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Working Paper 1

The Mining Sector in Zimbabwe and its Potential Contribution to Recovery

TONY HAWKINS

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Preface

In the course of 2007 and 2008, a group of Zimbabwean economists were brought together by the UNDP office in Harare and given an opportunity to reflect on the causes underlying the economic regression that had taken place in recent years, and on that basis to design a menu of policy recommendations that were seen as necessary if the regression was to be reversed, and the country was to be placed on a path of sustainable growth and poverty reduction. In the last quarter of 2008, the final report of this initiative the *Comprehensive Economic Recovery in Zimbabwe – A discussion document* was launched.

The first in the UNDP working paper series is on the mining sector in Zimbabwe, and the possible contribution of that sector to sustainable recovery. It draws on some analytical work carried out during the production of the *Comprehensive Economic Recovery in Zimbabwe – A discussion document*, but which for reasons of space it was not possible to include in the aforementioned report. As the working paper makes clear, the potential of mining to contribute to the country's recovery is substantial, subject to the appropriate policy frameworks being in place. The paper highlights the potential dangers that are attendant on an economy in which the contribution of mining to both GDP and exports is so significant, while at the same time rehearsing a menu of policy measures, drawn from international case studies, that would help to mitigate these risks.

As was the case with the *Comprehensive Economic Recovery in Zimbabwe* report of 2008, the UNDP office in Zimbabwe, through this working paper series, hopes to be able to provide both domestic and external decision-makers with additional insights in regards to problems facing a range of sectors, and thereby continue to contribute to an informed national debate on the various alternative recovery paths available to Zimbabwe. UNDP is grateful for the support received from the Embassy of Norway which has made this working paper series possible.

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Executive Summary

Mining could become the lead growth sector in a post-crisis economy, though this will depend on global commodity market conditions as well as on the macroeconomic, fiscal and industry governance strategies pursued by the authorities. By global standards, Zimbabwe is not a mineral-rich economy, but it does possess resources, especially of platinum, gold, diamonds, methane gas, asbestos, nickel, coal and chromite, sufficient to generate export earnings in the region of US$2 billion annually over the medium term and upwards of $5 billion a year within 15 years, thereby ensuring that mining remains comfortably the country's largest exporter.

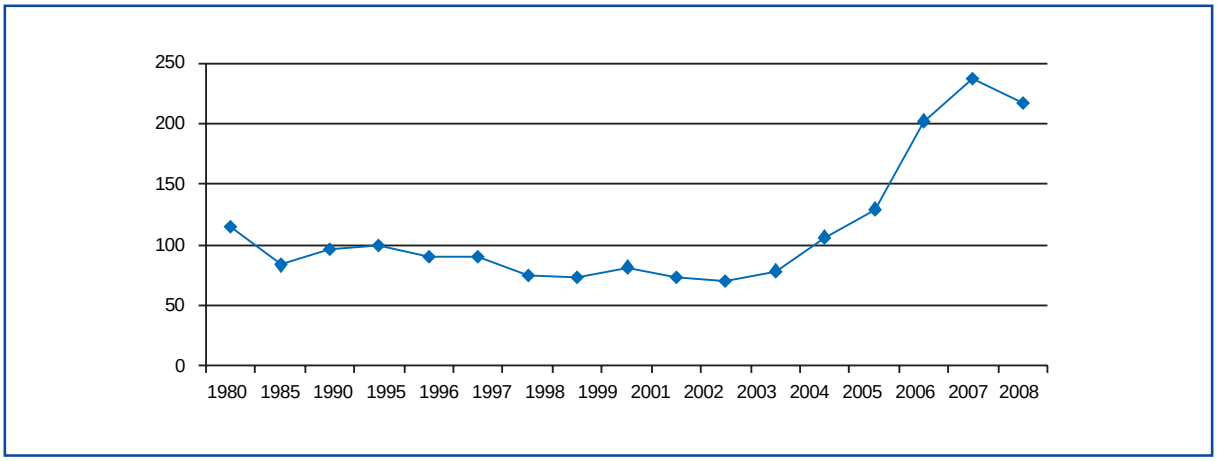
But because mining accounts for less than 5 percent of GDP and formal sector employment the sector's main contribution to growth and poverty reduction is likely to be indirect – in the form of gross capital formation via the construction industry during a post-crisis expansion period and over the long-term through its contributions to tax revenues and, most importantly, to foreign currency earnings as output levels increase. High – and increasing – levels of capital intensity, especially for major projects, mean that it will not make a significant *direct* contribution to employment growth.

