus for every single person in the concentrator to leave ... And we've lost people to Rio Tinto in Australia, in offshore for people, for skills that want to leave South Africa. So we've had to respond to that ... it's a symptom of a small pool of core people that are extremely valued by this industry and people paying extremely large premiums to move them around (Thomson, 2007).*

Implats similarly highlighted "unprecedented demand for skilled personnel" across southern and central Africa, with "much improved" compensation to attract and retain skilled staff having a "profound impact" on costs (Implats, 2007: 15; 2008: 11-13). This likely explains why figures for Lonmin's wage differentials obtained on Lonmin by Dick Forslund for 2010-2013 show the pay gap between higher grades of worker and lower grades at Lonmin was increasing (Forslund, 2015: 46-49). Inter-company competition was not confined to the upper echelons of the workforce, with RDOs also reportedly being poached (Chinguno, 2015: 584: Forrest, 2015: 515). Disputes over retention payments fuelled the 2012 strike wave (*Ibid*). The problem was to some extent self-imposed, since unlike in gold mining, the platinum sector did not set collective wage agreements through the CoM.

Secondly, actions to address mine safety have reportedly impacted costs and productivity. Platinum mines during the 2000s made great progress in improving safety standards, with lost-time injury frequency rates (LTIFR) (Figure 12) falling alongside fatalities - which dropped from 57 in 2003 to 22 in 2015.[15]

Safety is a longstanding issue for trade unions, but there have also been changes in management attitudes. Cynthia Carrol, appointed as Anglo American CEO in 2006, promised a radically different approach to safety. 2007 saw 25 Amplats employees killed - similar to the preceding eight years. Amplats' Rustenburg operation was then shut for a reportedly unprecedented safety audit, at a cost of 100,000 ounces of production (Froneman, 2007: 10 & 16). Carrol later claimed her attitude clashed with conventional wisdom, which saw deaths as unavoidable in platinum mining (McKay, 2012). By 2015, Amplats' fatalities had dropped to two. Added safety measures carry costs. Implats has spent

Figure 12: Lost time injury frequency rate (per million man hours worked)
(Source: company annual reports and accounts)



around R1bn on safety improvements in recent years, ranging from comprehensive roof bolting and netting, to personal safety equipment, to motion sensors on moving equipment.[16] Amplats has added two additional workers to each mining team (commonly 16 people) to improve safety.[17] Pressure for change came from government too. The Mine Health and Safety Inspectorate in recent years have frequently imposed stoppages using Section 54 of the Mine Health and Safety Act when perceiving regulatory transgressions. Opinion is split on whether or not the use of Section 54 has been over-zealous, but losses can be significant. Lonmin in 2009, for example, reported losing 30,000 ounces of platinum - 5% of annual production (Lonmin, 2009: 6). Besides the direct production lost, there can be added problems with ramp-ups and disruption to monthly volume-based incentive schemes for miners.

Thirdly, labour is not the sole driver of production cost increases. Labour costs as a proportion of group level on-mine costs have actually declined slightly on a group level at Implats and Amplats (Figure 13 and 14).

In both cases, the largest cost increases came from utilities (Figures 15 and 16), as a result of Eskom tariff increases, which have risen faster for mining than any of the other major Eskom customer categories in recent years.[18] Other mining input costs such as diesel and explosives were also reportedly rising at double digit rates, not only during the boom but in subsequent years (Amplats, 2012: 37; Implats, 2008, 19: Lonmin, 2008, 12-13). Labour nonetheless remains the most important item in the cost base not simply because it is the largest, but because there is greater scope for control given prices are set internally rather than externally.

It is important to note that group aggregates conceal major differences between operations employing different mining methods. Conventional mines - like Amplats' Rustenburg operations, Implats' Impala mine and Lonmin's Marikana mine - have around 60% of cash costs taken by labour, with mechanised mines less than 40% (Table 3) (*Shah et al*, 2012: 13).

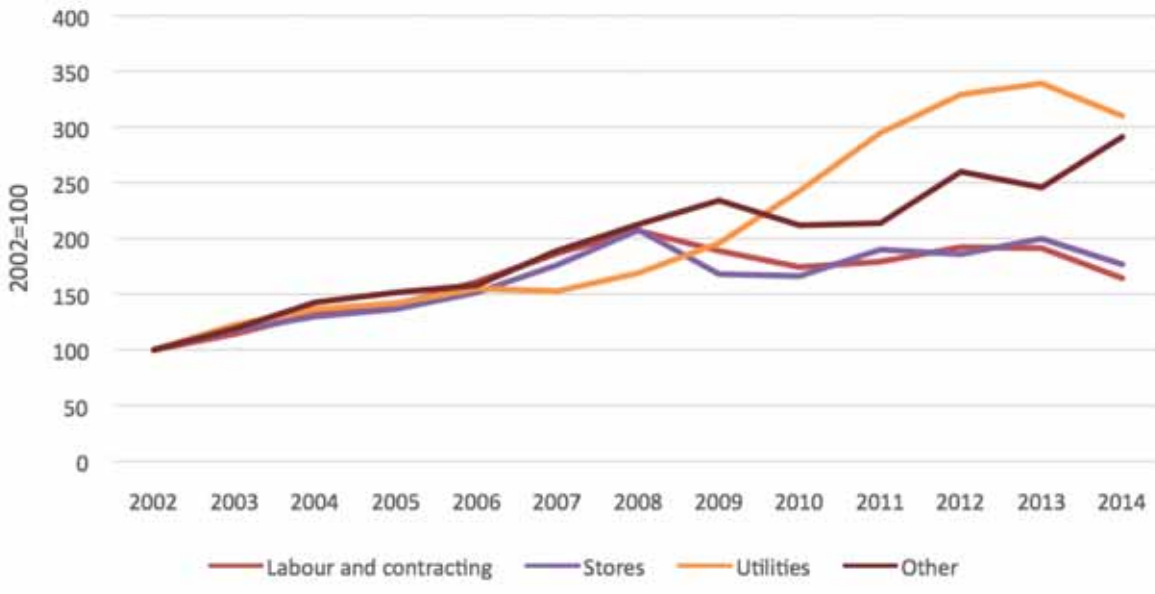
The fourth contributing factor to consider is geology. Shallower, richer deposits have been progressively mined-out in the major Rustenburg mining complexes (Amplats, 2014: 44; Lonmin, 2009, 6). In 2011, the average depth of operational vertical shafts was 800m, with that of shafts planned or under construction 1300m (Deutsche Bank, 2011: 18). Increased capital expenditure requirements, longer construction lead times (and therefore investment risk), higher energy costs, and haulage capacity constraints are all companions of greater mining depths. The increased reliance on the UG2 reef underlying the Merensky reef has meant mined PGM ores containing less platinum (as well as valuable by-products like Nickel), and more of the less valuable element palladium. From next to nothing in the 1980s,

Figure 13: Anglo American Platinum composition of on-mine cash costs, 2000-2014
(Source: company annual reports and accounts, author's calculations)

Figure 14: Impala Platinum Holdings composition of on-mine cash costs, 2000-2014
(Source: company annual reports and accounts, author's calculations)

by 2012 over half of the ore processed was UG2 (Amplats, 2012: 112). Correspondingly, platinum to palladium ratios have fallen. In 1989 Amplats (then RPM) produced 2.3 ounces of platinum for every ounce of palladium. By 2014 this had fallen to 1.7. Lonmin and Impala have had similar declines.[19] Head grades have also dropped, meaning mined ores now contain less PGMs. Implats' Impala mine, for example, in 2015 reports a head grade of 4.19 grams PGM (6E) per tonne, down from 5.3 g/t in 1996, similar for Amplats' Merensky head grade (Annual reports, various years). Essentially, costs per ounce could increase in some instances despite process efficiency improvements.

Figure 15: Anglo American Platinum index of key components of the cash cost base, 2002-2014
(Source: company annual reports and accounts, 2014 prices)



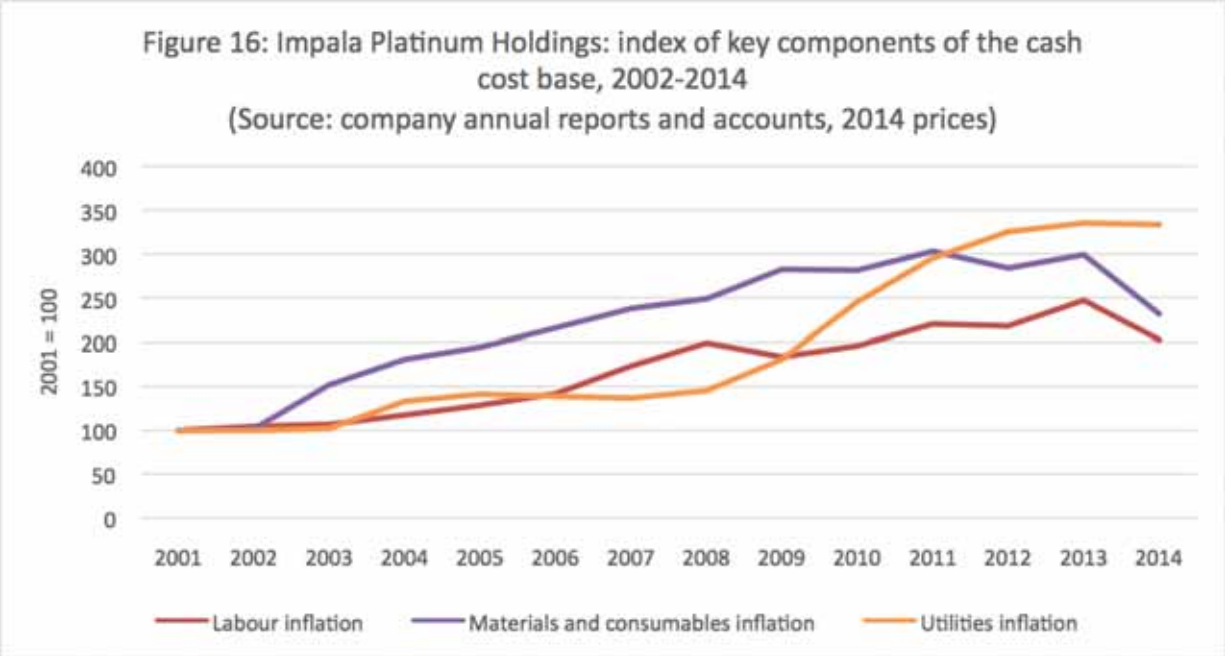


Table 3: Amplats cash operating costs by mining method (Sources: company annual report, 2014)