For a quarter of a century, until the commodity price boom of 2002 to 2008, mining operations around the world destroyed rather than created value with the rate of return in base metal mining falling slightly below the yield on US government bonds. In other words, with the industry failing to cover the opportunity cost of capital, mining globally was not sustainable.

However, between 2002 and 2008, two developments changed the face of the industry. Metal prices doubled during the protracted commodity price boom (Figure 1) thereby reviving the industry's fortunes while, partly reflecting mining's renewed vigour, resource nationalism resurfaced leading governments, especially in low and middle income economies, to raise mining taxes and demand state participation in the ownership and development of mining properties.

Yet ironically, Zimbabwe's mining industry experienced the worst of all worlds in the sense that, with production volumes falling steeply, it failed to exploit the commodities boom. Simultaneously however, the government embraced resource nationalism, demanding majority 'indigenous' ownership of all mining ventures, including a 25 percent 'free carry' stake for the state. The combination of a deteriorating

Figure 1: Mineral and metal price index (US$ prices 1995=100)



Source: International Monetary Fund Database

macroeconomic situation, the exodus of skills, infrastructural bottlenecks and policy unpredictability and uncertainty, ensured that investment in exploration and development has been minimal.

It is against this background that in a post-crisis situation Zimbabwe will have to craft a delicately-balanced policy environment that fosters investment, domestic and especially foreign, while ensuring that 'mineral rents[1]' are not only captured but invested efficiently by the state.

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[1] Mineral rents are defined as 'the value of the product less all the direct and indirect costs of production, including the minimum return to capital required to make an investor commit funds in the first place' (World Bank, 1992).

Acronyms

CSO	Central Statistical Office
DRC	Democratic Republic of Congo
GDP	Gross Domestic Product
GNI	Gross National Income
HDI	Human Development Index
ICMM	International Council on Mining and Minerals
IFC	International Finance Corporation
MMCZ	Minerals Marketing Corporation of Zimbabwe
OECD	Organization for Economic Co-operation and Development
PGM	Platinum Group Metal
PPI	Policy Potential Index
PSA	Production Sharing Agreement
RBZ	Reserve Bank of Zimbabwe
SADC	Southern African Development Community
SME	Small and Medium Enterprise
SWF	Sovereign Wealth Fund
ZISCO	Zimbabwe Iron and Steel Company
ZMDC	Zimbabwe Mining Development Corporation
ZSM	Zimbabwe School of Mines

Section 1

The Mining Industry: Problems and Prospects

Although Zimbabwe is not a typical resource-rich mineral economy like Botswana, the DRC or Zambia, during the crisis period since 2000 it has become increasingly reliant for foreign revenues on a narrow range of mineral exports. Despite falling output volumes not only did the share of mining exports in total exports double from 27 percent in 2000 to 53 percent in 2008, but export concentration[2] increased. In 2000, the top five mineral exports – gold, asbestos, platinum group metals (PGMs), nickel and ferrochrome – accounted for 24 percent of total exports but by 2008 the share of the main four products (gold, PGMs, nickel and ferrochrome – asbestos had effectively dropped out) had doubled to 49 percent.

Export concentration ratios have risen recently in many resource-rich African economies, especially but not only oil exporters, with the export concentration index increasing 80 percent between 1995 and 2006 (Unctad, 2008). Booming primary commodity prices in 2006/8 are likely to have further intensified this concentration.

Zimbabwe's experience is qualitatively different from that of resource-rich, Botswana, DRC or Zambia. In stark contrast with these three countries, Zimbabwe had managed to build successful manufacturing and commercial agricultural sectors, which have since regressed. Growing export concentration resulted from three main factors:

- the steep decline of both commercial agriculture and manufacturing whose combined export share fell from 72 percent in 2000 to 43 percent eight years later;
- the global commodity price boom; and
- the emergence of platinum as the country's main export, supplanting tobacco.

This, probably temporary, shift in emphasis from a broadly-diversified economy dependent for foreign currency earnings on agriculture, mining, manufacturing and tourism to one substantially reliant on mining exports, highlights a number of crucial issues that will preoccupy policy-makers going forward.

From a policy viewpoint three often-interrelated effects stand out:

- The so-called Resource Curse,
- Dutch Disease, and
- Wealth depletion effects

Resource Curse theorists maintain that whereas many countries have grown and diversified on the strength of rich natural resource endowments (Finland, Indonesia, Malaysia and Norway), recent (post-1970) history shows that many mineral-rich developing countries have consistently under-performed their mineral-poor peers in respect of growth performance, income equality and governance. (Toto Same, 2008). Resource Curse theory maintains that export-driven natural resource sectors – oil, gas, minerals, precious metals and gemstones – generate substantial revenues both for the state and foreign-owned multinational businesses, yet these do not translate into broad-based economic development benefiting all sectors of the population and especially the poor.

The main explanation of this paradox is the failure – or inability – of governments to mobilize non-renewable natural resource revenues (resource or mineral rents) and reinvest them efficiently in physical and human capital, diversification of the economy and poverty reduction. It is further argued that rich natural resource sectors are a source of Dutch Disease – over-valuation of the exchange

[2] Export concentration is measured as the number of products exported and the share of the top five exports in total exports. In 2008, Zimbabwe had an export concentration ratio (top five exports as a percentage of total exports) of 64.3. Three of the top five exports were minerals – platinum, ferrochrome and gold, the other two were agricultural, (tobacco and cotton).

rate – that turns the terms of trade against other sectors of the economy (agriculture, manufacturing and tourism) thereby undermining economic diversification and export growth.

There is little evidence of Resource Curse or Dutch Disease effects in Zimbabwe's pre- and post-independence growth experience, prior to the onset of the post-1997 crisis. The overvalued currency was the consequence of deliberate policy choices not Dutch Disease, while the country's lack-lustre growth performance can similarly be attributed to policy and implementation deficiencies rather than the Resource Curse. However, increased reliance on mining revenues especially during the commodities boom (2003–2008) raises a number of issues that will need to be addressed over the next decade.

1. The extent to which Zimbabwe is now at risk from adverse Resource Curse and Dutch Disease effects. In a diversified economy, there is a great risk that Dutch Disease, caused by buoyant export prices for minerals, exacerbated by aid inflows, will constrain the development of other sectors such as agriculture, tourism and manufacturing and especially their capacity to generate, rather than use, foreign currency.

2. With the advent of dollarization since 2008, the adverse impact of Dutch Disease has switched from an overvalued exchange rate for the Zimbabwe dollar to elevated cost and price structures that threaten to undermine competitiveness. In effect, this means that the real effective exchange rate – proxied by the US dollar or rand, depending on the choice of currency – is overvalued. Because the nominal exchange rate cannot be devalued, other than by exiting dollarization, adjustment must take place by lowering prices and costs – i.e., increasing productivity and competitiveness. Invariably, such deflationary adjustment is associated with recession in which output, employment and incomes are squeezed.

3. Greater export concentration has already increased the economy's vulnerability to adverse commodity price swings, reflected in the temporary closure in 2008/9 of some mining operations and reduced production volumes of all minerals.

4. A lasting shift in the economy's growth path from labour-intensive agriculture, some manufacturing and tourism to capital- and skills-intensive mining would raise the bar in terms of employment generation and poverty reduction, unless compensated by explicit counter measures.

5. In particular, future governments will need to pursue an explicit portfolio management growth strategy, whereby some proportion of mineral (and possibly tourism and forestry) rents are 'ring-fenced' for reinvestment in produced assets, especially infrastructure, and in human capital. This is necessary to ensure that the depletion of natural resources in mining is offset by the creation of produced assets and human capital.

6. Resource depletion considerations should be at the heart of a taxation regime for the industry. To that end, some percentage of mineral taxation should be set aside in a Sovereign Wealth Fund (see Box page 47), whose managers would be tasked with ensuring that revenues are invested in the domestic economy rather than used to finance general government consumption spending.

7. With the recent revival of resource nationalism both internationally and within Zimbabwe itself, the ownership and exploitation of natural resources is likely to remain a contentious political and economic policy issue, underscoring the necessity for clear, transparent, and above all, competitive mining industry investment and fiscal codes.

8. Between them, the precipitous decline of the economy, especially in 2007/8, and the ravages of hyperinflation and dollarization have destroyed domestic savings in government and in the corporate and household sectors. Recovery will take years, if not decades, meaning that unless future governments are willing to forego existing commitments to indigenization, investment levels will remain depressed with adverse consequences for economic growth and poverty reduction.