% of costs	Labour	Stores	Utilities	Contractors	Other
Conventional	61	19	8	2	10
Mechanised	37	25	4	24	11
Open Cast (Mogalakwena)	19	60	2	8	11
Processing	26	23	30	2	18
Average	44	28	10	6	12

Criticisms of the platinum industry's conventional business model nowadays come from company executives as well as critics. Amplats Chairman, Valli Moosa, said in 2014, following the 5-month platinum strike of that year, that "South African society does not have sympathy for a business model which is based on low skills and low wages, extremely hard work in potentially hazardous conditions, and the migrant labour system" (Amplats, 2014a: 13). But arrival at this point was hardly unexpected. Rather than sudden changes, the problems discussed above were decades-long processes. Indeed, in the mid-1990s Amplats' management had noted that "traditional approaches to the extraction and processing of ore are yielding diminishing returns" (Amplats, 1995: 7). The question remains therefore of why lower-cost, mechanised production techniques were not adopted sooner. This is the subject of the final section.

2.3

While the appeal of mechanisation has been noted for decades, a variety of factors have delayed adoption. Before discussing these, it is important to note that all mining, strictly speaking, is part mechanised. Mechanical loaders, scrapers and haulage have been in operation for many decades (Stewart, 2015: 638-639). Mechanisation in this context refers to the removal of human labour from the mine face, which has proven challenging (*Ibid*).

Path dependency was reinforced and adaptation to the distributive pressures discussed above postponed partly because problems with the business model were obscured by buoyant PGM prices. As Figure 17 shows, while remuneration and productivity were diverging, the sales value per worker was soaring around two great peaks in the 1999-2003 and 2005-2008 period - caused by favourable prices more than volume increases.

This meant cash flows sufficient to fund rising wages, generous dividends and large capital expenditure outlays simultaneously. Lonmin aside, while costs accelerated at double-digit rates 2000-2008, revenue grew faster. From 2009, while revenues plunged, costs proved stubborn and there came the reckoning.[20] Prior to this, cost inflation and declining productivity were certainly recognised as problems by those with pecuniary

interests in the industry, but they were not always the centre of attention. Dissatisfaction from investors and analysts, and management contrition, was instead often related to over-promising and under-delivering on capacity expansion: the ability to reap maximum reward from the boom. Former Lonmin CEO Ian Farmer encapsulated the issue in late 2008:

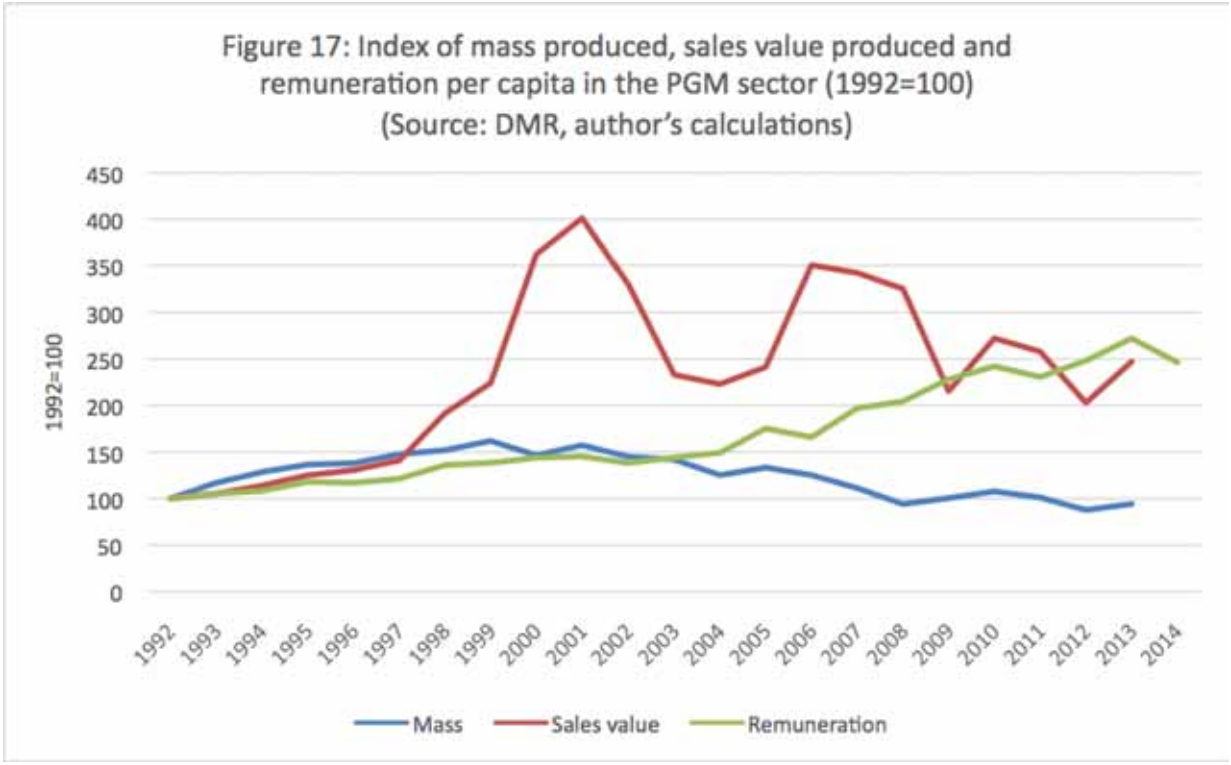
> *Over recent years, with record PGM prices, any ounce you could mine was likely to be profitable. And we have, therefore, chased volume, including extending the life of many of our open pits well beyond their original plan. The current pricing environment has changed however. And, ultimately, we're in the business of making money, not mining ounces at any cost* (Thomson, 2008b)

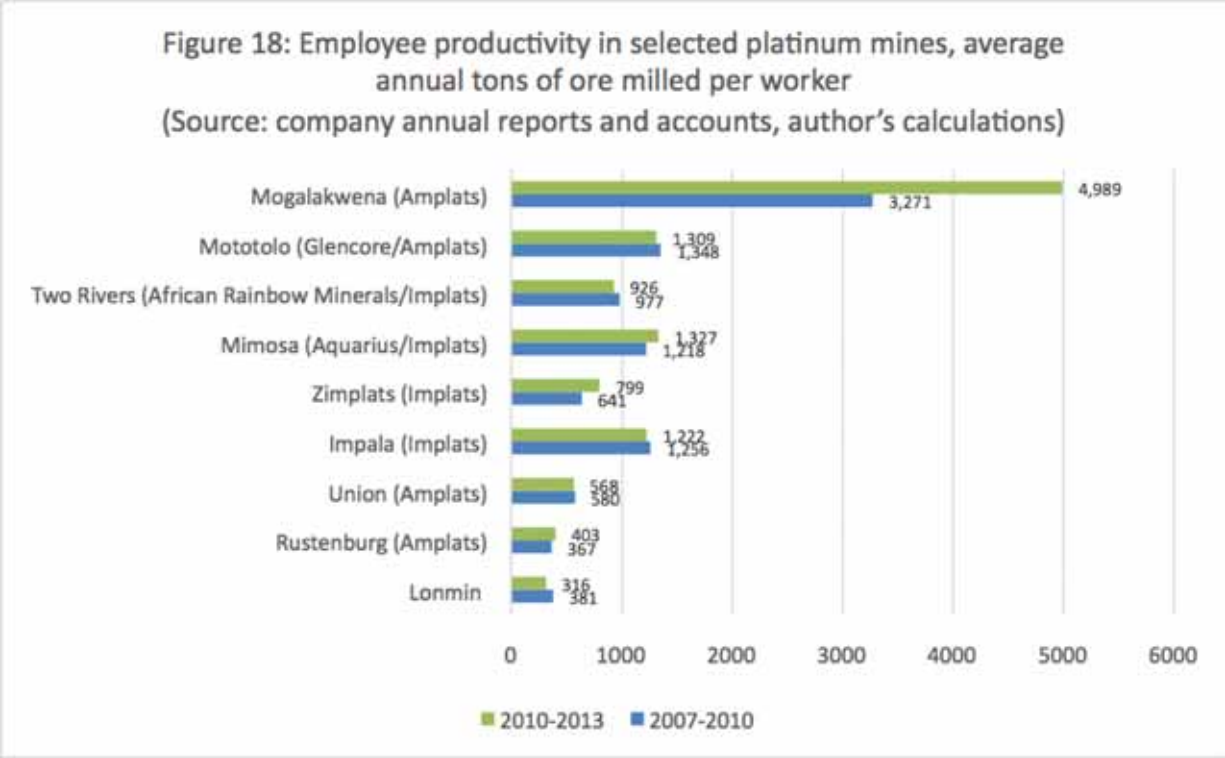
Price declines fully exposed the problems with conventional methods, and those "in the business of making money" view mechanisation as the escape from rising labour costs and radical unionism. Workers at Amplats' unique opencast mine on the northern limb, Mogalakwena, produced an average of 5,000 tonnes of ore for milling 2010-2013, compared to only 400 in the company's struggling Rustenburg mine. Modern, shallow mechanised mines like Amplats'/ARM's Mototolo or Implats'/ARM's Two Rivers are 3-4 times more productive than Lonmin by this measure. These mines use less but more highly skilled and highly paid labourers, who work in relative safety, with LTIFRs almost incomparably low.