Section 2

A Post-Independence Overview

2.1 GEOLOGY AND HISTORY

The Zimbabwe Geological Survey (1990) identifies more than 500 individual deposits of base metal and industrial minerals in Zimbabwe. It describes Zimbabwe as 'an important producer' of gold, chrome, lithium asbestos and caesium, as well as high-quality emeralds. Modern mining began in 1892 and by 1990 over 40 minerals were being exploited. Over the first 100 years of modern mining activity, the two most valuable products by far were gold and asbestos but this has changed with the emergence of nickel and ferrochrome as major exports and, very recently, the exploitation of platinum group metals – platinum, palladium and rhodium.

Most mineral production is from the ancient Archaean core of the country where most deposits are concentrated in the greenstone belts that contain gold, copper, tungsten, antimony and arsenic. Nickel with its by-products of copper and cobalt is also mined in the greenstone belts, while asbestos deposits are found in the serpentized ultramaric intrusions. There are known huge resources of chromite and platinum along the Great Dyke that runs through the centre of the country from north-east to south-west.

Initially mining in Zimbabwe centred on the exploration and exploitation of gold deposits almost all of which were known from ancient workings. Subsequently, world class deposits of chromite and chrysotile asbestos were developed, along with Hwange coal. The Zimbabwe Iron and Steel Co (ZISCO) (as it is now known) was built to produce iron, steel and coke, while two major ferrochrome projects were developed, Zimbabwe Alloys, producing low carbon ferrochrome and Zimasco, which manufactures high carbon ferrochrome. Subsequently, an ammonium nitrate plant was opened at Zisco to produce oxygen-refined steel, while a large open-cast coal mine was developed at Hwange for coking coal and for steam coal to fire the Hwange Thermal Power Station.

Copper deposits were exploited by MTD Mangula and the Empress nickel deposit, discovered in 1956, was brought into production along with other nickel properties (Trojan, Shangani, Epoch and Madziwa in the 1960s and early 1970s). Two nickel deposits at Hunters Road and Damba-Silwane remain dormant. The Empress Nickel mine has closed but the refinery still operates for toll treatment of matte from the BCL mine in Botswana. Small open-cast mines were opened at Buchwa and Ripple Creek for iron ore, and at Dorowa for phosphate, along with a number of open-cast gold mines using extraction by heap-leaching.

Since 2000 however, a number of mines have closed, including the copper producers at Mangula, Alaska and Sanyati and the Epoch and Madziwa nickel mines. The Railway Block high-grade chromite mine has closed as well as the Dalny-Venice-What Cheer group of gold producers and the smaller Gaika, Motapa and Royal Family gold mines.

The original BHP Platinum mine at Selous, which opened in the late 1990s, was closed when the Australian mining company disinvested. The plant was subsequently restructured for the open-cast mining at Ngezi, while most recently diamond pipes at Murowa (the Rio Tinto group) and River Ranch have been mined on a small scale along with alluvial diamonds at Marange.

All existing mines operate under constraints – most notably the exchange rate, which has decimated gold production, and shortages of power, skills, ore and low sulphur coal required by the ferrochrome sector. Major expansion potential exists in the platinum industry with new underground mines at Unki (Anglo American), Ngesi (Impala Platinum) and Mimosa.

The Zimbabwe Geological Survey (1990) lists no fewer than 66 base and industrial mineral deposits found in Zimbabwe but in recent years production has become increasingly concentrated to the point

Table 1: Zimbabwe's estimated mineral resources

Mineral	Estimated resource (tonnes)	Current annual extraction rate (tonnes)
Gold	13 million	20
Platinum	2.8 billion	2.4 million
Chromite	930 million	700,000
Nickel	4.5 million	9,000
Coal	26 million	4.8 million
Diamonds	16.5 million	Infancy
Iron Ore	30 billion	300,000
Copper	5.2 million	None
Coal Bed Methane	Largest known reserve in Southern Africa	None

Source: Reserve Bank of Zimbabwe. Monetary Policy Statement (February 2009)

where in 2006 seven products accounted for 98 percent of total value. In part, this growing concentration reflects price movements – the boom in gold and platinum prices – along with a shift in the composition of output towards higher value and value-added minerals, such as PGMs and ferrochrome.