Experiments with low profile, remote-controlled trackless machinery designed to fit in narrow stopes and replace RDOs date to the 1970s in gold mining, and the 1980s in platinum. Technical obstacles have been formidable - the narrowness and unevenness of the reef being paramount (Stewart, 2015). Mechanisation also carries costs for equipment, trained staff, spares, and reengineering of old mines to fit the equipment. It has proven difficult to mechanise without suffering ore dilution, and this has immediate financial consequences if haulage capacity cannot be simultaneously increased to make amends (Axsel, 2002: 20; Hochreiter, 1985: 173; Stewart, 2015: 634-635). It also involves experimentation with methods and technologies that, if not entirely unproven, may at least be unfamiliar to existing staff. Conventional methods offer flexibility, predictable results and a fit with existing competencies. Management were understandably cautious while conventional mines were still highly profitable.

Trials at RPM in the late 1980s found high capital costs negated labour efficiencies (RPM, 1990: 6; 1986, 10). Similarly, in the early 2000s Amplats reportedly switched mechanisation of Rustenburg from priority to aspiration as operating costs proved higher than expected (Madavo, 2004: 2). New mining director Robin Mills in 2005 was reportedly applying a "back to basics" approach, returning failed mechanisation experiments to "appropriate, tried and tested methods" (Shepherd, *et al*, 2005: 4; Deutsche Bank, 2005: 14). Implats similarly

Figure 17: Index of mass produced, sales value produced and remuneration per capita in the PGM sector (1992=100) (Source: DMR, author's calculations)





Mines may report employees in different ways

switched its Marula mine from mechanised to conventional methods in 2004 following technical difficulties (Saunders & Ismail, 2004).

Lonmin, though, provides the most interesting example. In the early 2000s it was considered low-cost relative to peers due to "[t]he low cost of labour", and its high-grade, relatively shallow deposits. Its strategy, Morgan Stanley analysts said, was to stick to "well proven hand-held mining techniques" (McTaggart, Lun, & Fernandez, 2002: 24, 2002: 24-25). The 2004 appointment of Brad Mills as CEO brought a radical shake-up. Mills instigated an ambitious mechanisation programme, targeting 50% mechanised production by 2010 - well ahead of competitors (Lonmin, 2006: 12). Using bespoke technology, management anticipated annual labour-cost reductions of 6%-7%, with a long-term 25% cost advantage over conventional mining (Shepherd, Cooke, & Bergtheil, 2008b & 2008c; Sainsbury, Wrigglesworth, & Madavo, 2005: 3; Thomson, 2006: 10). The endeavour stumbled. There were difficulties sourcing skills and spares (Thomson, 2008b). Senior staff were reportedly alienated, and familiar technical challenges arose around dilution (Shepherd, Cooke, & Bergtheil, 2008b: 2-3). Consequently, the promised productivities did not materialise. In 2008, mechanised production costs at Marikana were double those of conventional methods and output growth had reversed (Lonmin, 2008: 4 & 12-13).

This was perceived as wanton experimentation with shareholders' money at a time when tried and tested techniques were capable of generating better returns. A laboratory of this variety might have been just what the industry needed long-term, but short-term it was untenable given investor time horizons. JP Morgan analysts (2008c: 2) opined:

> *We fear that mechanisation may take ages to break-even with conventional methods (maybe 5 or more years). In the intervening period we strongly suspect that production and hence costs will suffer badly ... conventional mining could deliver so much more value.*

Mills was ousted by the board in 2008, and mechanised shafts were converted back to mixed methods. Mills in 2013, possibly feeling vindicated by events, said the "painful" process of mechanisation would take 15 years, and that the industry had missed its opportunity. "Machines don't annually come up and want 15 percent more salary" (Eisenhammer, 2013). What emerges from this example is how a different form of distributional pressure shapes and guides the industry: shareholder value. As the next section explores, the pressure to deliver acceptable returns to mobile investors in increasingly globalised capital markets, sits uneasily with the distributional pressures from government and labour.

Three

Spreading the gains? Financialisation and shareholder value

3.1

This final section examines a new distributive pressure of the post-apartheid period in financialisation: the increasing power of capital market demands in the economy, in particular the demand for short-term shareholder value delivery as a corporate priority (Erturk *et al*, 2008).[21] The period of political liberation in South Africa was also one of economic liberalisation. As capital controls were loosened during the 1990s, the key platinum mining companies became embedded in increasingly internationalised capital markets. The added mobility of capital brought with it intensified expectations of management to deliver returns to shareholders, since investors could redirect funds to higher yielding opportunities elsewhere in the world. In this context, the sprawling conglomerates in which the big three platinum producers had been housed were dismantled in pursuit of improved shareholder value.

A handful of large conglomerates had driven the early growth of the mining industry, and dominated mid-20th century capitalism in South Africa. These developed around creating economies of scale and improving access to finance in gold mining, but spread across other sectors creating remarkable levels of corporate consolidation (Fine & Rustomjee, 1996; Innes, 1989). Financial orthodoxy became hostile to conglomerates in the 1990s, viewing them as difficult for executives to competently manage and investors to accurately price - meaning conglomerate shares were frequently seen as priced at a discount to asset values (market price of shares less than company assets). The solution was to split into more coherent enterprises, enabling management to focus on 'core competencies' and giving investors a clearer view of company finances and an ability to benchmark performance against suitable competitors. This would, in theory, unlock 'trapped' shareholder value, and create leaner, returns-driven businesses. Here we consider each of the big three in turn.

Amplats was created from JCI and Anglo American's platinum assets, and listed on the JSE in 1997 with Anglo American retaining a controlling interest. Two years later Anglo American shifted its primary listing and head office to London. Being in the larger London capital markets, the company argued, would improve access to financing for international expansion, and reduce the discount on its shares (Cohen, 2016). In the more shareholder value-orientated culture of the London investment and analyst community, the financial performance of Anglo and its charges became subject to intense scrutiny. Management was encouraged to ditch industrial assets and directly compete with fellow global diversified miners Rio Tinto and BHP Billiton. Its five-year restructuring to 2005 involved $12bn of acquisitions and $7bn disposals to create a "focused business to deliver improved returns to our shareholders" (Anglo American, 2003: 3). To counter accusations of over-exposure to South Africa, it bought into coal mining in Colombia, Copper in Chile and Zambia, phosphates in Brazil, and Nickel in Australia (Anglo American, 2003; 2004; 2005). By 2003 just 40% of the asset base was South African (Anglo American, 2003: 3). In this context, Amplats' mines had to pull their weight in contribution to the competitive ambitions of their London parent, with financial performance metrics assessed by investors and analysts against other minerals in other geographies.

Implats, meanwhile, emerged from Gencor, a mining conglomerate controlled by the Afrikaner insurance giant, Sanlam, which had close links to the National Party during apartheid. Having divested its non-mining assets in the early 1990s, and listed its non-precious metals division, Billiton, in London in 1997, Gencor's 46.5% stake in Impala became its only significant asset. This was unbundled in 2003, making Implats fully independent. The same year it disposed of its 27% stake in Lonplats, and acquired a controlling stake in Zimplats - in neighbouring Zimbabwe - as the basis for future growth. While JSE rather than London-listed, Implats was still affected by economic globalisation, with share capital typically around 40% foreign owned

in the 2000s (Implats, 2006: 23; Madavo, 2003: 2 & 17). Lonmin differs as the progeny of a British rather than South African conglomerate, the London-listed but Africa-focused Lonrho, with businesses ranging from hotels, to agri-business, to mining. Lonrho's infamous CEO Tiny Rowland had initially resisted pressures from "opportunity seekers who calculate that by sending the healthy Group to the breakers yard, they could expect to get far more from the share price" (Lonrho, 1988: 4). The counter-argument was that diversity hedged revenue risk (Lonrho, 1991: 4). This reversed following Rowland's removal in a 1993 boardroom coup as the company fell out of favour with the stockmarket (Jones, 1999: 3). The Westplats and Eastplats platinum mines were spun out in 1996 to form the core of London-listed Lonmin. It quickly shed its gold and coal assets to focus on deriving maximum returns from platinum, which it dubbed the "metal of the future" (Lonmin, 2002: 5; 2004, 2).

Besides the impact of economic globalisation - and the mobility of investment derived from it - other significant changes increased the pressure on company management to deliver better short-term financial performance. The rise in financial intermediation is one. Rather than individuals or traditional institutional investors like pension funds holding shares directly, savers in advanced economies have become increasingly intermediated by specialist asset managers (Kay, 2012: 28-30). The widespread use of short-term performance benchmarking to set incentives means asset managers are often encouraged to pursue short-term trading strategies (Kay, 2012: 40-43). Alongside this has been the rise of more speculative investment vehicles, notably hedge funds, and technology which facilitates quicker trading on stock markets.

Investment has therefore, as Bank of England chief economist, Andy Haldane (2010), argues, become increasingly impatient. This manifests in declines in the average duration of share-holding periods. For US equities, this fell from around seven years in the mid-1970s to two in the 1980s, to seven months by 2007; in the UK from five years in the mid-1960s to two in the 1980s, to seven months in 2007 (Ibid, 2010: 10).[22] For the JSE, share-holding periods remained significantly higher in the 1980s, at around 15 years, but had fallen to around 1 year from the mid-1990s, according to calculations by Adrian Saville (Lamprecht, 2013). This is reflected in Amplats and Implats. RPM had a free-float average share holding period of four years in the early 1990s, but by the mid-2000s Amplats' was less than one. For Implats, the fall was from over a year to a few months over the same period.[23]

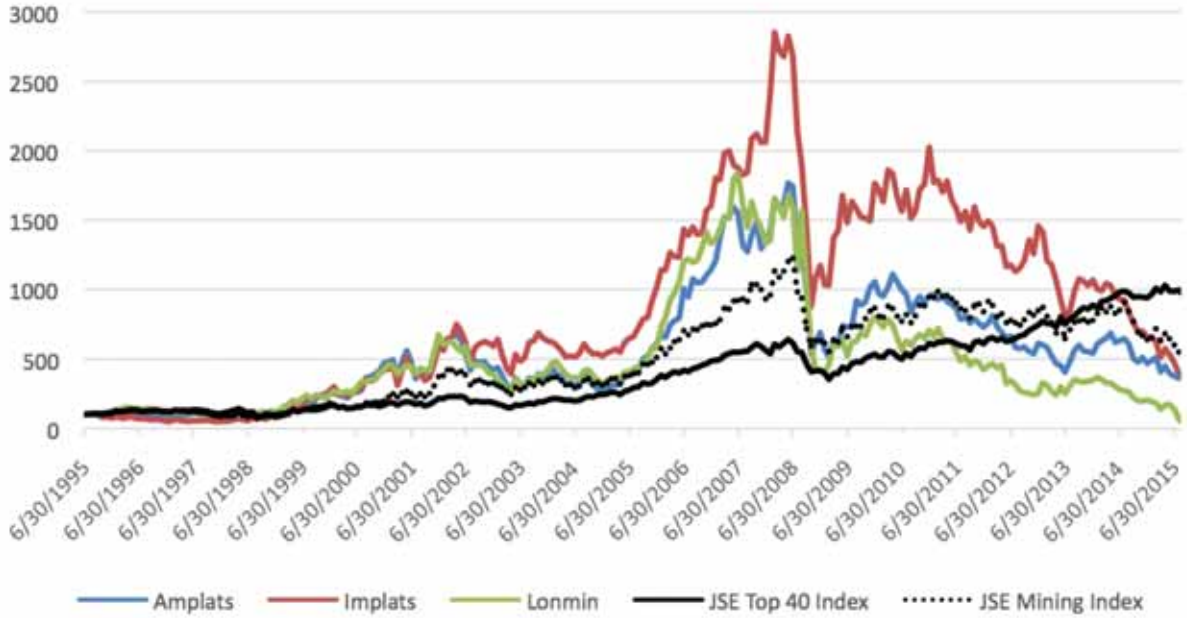
There are of course many shareholders who embody the textbook image: providing capital for growth alongside stewardship and oversight, through good times and bad. But many are simply footloose traders in the secondary market, not investors in the true sense of the word. This change was noted by analysts in the early 2000s. One in 2002 noted that "the majority of PGM investors are far more geared to a three-month view", while "about 15% of the PGM investor population are fundamental long-term participants" of three to five years (ING, 2002: 30). "The obvious issue therefore," they said, "is that of share price value" (*Ibid*). The pressures of this new context also, importantly, manifested in complex executive remuneration schemes heavily weighted to relative performance on key shareholder value related financial metrics (e.g. share price performance, return on capital employed etc.). From the early 2000s, the big three reformed executive remuneration packages to put more pay 'at risk' - that is subject to the achievement of performance targets.

The ability of management to satisfy these demands over recent history can be split into two periods: delivery from 1998-2008, where two booms were punctuated by a minor downturn in the mid-2000s. Second, a period of downturn from 2008-2016, punctuated by a brief rally around 2010/11. This is reflected in Figure 19, which shows the big three's outperformance of the JSE40 index and JSE Mining index, in particular 2005-2008, followed by subsequent underperformance.

This generated high levels of annual total shareholder return (hypothetical capital gain plus reinvested dividends), in which dividends only played a small role (See Amplats example, Figure 20), but have been largely negative since then as share prices have dropped and dividends halted - Lonmin and Impala exhibit the same pattern.[24]

Similarly, the major platinum miners achieved returns on capital comfortably in excess of their cost of capital during the first period, aside from the 2003-05 dip, but have been persistently below in the second (Figure 21). Capital in this instance comprises the mixture of equity and debt used to finance the company's assets. If the company is to be seen as delivering value to investors, returns on invested capital should be sufficient to meet the cost of capital (the interest expense on debt and the estimated cost equity), ideally in excess of it. Amplats' CEO Chris Griffith, for example,

Figure 19: Index of platinum stock prices in comparison to the JSE Top 40 and the JSE mining index (Source: Bloomberg data, author's calculations)



in 2014 said the hurdle rate of return for new projects is typically set 3-4% above the weighted average cost of capital (ThomsonReuters, 2014: 15). Return on equity (ROE) (net profit as a percentage of shareholder equity) specifically was well above the 18.6% JSE average 2002-2008, at 34.7% for Amplats, 39% for Implats and 28% for Lonmin. The post-2009 period, by contrast has been by far the lowest in the past four decades, with Amplats and Lonmin both recording negative average ROE between 2009 and 2015, and Implats scraping under 7%.[25]

Figure 20: Amplats Total Shareholder Return, 1998-2014 (%) (Source: Bloomberg data)

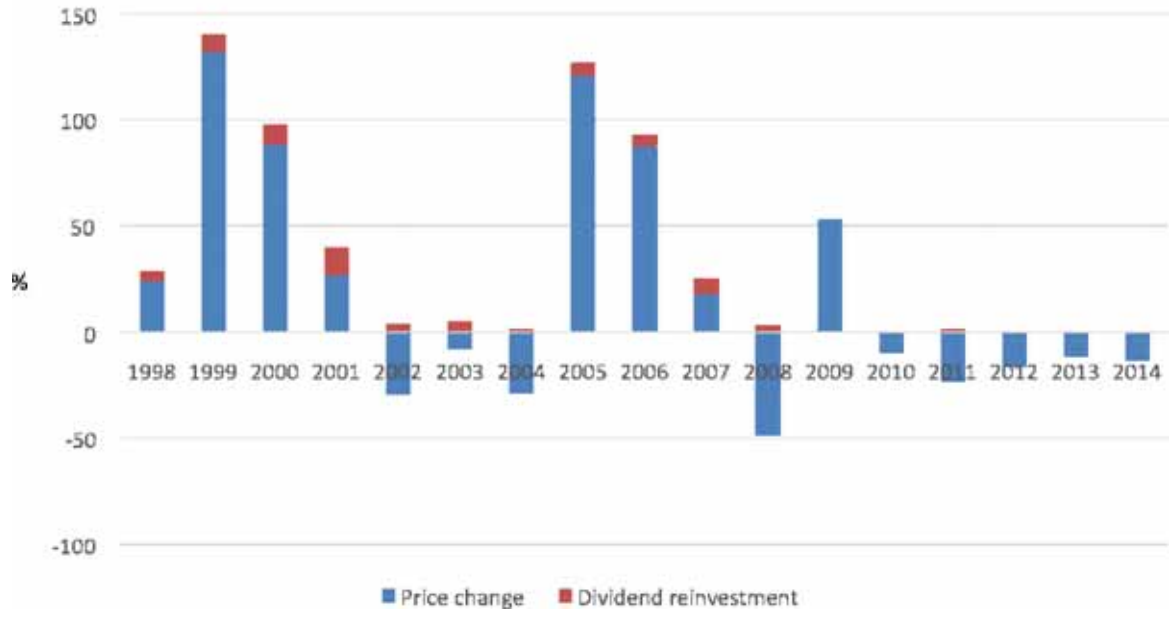
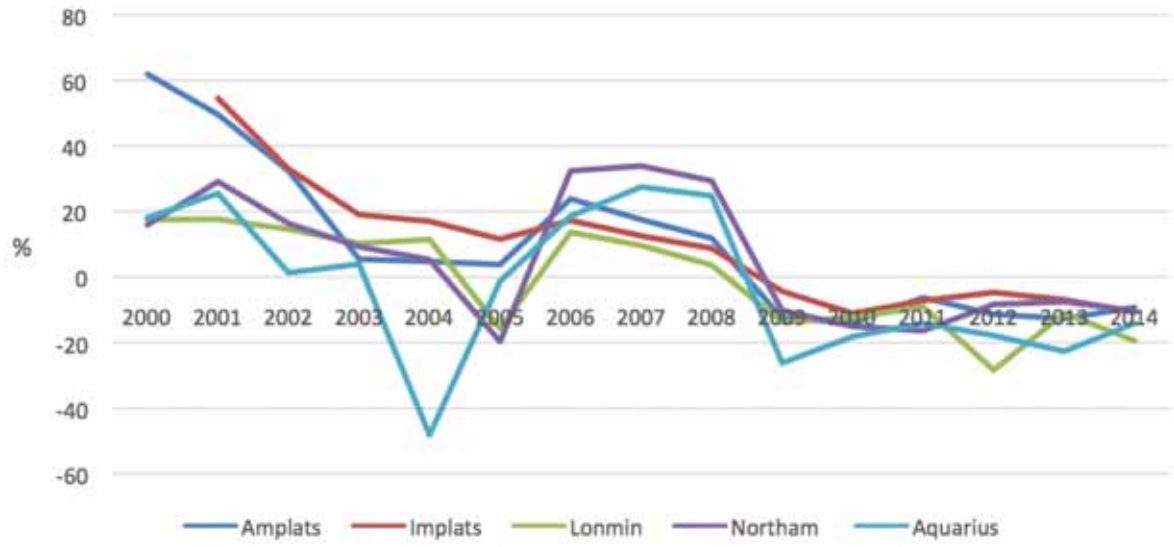


Figure 21: Platinum sector economic value-added spread (Return on Invested Capital - Weighted Average Cost of Capital, 2000-2014) (Source: Bloomberg)



It is in the nature of mining investment to endure barren years for brief periods of spectacular reward: long winters and short summers, to use the CoM's (2014) favoured aphorism. The 2000-2008 period was a particularly long, hot summer for the platinum industry, though, and it took place in a changed context of intensified demands for shareholder value delivery. Convinced that this was something more enduring than a normal cycle, management committed itself to some large cash distributions to shareholders (dividends and share-buybacks), and ambitious plans to expand future output.