Geological assessments suggest that underinvestment in exploration and production, and not mineral potential, have been the main factors limiting mining development in Zimbabwe. This is not a new phenomenon and pre-dates the onset of the political and economic crisis at the end of the 1990s. As long ago as 1992, the World Bank identified Zimbabwe, along with the DRC and Namibia, as 'Category A' countries requiring the highest level of exploration investment amongst African states of US$100 million over a five-year period ($20 million annually). In all three countries mining exploration had been constrained by political and economic uncertainty with mining houses reluctant to invest in a country with a track record of policy unpredictability, especially in terms of property rights and exchange-rate management.

2.2 OUTPUT

The official volume of production index compiled by the Central Statistical Office depicts a stagnant industry with the volume of mining output peaking in 1998. After averaging 108 during the 1990s, the volume index (1990 = 100) declined to average 100 between 2001 and 2004. Mining production stagnated over the entire period (1980–2004) growing just 0.32 percent annually, but because prices – measured by the unit value index – grew 47 percent a year, the Zimbabwe dollar value of production increased dramatically, driven by currency devaluation, particularly since 2000 (Table 2).

Table 2: Mining production 1980–2004 (Index 1990 = 100)

	Volume index	Unit value index	Aggregate value index
1980	93	31	29
1981	89	30	27
1982	90	32	29
1983	86	41	35
1984	90	44	40
1985	90	50	45
1986	92	54	50
1987	96	59	57
1988	95	76	72
1989	99	93	91
1990	100	100	100
1991	102	135	138
1992	100	184	184
1993	96	238	228
1994	109	294	322
1995	116	349	405
1996	111	399	444
1997	111	445	493
1998	120	674	820
1999	112	1,086	1,239
2000	104	1,356	1,410
2001	88	1,964	1,728
2002	96	3,832	3,679
2003	79	36,369	28,732
2004	106	354,150	375,399

Source: Central Statistical Office, Harare

Table 3: Summary

Period	Volume index average	Growth rate (% p.a.)	Unit value index average	Aggregate Value index: Growth rate
1980-1989	92	+ 0.65	51	+13.0
1990-1997	106	+ 1.31	268	+22.0
1998-2004	101	- 1.70	57,615	+ 34.0
1980-2004	100	+ 0.32	16,083	-

Source: Central Statistical Office, Harare

Table 4: Volume of mining production (Value-weighted)

	Volume Index
1980	100
1985	94
1990	120
1993	93
1995	110
1997	95
1998	103
1999	121
2000	112
2001	118
2002	121
2003	138
2004	107
2005	76
2006	51

Source: Own calculations using Chamber of Mines output data

Drawing on data from the Chamber of Mines, a volume index, weighted by production values, has been calculated (Table 4 and Figure 2). This shows a very different picture. Output peaks as recently as 2003, driven by strong volume growth in low-value base minerals (Limestone, Black Granite, Quartz, and Chromite), but this production has since declined steeply with the result that by 2006, the volume index was only half its 1980 level.

The volume figures show that, with the exception of platinum, production in 2006 was well below peak levels. Gold output, which peaked at 27.1 tons in 1999, had fallen back to its 1980 levels by 2006 and declined further to 6.8 tons in 2007 – its lowest level in more than a century. Asbestos output has slumped more than 60 percent from peak levels while nickel production is down 42 percent and coal 60 percent.

Figure 2: Mining production: Volume index (Chamber of Mines data)