3.2

It is common in mining for optimistic splurges of capital expenditure (henceforth 'capex' - expenditure on fixed assets) to follow high prices. As PGM prices took off in the late-1990s there was, in the words of one analyst a "scramble for expansion" (HSBC, 1999: 11). Meeting increased demand was strategically important not simply to maximise income, but to prevent undersupply which would encourage PGM buyers to seek alternatives. The big three undertook huge increases in capex. Amplats' went from real average annual capex of R2bn in the 1990s to an R11bn average in the 2000s, Implats from R1bn to R4.5.[26] Much of this was targeted at expansion. Amplats upped project capital commitments five-fold between 2000 and 2003, and tenfold between 2000 and 2008 to over R20bn in today's money.[27] Implats 1997-2007 aside, output did not generally follow in step, as companies over-promised and under-delivered.

There has been repeated lowering of output targets as the reality of new market conditions has sunk in, and more recently drastic capex cuts to preserve cash. The broader disconnect between capex and output growth reflects the increased capital intensity of the industry - the increased amounts of capex required to sustain and expand operations. This is due to factors discussed in the previous section: increasing age, depth and (often unanticipated) geological complexity in the Rustenburg region, added costs associated with safer and more mechanised production, requirements for new supporting infrastructure on the eastern and northern limb frontiers of the industry, and generalised input cost inflation (Amplats, 2012: 8; RBC, 2011: 13-14; Davis & Bruwer: 17). Research for the World Platinum Investment Council found industry-aggregate capex per ounce produced, in real terms, rose from around R1,000 in the 1990s to over R4,000 (VenmynDeloitte, 2015). Similarly, Credit Suisse (2007: 35) estimated capex required to maintain industry steady-state production increased 300% between 2001 and 2006. This is significant because even with many expansion projects suspended in response to the current slump, the industry requires considerable maintenance and

replacement capex - excessive cuts or delays in these simply stores up future trouble, as Implats and Lonmin experienced (RBC, 2011: 8; Shepherd, Cooke, & Tiwari 2011: 5-10; ThomsonReuters, 2013b: 5; Lonmin, 2012: 11).

The alternative way to achieve growth is to purchase the assets of other mining companies. This proved, generally, even less successful, as companies bought projects with questionable prospects near the top of the cycle when purchase prices were highest. As Lonmin (2005: 8) sought to "identify and capture high quality resources" in pursuit of its growth targets, it paid $192m (R1.2bn) in 2005 for the Canadian-listed junior Southern Era Platinum. Its major asset was the eastern limb Messina mine - mothballed by Impala as unprofitable in the early 1990s before being sold to Southern for $10m in 1999 (Lonmin, 2005: 2; Shepherd, *et al*, 2005: 4-5). It fared little better in Lonmin's hands and was mothballed in 2009 - the company is currently seeking a sale (Lonmin, 2009: 6). This was followed by the $413m acquisition of another Canadian junior, AfriOre, and its undeveloped Akanani northern limb exploration project. Bringing it to production would cost an estimated $700m extra (Lonmin, 2007: 7-10 & 77). Initially targeted to enter production in 2013/14 and double Lonmin's platinum output to 2moz/pa platinum, it remains undeveloped today, and the value of the asset was written down by $602m in 2012 (Lonmin, 2012: 128).

Implats had similarly used acquisitions to grow, with mixed results. From 2001-2003, it acquired control of Zimplats, gaining a large, shallow resource base on the Zimbabwean great dyke which it then developed into a highly-mechanised mine with low labour costs, that is now the largest in the country. However, continuing political risk, in particular uncertainties around indigenisation legislation[28] and control of the resource base, has hampered investment. Less ambiguous in its merits was the R4.2bn (~$590m) 2007 acquisition of 74% of Afplats, whose major asset was the undeveloped Leeuwkop project (Implats, 2007: 25). The company had stated its aim was to "deliver superior returns to shareholders by focusing on growth" (Implats, 2007: 12), and first production from Leeuwkop was originally due in 2010. However, with a further ~R3bn required to bring the project into production, it remains undeveloped today, with a R1bn impairment charged in 2014 (Implats, 2007: 8; 2014: 50).

Larger in size than last year's shareholder bailouts - $297m at Implats, $407m at Lomin (Monteiro, 2015; Kumwenda-Mtambo, 2015). Even without such acquisitions, Amplats was committing to "numerous growth projects" requiring "vast sums of capital expenditure" (Davis & Bruwer, 2008: 8). The confidence to do so rested on the belief that this was no ordinary mining cycle, but instead a 'supercycle', meaning that commodity prices in general would remain "stronger for longer", driven by rapid industrialisation and urbanisation in emerging markets, particularly China (Humphreys, 2015: 38-139). This narrative was particularly appealing for PGMs, since in addition there was the upwards trajectory of demand from the auto-industry. Platinum consumption per-vehicle in Western Europe more than trebled from 0.04oz/vehicle in 2000 to 0.14oz/vehicle in 2009. This was driven by increased purchases of diesel vehicles - up from 20% of sales in the late-1990s to over 50% in 2008 - which use more platinum in their catalytic converters. Consumption remained just 0.02oz/vehicle for the rest of the world in 2008, but this was expected to change with widespread introduction of clean air legislation. As Mills put it when explaining the rationale for the aforementioned Akanani acquisition:

> *In all, ladies and gentlemen, the signals indicate that platinum will continue to perform very well for the future ... Platinum has some of the best economic fundamentals in the natural resource universe. Current demand is firmly underpinned by clean air legislation in both the U.S. and the EU, and we see strong, long-term demand underpinned by the global growth of the middle-class, which translates into demand for platinum related products ... Lonmin is uniquely positioned in this sector. We have a clear strategy of capturing and building growth* (Thomson, 2006b: 9)

The supercycle terminology originated from an investment bank analyst, but was recirculated by journalists and mining company executives (Humphreys, 2015). In a loosely similar fashion to the banking industry's contemporaneous line on securitisation eliminating risk, it assuaged doubts and helped talk up the industry's future prospects to the investor community. Given this prevailing wisdom, failure to demonstrate commitment to future growth with a suitable pipeline of projects was interpreted negatively as conservativism. Up to May 2008, as platinum prices reached their peak, Lonmin management was stating PGM price increases were

"likely to continue for some time" (Thomson, 2008a). Amplats similarly said that despite "signs of a slowdown" in the world economy, the "unique properties" of PGMs would continue to underpin the price (Amplats, 2007: 6).

With revenues falling and costs continuing to rise after 2009, heavy capex requirements began to bite. Companies went from enjoying strong, often spectacular, free cash flow pre-2008, to mostly negative cash flow after capital expenditure from 2009. This has necessitated seeking cash from elsewhere, and the post-2009 period has seen increases in indebtedness and bailouts from shareholders. Lonmin has been by far the worst placed. Leveraging more during the boom, it has undertaken several share sales since 2009 to try and shore up its balance sheet. Implats earlier in the decade prided itself on financing capex from cash flows rather than leveraging - in doing so facing criticisms over its 'lazy' balance sheet (too much cash and thus a lower ROE) (Saunders, 2002: 8). But by 2013 it too had been forced into a net debt position having issued $500m in convertible bonds, and in 2015 raised R4bn (~$300m) in a rights offer. Amplats receives the bulk of its credit from Anglo American, and benefits from its parent's ability to underwrite its share offers, of which it has only undertaken one since the crisis (Hatch & Kilalea, 2015; Engelbrecht & Hart, 2014). Nonetheless, in their different ways all have struggled with a similar problem: an exuberant pursuit of growth, and a subsequent struggle to balance the rationing of capex to preserve cash with the future viability of the business.

3.3

Alongside this, an additional distributive pressure arose from demands to fulfil commitments to shareholder value generation and release funds accumulated during the boom with dividend payments and share-buybacks. Tables 4, 5 and 6 show the relative distribution of cash (aside from purchases of goods and services) leaving the companies, split between the key end destinations of full-time employees, capital expenditure, taxation, interest payments, royalties, dividends and share buybacks, and reported community/education/social expenditure. This longer time series is important, because while shareholders have had a torrid time recently, this was not the case previously. As the tables show, in many years of the boom period, cash distributions to shareholders exceeded the amounts paid to full time employees or on capital expenditure, and well surpassed payments for taxes, royalties and corporate social responsibility. Given the cyclicality of the mining industry, cyclicality in distributions to shareholders is a reality. Rewards to shareholders in good times, should, hypothetically, make it easier to raise cash from them in bad. But the sheer size of these raises questions.