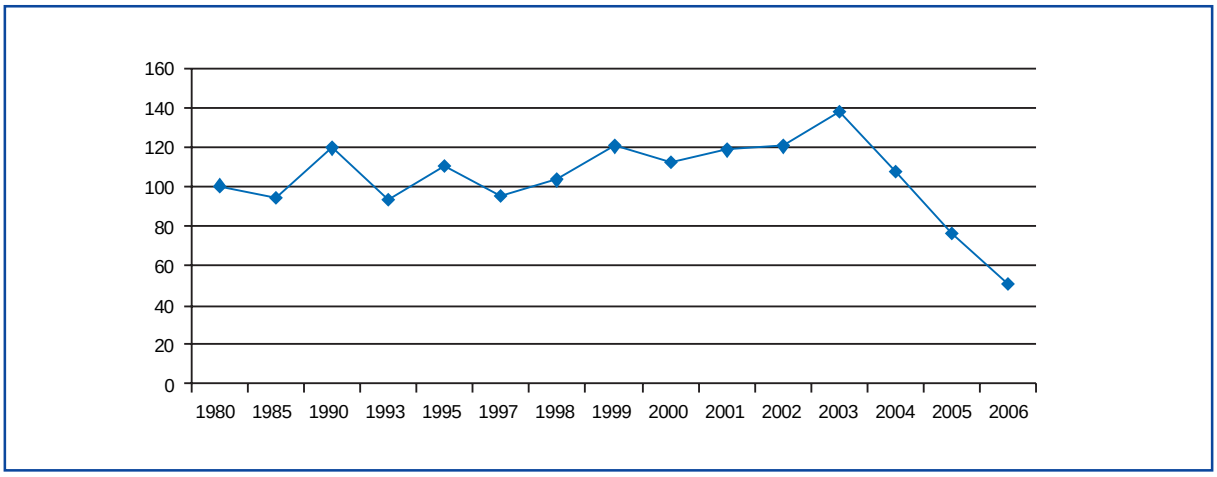


Table 5: Output volumes: Selected years (tonnes)

	1980	1990	2000	2002	2004	2006	% change from peak
Gold	11.4	16.9	22.1	15.5	21.3	11.4	- 58
Asbestos	251,000	161,000	145,000	168,000	104,000	97,000	- 61
Nickel	15.1	11.4	6.0	8.0	9.8	8.8	- 42
Chromite	552,000	573,000	669,000	749,000	668,000	700,000	- 10
Ferrochrome	n.a	n.a.	250,000	258,000	193,000	201,000	- 22
Coal	2,589,000	4,978,000	3,808,000	3,721,000	3,323,000	2,107,000	- 60
PGMs	-	-	904	4,459	8,375	9,429	n.a
Granite	-	-	512,500	415,400	58,700	-	- 88
Limestone	1,217,900	1,251,600	1,978,800	5,057,600	4,918,000	-	- 52

Source: Chamber of Mines of Zimbabwe

Table 6: Value of mining production (1980–2006)

	Value: Z$ millions	Value: US$ millions**
1980	415	660
1981	394	548
1982	383	417
1983	470	423
1984	546	363
1985	629	383
1986	699	417
1987	816	490
1988	986	508
1989	1,197	527
1990	1,302	494
1991	1,814	359
1992	2,415	441
1993	3,046	439
1994	4,327	516
1995	5,359	576
1996	6,038	593
1997	6,568	528
1998	11,319	529
1999	16,524	426
2000	16,745	304
2001	40,218	322
2002	86,007	290
2003	660,533	330
2004	4,269,682	776
2005	17,433,500	580
2006	199,950,476	445

Source: Central Statistical Office, Harare and the Chamber of Mines of Zimbabwe

Note ** Production valued at the official exchange rate until 2000. Production valued at blend rate (2001-2006)

Valued in US dollars (at the official exchange rate until 2000 and at a blend rate thereafter), output has still to regain the peak reached in 1980 on the back of the spike in the gold price. The figure for 2004 (US$ 776 million) is inflated because during that year both the official and free market rates were closely managed by the authorities, resulting in an unrealistic figure for the year when exports were worth US$812 million.

In 1980 gold accounted for 37 percent of output by value – the next largest being asbestos (18 percent). In US dollar terms, output value reached its trough between 2000 and 2003 since then platinum has become a significant player and there has been a price-driven recovery for most other minerals.

Figure 3, compares the reported value of Zimbabwe's mineral production with the World Bank's minerals commodity price index, and illustrates how, mostly with minor discrepancies, the value of mining output in Zimbabwe mirrored global price trends until 2003. Since then, however, the two have diverged, highlighting Zimbabwe's inability to capitalize on the extraordinarily favourable global environment for mineral producers.

Figure 3: Mineral production and world metal prices

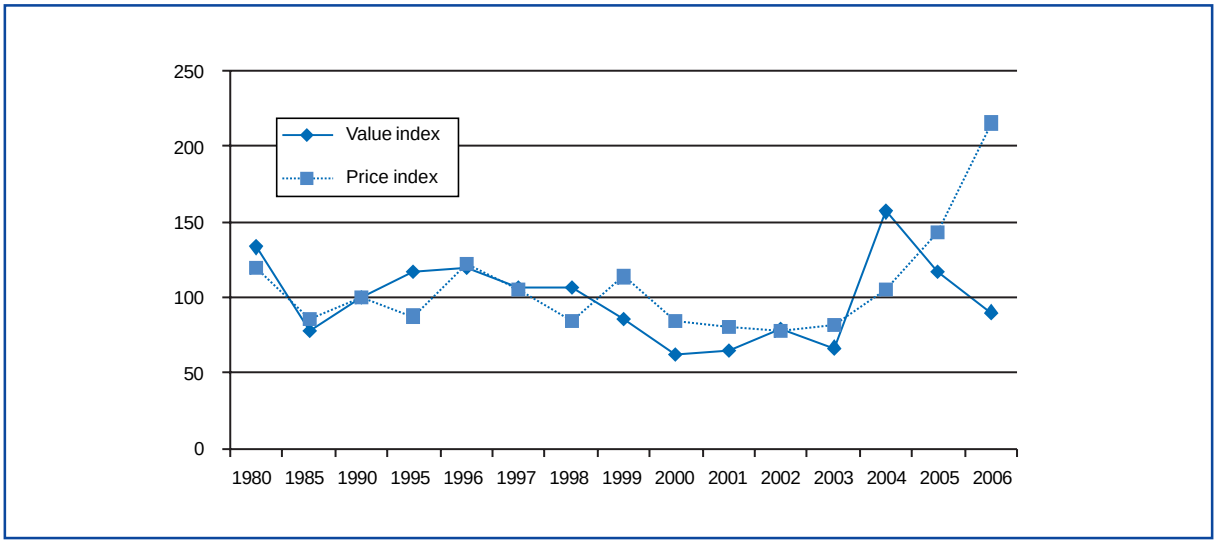


Table 7 summarizes the production and output value data for the country's main minerals. Output volumes have grown for both chromite and platinum, whose exploitation started only in the mid-1990s, but in all other cases, production volumes have fallen.

All value figures come with a serious health warning. Different foreign exchange regimes apply for different commodities, with gold shipments, in particular, being valued artificially by the Reserve Bank of Zimbabwe. For other commodities, the conversion rates used by producers from foreign to local currency vary widely, changing in line with foreign currency 'surrender' requirements stipulated by the central bank.

With these caveats in mind, the most striking aspects of Table 8 are the collapse of asbestos and, to a lesser extent, coal; the steep fall in gold's share; and the emergence and rapidly-growing importance of PGMs.

Table 7: Volume and value of main minerals mined in Zimbabwe (1980–2006)

	1980	1990	2000	2006
Gold (kgs)	11,444	16,900	22,070	11,354
Z$ millions	145	505	8,644	53,745
Asbestos (tonnes)	250,950	161,100	145,200	97,000
Z$ millions	70.2	145.5	2,668	4,792
Nickel (tonnes)	15.1	11.4	6.0	8.8
Z$ millions	55.6	236	78.5	35.815
Chromite (tonnes)	553	573	668	700
Z$ millions	18.4	60.3	778.4	15,270
Coal (tonnes)	2.55 million	4.98 million	3.81 million	2.1 million
Z$ millions	28	162	2 437	11,765
Ferrochrome tones	n.a.	n.a	249 840 (2001)	200,673
Z$ millions	n.a	n.a.	7,000	29,501
Platinum (kgs)	n.a.	n.a.	904	9,430
Z$ millions	n.a.	n.a.	733.4	43,446

Source: Chamber of Mines of Zimbabwe

Table 8: Main commodities (% shares by value)

	1980	1990	2000	2001	2006
Gold	36.6	38.6	51.6	26.3	27.9
Asbestos	17.7	11.0	16.0	6.8	2.4
Nickel	14.0	18.0	4.7	18.8	17.9
Chromite	4.7	4.6	4.6	6.4	7.6
Coal	7.0	12.4	14.0	10.5	5.9
Ferrochrome	n.a.	n.a.	n.a.	17.4	14.8
Platinum Group Metals	n.a.	n.a.	4.4	4.7	21.7
Total	80.0	84.6	95.3	90.9	98.2

Source: Chamber of Mines of Zimbabwe

2.3 EXPORTS

Mining's chief contribution to the economy, especially in recent years, has been its capacity to generate foreign exchange, even with falling output. Since independence in 1980, mining has accounted for almost 40 percent of total exports, dominated by gold, with the other important contributors being ferrochrome, nickel and latterly platinum, which will shortly become the country's major export. Table 9 shows that since the start of the commodity boom in 2002, the share of minerals in total exports has averaged 49 percent.