For example, when Amplats paid out R13.8bn in dividends in 2008 and R12.3bn in 2007, this represented about one third of cash expenditure on the categories listed above, as compared to 20%-25% spent on full-time employees. To provide some context, the North West provincial government budget payments in 2007/08 totalled R15.6bn (National Treasury, 2008: 7). It also represents, in real terms, roughly 10 times what the company has reported for community, education and social expenditure for the 16 years 1999-2014 (the longest for which reported figures are available) and more than 8 times the value of royalties paid in the 18 years 1997-2014. The company had lowered its dividend cover ratio (net profit divided by dividends) to near one, a 'full distribution' policy meaning all net profits would be paid out. Figures are similar at the other two, with dividends and share buy-backs accounting for around a quarter (26% at Amplats, 28% at Implats, 22% at Lonmin) of cash distribution during the 2000-2008 period.

At the end of the 2007/08 financial year, Implats found itself flush with cash: over R10bn on the balance sheet, with just R1.5bn debt, meaning a net cash position (more cash than debt) of R8.5bn. This was followed by R8.5bn of dividend payments during the 2008/09 financial year, which pushed the company to a much narrower R1.3bn net cash position. In 2012, this had tipped into a net debt position of R2.3bn, - the same year the company had paid out a R3.3bn dividend. Similarly, with Amplats the R13.8bn in dividends in 2006/07 and R12.3bn in 2007/08 went alongside a deterioration in the company's financial position from net cash of R4.9bn at the end of 2006, to net debt of R19bn at the end of 2009, as it raised debt of R7.6bn, R8.1bn and R7bn in subsequent years. As analysts at JP Morgan (2010: 8) noted after the company subsequently turned to shareholders for a R12.5bn equity raising in 2010, "[b]orrowing to pay dividends in a cyclical single commodity miner has never been the smart thing to do." The large pay-outs left the companies with weaker balance sheets than might otherwise have been the case.

Table 4: Anglo American Platinum cash distribution, 1997-2014 (Source: company annual reports and accounts)

	Employees %	Capital Expenditure %	Tax %	Interest %	Royalties %	Dividends & Share buybacks %	Community, education & social %
1997	64.9	24.6	6.0	2.2	0.2	2.0	NA
1998	48.3	34.5	4.2	0.7	0.5	11.7	NA
1999	47.5	27.4	4.5	0.4	1.1	18.9	0.3
2000	35.0	22.6	11.4	0.1	1.5	29.0	0.4
2001	20.5	20.8	15.0	0.1	0.8	42.3	0.4
2002	21.3	30.8	17.0	0.2	0.2	30.3	0.3
2003	29.4	43.7	8.7	1.6	0.1	16.1	0.3
2004	44.6	35.3	3.1	2.2	1.4	12.7	0.7
2005	44.6	32.5	4.1	2.0	1.2	15.1	0.5
2006	34.7	32.4	6.3	0.8	1.1	24.1	0.6
2007	21.4	27.5	17.6	1.0	0.5	31.7	0.3
2008	24.7	35.5	4.4	0.8	0.2	34.0	0.3
2009	44.9	50.1	1.8	1.9	0.2	0.0	1.1
2010	53.6	39.5	4.5	1.1	0.6	0.0	0.7
2011	49.4	30.7	3.1	0.8	1.8	12.7	1.5
2012	58.9	32.1	2.7	0.9	1.3	2.4	1.7
2013	63.1	26.4	2.8	2.2	2.9	0.0	2.5
2014	56.7	27.1	10.8	2.0	1.5	0.0	2.0
Average	42.4	31.9	7.1	1.2	1.0	15.7	0.8
Average 2000-2008	30.7	31.2	9.7	1.0	0.8	26.1	0.4
Average 2009-2014	54.4	34.3	4.3	1.5	1.4	3.5	1.6

The rhetoric of the companies over the boom period relays the importance of commitments to shareholder value delivery in a context of heightened capital market competition. At RPM, previous booms had been treated as opportunities to build counter-cyclical buffers. For example, in 1987, after two successive years of record profit, RPM management stated that "the policy was deliberately continued of strengthening the Group's financial position in order to be better able to withstand a deterioration in market conditions" (RPM, 1987: 4). Similarly, in 1994 it stressed its focus on "building cash reserves during the good times" (RPM, 1994: 5). Such a policy seemed, subsequently, to be viewed as overly conservative as Amplats did the opposite in the 2006-2008 boom, running down cash and taking on debt. Its 350% increase in dividends per share to 2006 was interpreted by UBS (2007: 5) as "likely to be an attempt to get balance sheet gearing as they [management] indicated they are more confident in the duration of this cycle and are happy to have debt".

This aligned with the strategic direction of Amplats' parent company, which had built its stake in Amplats from 50% in 2000 to 80% in 2008. By then, Amplats was generating a quarter of group earnings before interest, taxation, depreciation and amortisation (EBITDA) (a common measure of operating profitability) from a fifth of group revenues, up from around a tenth a few years prior. The major dividend distributions in the latter phase of the boom have to be seen in the context of Anglo's strategic priorities in its competitive struggle against other global diversified miners in London. Apparently stung by criticisms in the early 2000s that it was overly conservative (low gearing - use of debt - and low exposure to growth commodities), and with its performance lagging behind its major diversified competitors Rio Tinto and BHP Billiton, it took on a more aggressive, market-pleasing strategy (Credit Suisse, 2006; JP Morgan, 2007). It disposed of its paper manufacturer, Mondi, which gave stable but low returns, and sought exposure to the supercycle with large, debt-

Table 5: Impala Platinum Holdings cash distribution, 1993-2015 (Source: company annual reports and accounts)

	Employees %	Capital Expenditure %	Tax %	Interest %	Royalties %	Dividends & Share buybacks %	Community, education & social %
1993	68.6	10.4	7.8	5.9	1.1	6.2	NA
1994	69.0	14.1	5.6	4.0	1.0	6.1	NA
1995	63.8	17.1	7.3	3.0	1.7	7.1	NA
1996	67.0	18.6	7.3	2.6	0.8	3.7	NA
1997	74.5	16.0	2.7	2.4	0.3	4.0	NA
1998	68.9	11.9	2.6	1.4	4.5	10.7	NA
1999	47.9	14.4	9.4	1.1	7.9	19.3	NA
2000	34.0	17.3	13.5	0.5	9.0	25.8	NA
2001	17.5	21.0	13.5	0.1	9.0	38.9	NA
2002	23.6	15.6	21.7	0.2	10.1	28.9	NA
2003	25.4	20.3	20.7	0.2	6.8	26.5	NA
2004	32.6	24.4	16.7	0.8	5.5	19.8	NA
2005	33.8	24.6	11.4	0.5	5.1	24.6	NA
2006	23.7	16.9	11.6	0.3	6.4	41.0	NA
2007	27.7	19.5	19.8	0.3	11.5	21.0	NA
2008	22.9	24.3	22.6	0.4	1.4	28.1	NA
2009	18.4	29.1	11.9	0.5	0.5	35.5	4.1
2010	40.2	30.2	10.9	0.3	1.7	12.5	4.2
2011	38.0	31.3	10.2	1.0	3.1	14.2	2.3
2012	33.0	38.9	6.8	0.7	2.3	16.0	2.5
2013	46.4	36.3	5.7	0.8	2.7	3.3	4.8
2014	51.4	30.8	4.8	2.7	3.9	2.5	3.8
2015	63.1	28.1	2.5	2.1	1.5	0.0	2.7
Average	43.1	22.2	10.7	1.4	4.2	17.2	NA
Average 2000-2008	26.8	20.4	16.8	0.4	7.2	28.3	NA
Average 2009-2015	41.5	32.1	7.5	1.2	2.2	12.0	3.5

Employee costs exclude capital employees

financed acquisitions, in particular to the major industrial commodities like iron-ore and copper required by China (Anglo American, 2005: 3; 2004: 3; 2007: 7; Investec, 2006).

The second element was a policy of increased distributions to shareholders, resulting in $10bn of share buybacks over 2006-2007. Dividends per share were increased nearly 250% between 2002 and 2006. This was described by Deutsche Bank (2006: 1) as "setting the bar higher for industry as a whole", "leading the way on shareholder returns" by Credit Suisse (2006), and "astonishing" by Morgan Stanley (2006). For a brief time during 2006-07, Anglo's shares out performed Rio and BHP. In February 2008, CEO Cynthia Carrol announced a bold 40% gearing target to be achieved through increased dividends and share buybacks - plans suspended with the subsequent onset of the global financial crisis (Thomson, 2008c). Amplats' increasingly aggressive distributions in this period should therefore be viewed as a part of the platinum sector's wider contribution to a much larger competitive struggle between the world's major mining conglomerates on the London capital markets.

Implats in the early 2000s stressed its commitment to a "mission" of shareholder value delivery, and "returning the benefits of any excess cash to shareholders" (Implats,

Table 6: Lonmin PLC cash distribution, 2000-2015 (Source: company annual reports and accounts)

	Employees %	Capital Expenditure %	Tax %	Interest %	Royalties %	Dividends & Share buybacks %	Community, education & social %
2000	42.0	24.1	4.6	5.5	0.0	23.9	NA
2001	28.9	22.6	21.4	1.8	0.0	25.3	NA
2002	11.8	14.5	17.2	0.4	0.0	56.1	NA
2003	37.9	29.9	10.5	1.8	0.0	18.7	1.1
2004	43.0	28.3	10.2	2.0	0.0	15.5	1.1
2005	43.0	28.5	10.7	3.1	0.0	13.8	0.9
2006	43.3	19.4	19.7	3.4	0.6	13.2	0.3
2007	39.1	21.9	21.2	3.3	0.6	13.6	0.3
2008	39.9	27.1	16.4	1.6	1.0	13.4	0.5
2009	60.9	28.4	5.8	4.1	0.0	0.0	0.8
2010	66.1	26.8	1.2	4.4	0.6	0.0	0.9
2011	60.7	31.3	1.2	3.0	0.9	2.3	0.7
2012	60.3	32.6	0.8	2.5	0.6	2.5	0.8
2013	77.9	16.7	0.4	3.6	0.6	0.0	0.8
2014	80.6	13.3	0.0	4.5	0.7	0.0	0.9
2015	79.9	15.1	0.3	3.0	1.0	0.0	0.8
Average	50.9	23.8	8.9	3.0	0.4	12.4	NA
Average 2000-2008	36.5	24.0	14.7	2.5	0.3	21.5	NA
Average 2009-2014	69.5	23.4	1.4	3.6	0.6	0.7	0.8

2001: 7; 2004: 7-14). It was encouraged to make good on this by analysts, who viewed cash reserves as well in excess of needs and generative of a "lazy" balance sheet. Increased distributions to return excess cash to shareholders, including with a special dividend in 2006, alongside a commitment to higher gearing, were welcomed. Pledging to ensure shareholders were "well rewarded", it lowered dividend cover to make way for higher distributions (Implats AR 2008, 16-20). Unlike most of the rest of the global mining industry, though, Impala continued paying dividends through to 2012. But by 2013 it too tipped into a net debt position, "an ominous first for a company that has prided itself on balance sheet robustness and has in the past issued what now appear to be overly generous dividends", as one analyst remarked (Dinham, 2013: 1).

Lonmin's largest distributions came earlier in the decade. During its restructuring in 2001-02, it returned $143m (R1.5bn) to shareholders via share buybacks, and $360m (R3.9bn) in a capital return. This again related to capital market pressures. With EBITDA margins above 60% and $207m received from Glencore for the acquisition of Duiker coal, there was pressure to distribute what was now a large amount of excess cash on its balance sheet (Major & Syropoulo, 2001a: 2). The company subsequently "far exceeded market hopes", as one group of analyst put it:

> *For those seeking signs of a changed mindset in the management of the so-called "heavy industries" after years of boom and bust, and value destruction through over-investment in new capacity, the move by Lonmin to return capital to shareholders and gear up to e20% [estimated] to improve returns on capital is a very encouraging development indeed* (Perrott-Humphrey, *et al*, 2001: 2).

The move to fund more of the capital expenditure programme through debt rather than from existing cash flows would, management said, in turn lower the cost of capital (Lonmin, 2002: 3). Thus while Lonmin's distributions to shareholders were proportionally smaller than at Implats and Amplats, the companies' drive to distribute cash and lever the balance sheet also left it in a more precarious position than might otherwise have been the case.

None of the above is to condemn companies for inability to predict the future, since at the time there was widespread belief that the platinum boom would continue, but it is necessary to understand the context for behaviours of the period that subsequently appear risky: in this case, pressures to deliver shareholder value in a period of intense capital market competition and optimistic narratives about the future.

3.4

Shareholders in a company, especially in a risky industry like platinum mining, expect to be rewarded during periods of high profitability. In return for this, they should provide capital for the business to grow, and discipline and accountability for management. Whether these roles were fulfilled in this case is a complicated matter.

The big three have sought financial support from shareholders on several occasions in recent years; Amplats in 2010 with a 12.5bn rights offer (the offer for sale of new shares to existing shareholders, proportional to their stake), Implats with a R4bn rights offer in 2015, and Lonmin on several occasions since 2009. However, during the decades prior to this, there was no significant raising of equity capital besides R4.4bn in 2004 by Amplats to pay down debt. For Amplats and Implats, when looked at from the perspective of the idealised long-term shareholder, a lot more cash has gone out than in (Figure 22). At Lonmin the two figures are on a par as a result of the repeated bailouts in recent years.

As the economist John Kay (2012, 28) notes, "[e]quity markets today should primarily be seen as a means of getting money out of companies rather than a means of putting it in". The remaining role for shareholders Kay says, is "promoting stewardship and good corporate governance" through long-term engagement with management (*Ibid*). The picture in platinum is again complicated though, because many of the shareholders present during boom have subsequently departed. Between 2007 and 2016, 40%-50% of the Top 50 shareholders in the big three fully exited their investment. A lesser proportion have maintained or increased their shareholding in the company.

Figure 22: Proceeds from share issuance against dividends and share buybacks paid (2015 prices) (Source: company annual reports and accounts)

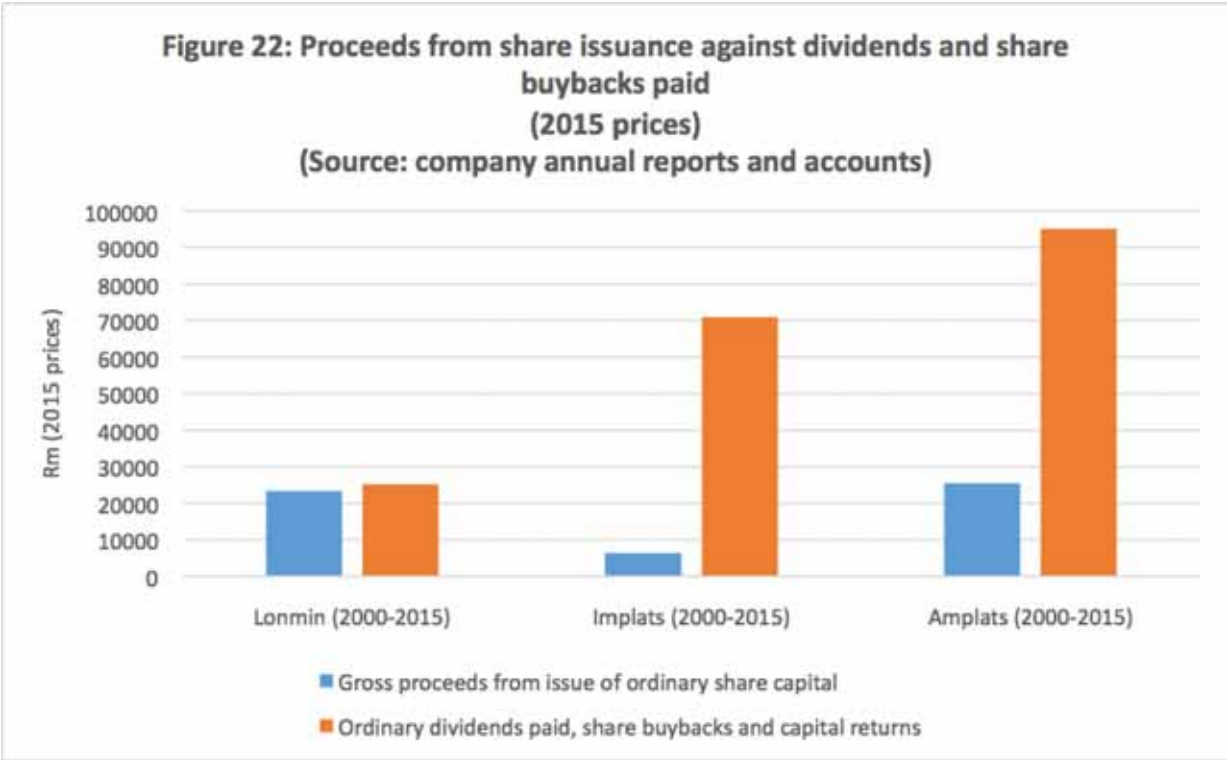


Table 7: Amplats, Implats and Lonmin changes in top 50 shareholders 2007-2016 (Q12007 - Q1 2016) (Sources: Bloomberg)

	Amplats (Q42007 - Q1 2016)	Implats (Q1 2007 - Q1 2016)	Lonmin (Q1 2007 - Q1 2016)
Top 50 fully exiting investment	22	19	26
Top 50 maintaning/increasing investment	11	15	20

Alongside this there has been a shift in the geographical composition of the shareholder base. Many of the major European and North American investors that had crowded into the sector for the boom have left and South African investors have become increasingly important. South African investors only made up half of the Implats shareholder base in 2007, but this has since increased to two thirds.[29] For Lonmin, South African shareholders have risen from just 6% in 2010, to just under 40% in 2016.[30] In summary, while shareholder value acted as a significant new distributional pressure on the platinum sector during the boom, many of these shareholders were simply purchasing a short-term claim on income to be traded in the secondary market. While shareholder returns have been low over recent years, this context of heightened pressure from increasingly mobile investors remains important in understanding the evolution of the industry.

Four

Reflections

The South African platinum industry is currently pinched between the three distributional pressures discussed in the preceding sections, and ill-equipped to satisfy any of them. A return to the profitability achieved in the past boom seems very unlikely in the coming years. UBS estimated recently that for Implats to achieve its historic average rate of return on equity of 33% in the future with its higher cost base, a platinum price of above $3000/oz would be required (Slutzkin, 2013: 11). At present, the price lies around $1000 and the current outlook is generally for modest increases in prices in the coming years with demand for platinum either flat or rising slowly (Jollie, 2016). The difficulty now is for the industry to generate market-pleasing returns - in the region of 15% return on capital employed, Lonmin and Amplats management have said - from a changed cost base and, potentially, increased legislative pressures from government around ownership transformation and wage pressures from organised labour.

Expectations for the future of the industry are therefore set on areas where mines are newer, shallower and hence more amenable to mechanisation. Credit Suisse (2012: 9) estimated the average depth of mines on the western limb in 2012 to be 800m, compared to 400m on the eastern limb, and less than 300m in Zimbabwe. Older, deeper, labour intensive mines face a struggle. This has serious social implications since these mines are where the industry generates mass employment. Lonmin's Marikana complex, Implats' Impala complex and Amplats' Rustenburg complex are all struggling, but provided around 100,000 full time jobs (not including contractors) in 2014. Amplats (2014: 37) is seeking to "transition to a lower-cost, more focused quality portfolio" attempting to grow "higher margin and low-cost operations such as Mogalakwena", its enormous northern limb opencast mine. It is attempting to sell its Rustenburg complex, the historic centre of the industry, to Sibanye Gold. The Rustenburg operation was by no means irredeemable - it would have been impossible to sell if so. As analysts have noted, Amplats would likely remain profitable with Rustenburg in the mix, but less so than would otherwise be the case (Froneman & Fitzpatrick, 2015; UBS, 2012a). It also removes roughly 50% of the workforce - and the most rebellious element at that - while only losing 20% of metal produced (Hatch & Kilalea, 2015: 1). Mogalakwena meanwhile generates profits even in the current environment. Unaffected by recent labour conflict due to the different composition of the workforce, it kept running throughout the 2012 and 2014 strikes and has contributed the bulk of the company's operating profits.

However, if Amplats has a clear direction of travel between the industry's past and future, this is less so with Implats and Lonmin. Notwithstanding smaller mines on the eastern limb and Zimbabwe, the former still depends on its Rustenburg Impala mine. Lonmin meanwhile is stuck with high-cost, Marikana operation, without the cash to develop Akanani. By late 2015, Lonmin's market trading value was less than a tenth of the estimated replacement value of its assets (approximately $2bn) (Chigumira, Slutzkin, & Allsop, 2015: 8). For these companies, Amplats' older western limb operations, and Sibanye as it takes over Rustenburg, eking out lower production costs and increased labour productivity will surely be challenging.

Smaller competitors are hoping to capitalise, with shallower, mechanised operations. The promise is not simply profitability through the mining cycle due to radically lower operating costs, but an end to labour conflict and the social problems associated with the conventional model. The chief executive of the Canada-listed Ivanhoe Mines, which is moving towards a 2020 date for the start of production on its massive Platreef project adjacent to Amplats' Mogalakwena mine, said in a recent speech:

> *Everyone working [at the Platreef mine] will be in an air-conditioned cab and there will be no exploitation of human labour. It's the kind of mine operation where there will be no fatalities or injuries. The men and women who work here will be very well paid professionals who will lift nothing heavier than a pencil* (Cloete, 2016).

The realities may turn out messier than envisaged - or at least, solving one problem may create another. As some academics have argued, mining may almost inevitably generate social conflict (Bebbington *et al*, 2008; Bebbington, 2011). Compared to other businesses of similar financial heft, mining concentrates its activity around small points of extraction, around which there is a large ecological and social footprint. Notwithstanding its multiple ills, the labour-intensive business model of platinum mining provided mass employment, with huge labour requirements locking mines and adjacent communities in a complex interdependency. With the mechanised model exemplified by Mogalakwena, this changes. The intensity and disruptiveness of recent protests around the mine seems to attest that the model is capable of generating new forms of discontent and distributive pressure: mass employment opportunities are harder to provide while the localised socio-ecological impacts of mining become even greater in these more spatially expansive open-cast operations. This is catalysed by the fact that the most promising future deposits underlie rural areas in former homelands where local populations are often highly concentrated around mineral deposits and economic conditions have remained dismal. Redistributive pressures therefore seem increasingly likely in future to centre around these communities, and entitlements to incomes and other economic benefits derived from the complex community ownership, procurement and employment schemes mining companies now implement. For mining companies these can help stabilise the local operating environment and meet Mining Charter requirements. The problem then, as recent community disputes across the rural platinum belt suggest, revolves around defining who this community includes and excludes, and who acts on its behalf. These questions are taken up by other working papers from the MARTISA project.

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End Notes

1 Source: Johnson Matthey data; DMR data; author's calculations.

2 DMR Data.

3 Bloomberg data; author's calculations.

4 The industry had boomed in the mid-1980s, and, as on previous and subsequent occasions, rising prices emboldened prospective entrants. Among the new projects, Barplats was owned by Rand Mines, Messina was controlled by Sanlam and Northam controlled by Gold Fields, in which Anglo American owned a 25% stake at the time. Lefcochrysos had listed as an independent platinum mining project in 1987 but hit financial difficulties and was taken over by Impala. Impala would also acquire Barplats in the early 1990s and Anglo American took control of Northam (Edwards & Silk, 1987).

5 In the Charter's wording this "[R]efers to any person, category of persons or community, disadvantaged by unfair discrimination before the Constitution of the Republic of South Africa, 1993 (Act No. 200 of 1993) came into operation", including white women (DME, 2004; 9).

6 In addition, in 2004 Amplats sold a 51% in its Lebowa (now Bokoni) mine and adjacent undeveloped projects to Anooraq resources (now Atlatsa, a majority black-owned company); In 2005, it sold its rights on the Elandsfontein property to Eland platinum mines, in which the Ngazana consortium held a 26% stake; A royalty to equity conversion with the Bakgatla-Ba-Kgafela traditional authority resulted in a 15% stake in the union mine alongside adjacent undeveloped projects; in 2008, it sold Mvela its remaining 22.4% interest in Northam and a 50% stake in the Booysendal project, and established an ESOP, the Kotula Trust, with a 1.5% stake at holding company level; in 2011, Project Alchemy resulted in 2.3% of holding company shares been sold to mining communities and held in a trust (Amplats, 2014b: 84). Implats' main BEE partners were the Bafokeng, however, were the major empowerment partners with a 2007 royalty to equity conversion making the tribe the largest shareholder in the company with a 13% stake at holding company level. Its Two Rivers mine is 51% owned by Motsepe's African Rainbow Minerals; 27% of the Marula mine's share capital is held in equal 9% stakes by Mmakau Mining, founded and owned by Motsepe's sister Bridgette Radebe, wife of ANC minister Jeff Radebe, alongside Tubatse Platinum and the Marula Community Trust; finally, an employee share ownership programme established in 2014 holds 4% of the Impala subsidiary's share capital. Lonmin's main BEE deal was the creation of Incwala Resources, a majority black-owned company with an 18% stake in the two main operating companies, Westplats and Eastplats. This was later taken over with a debt-financed purchase by now-Deputy President Cyril Ramaphosa's Shanduka Resources. Besides this, the company executed a royalty to equity conversion deal in 2014 translating into a 2.24% equity participation at holding company level, an Employee Profit Share Scheme translating to 3.8% equity accreditation, and two community share ownership trusts holding 0.9% of Lonplats shares respectively (Lonmin, 2015; 56).

7 The 12 miners were in alphabetical order, African Rainbow Minerals; Anglo American Platinum; Aquarius Platinum; Atlatsa Resources; Eastern Platinum; GlencoreXstrata; Impala Platinum; Lonmin; Northam Platinum; Royal Bafokeng Platinum; Sylvania Platinum; Tharisa Minerals. The four companies with significant mines under development were Platinum Group Metals; Ivanplats; Sedibelo Platinum and Wesizwe Platinum. Companies carrying out exploration projects in pursuit of new production include Jubilee Platinum, and Nkwe Platinum.

8 The Royalty, introduced in 2010, attempts to blend the benefits of a fixed levy on output with a variable levy on profits. A minimum 0.5% payment on gross sales provides a floor, while depending on profitability companies pay up to a 5% ceiling for refined minerals and 7% for unrefined minerals (Republic of South Africa, 2008).

9 This meant BEE transactions with more "clearly identifiable beneficiaries", that financing structures should ensure cash flows reach BEE beneficiaries, and full shareholder rights for BEE participants (see DMR, 2010; iv-v).

10 The DMR found that while 90% of companies in the review's weighted sample had achieved 26% HDSA ownership, only 20% was 'meaningful' under the terms of the 2010 Charter, and 37% of right holders had provided no economic value to HDSA owners. Gqubule argues this was "a glorified industry self-assessment" since the government's consultants had no independent means of verifying material provided by companies (Gqubule, 2016: 14-15).

11 These include, among others, Wesizwe Platinum's Bakubung project, Ivanhoe Mines' Platreef project, RBPlats' Styldrift project, and Northam's Booysendal expansion.

12 Author's calculations from Department of Labour EEA2 documents and company sustainable development reports.

13 Part of a strategy to focus on using fewer but more productive full time employees (Amplats, 2006: 33; Amplats, 2008: 17).

14 Author's calculations from DMR data.

15 Data from CoM, DMR.

16 Interview with Johan Theron.

17 Interview Stephen Bullock.

18 Author's calculations with Eskom tariff data.

19 Author's calculations from company data.

20 Author's calculations from company data.

21 Shareholder value meaning management focus on actions which increase the wealth of the company's owners, involving appreciation of share prices (allowing shareholders to make capital gains from selling the shares), or distribution to shareholders in the form of dividends or share buybacks.

22 The measure is only indicative of a trend and do not reflect the behaviour of all investors, as averages can be distorted by a small numbers of highly speculative traders.

23 Author's calculations based on company data on share capital in issue, and Bloomberg data on trading volume.

24 Author's calculation using Bloomberg data.

25 Author's calculation using Bloomberg data and company accounts.

26 Author's calculation using company accounts.

27 Author's calculation using company accounts.

28 Requiring foreign companies to transfer majority ownership to black Zimbabweans.

29 Company data supplied to author.

30 Author's calculations with Bloomberg data.

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