Table 9: Mineral exports (US$ millions)

	Value	Total exports	Mining share in total exports (%)
1980	645	1,421	45
1981	526	1,503	35
1982	560	1,228	41
1983	468	1,150	41
1984	453	1,172	39
1985	439	1,141	39
1986	567	1,346	42
1987	626	1,450	43
1988	512	1,650	46
1989	n.a		n.a
1990	689	1,715	40
1991	601	1,587	38
1992	533	1,419	38
1993	535	1,605	33
1994	568	1,942	29
1995	751	2,235	34
1996	712	2,500	28
1997	640	2,443	26
1998	536	1,915	28
1999	540	1,923	28
2000	600	2,192	27
2001	470	2,114	22
2002	404	1,794	23
2003	542	1,661	33
2004	804	1,671	48
2005	805	1,589	51
2006	933	1,723	54
2007	991	1,854	53
2008	866	1,744	49

Sources: Central Statistical Office, Harare: International Monetary Fund and the Reserve Bank of Zimbabwe

Summary

Period	Average annual mining exports (US$ millions)	Growth rate (% p.a.)	Average share in total exports (%)
1980-1988	533	-2.5	41.2
1990-1999	629	-1.8	32.3
2000-2008	720	+ 5.6	40.4
1980-2008	564	+1.3	37.8

2.4 EMPLOYMENT

Table 11 shows major discrepancies between the official industry employment figures compiled by the Central Statistical Office (CSO) and those of the Chamber of Mines, primarily because the Chamber's statistics include employees in smelting and refining, especially the state-owned Zimbabwe Iron and Steel Company (ZISCO).

The CSO figures show mining employment down 43 percent since 1980, but the Chamber's numbers show an increase of nearly a quarter. However, the detailed data show:

- A steep decline of nearly 65 percent in the base minerals sector.
- The creation of 6,600 new jobs since 1996 in platinum.
- Modest expansion (16.6 percent) in gold mining employment.

Table 10: Export shares by commodity

% Share	1980	1990	1997	2000	2002	2004	2006	2007	2008
Gold	27.0	34.0	41.6	36.0	39.3	32.7	21.7	15.7	13.9
Ferrochrome	21.0	22.0	27.7	25.8	26.4	23.0	15.6	18.2	15.8
Nickel	12.5	14.5	11.2	13.0	7.9	11.9	17.1	23.2	10.5
Asbestos	19.0	8.5	7.5	10.2	9.6	2.4	3.3	2.1	1.0
PGMs	-	-	-	1.8	1.5	21.6	33.3	35.1	51.5

Source: Central Statistical Office, Harare and Reserve Bank of Zimbabwe

Table 11: Mining sector employment

	1980	1990	1995	2000	2004	2006
Total (CSO)	66,200	51,000	59,000	45,000	38,000	n.a.
Chamber of Mines	59,675	49,320	47,943	41,120	66,415	73,970
Gold	11,770	12,300	17,650	13,740	11,700	13,725
Base Minerals	3 ,950	25,720	20,600	12,520	10,100	11,225
Smelters & Refiners	8,270	9,525	7,750	8,930	35,080	35,540
Platinum	-	-	4,830 (1996)	3,425	5,100	6,600
Employment excl Smelting & Refining	51,400	39,800	40,195	32,190	31,335	38,430

Source: Chamber of Mines of Zimbabwe and Central Statistical Office, Harare

- The quadrupling of employment in smelting and refining. ZISCO, a loss-making parastatal, accounts for 30,400 (86 percent) of employment in these industries. ZISCO's payroll has increased nearly six-fold since 1980, despite a collapse in output over the period

- When the smelting sector is excluded, mining industry employment declined by a quarter over the period

2.5 SKILLS

The Chamber of Mines of Zimbabwe estimates that more than half the industry's skilled personnel emigrated from the country in 2007 and that in early 2008 there were 1116 vacancies for professional and technical staff. In his report for the Chamber of Mines of Zimbabwe (August, 2007), Professor Keith Viewing paints a picture of a severe and rapidly-worsening skills shortage, exacerbated by the precipitous decline in the country's capacity to regenerate skills.

Citing data provided by 19 mining companies, Professor Viewing estimates graduate vacancies at between166 and 233, including 48 mining engineers, 28 geologists, 30 metallurgical engineers, 34 mechanical engineers, 12 electrical engineers, 5 surveyors and 7 in metallurgical assay. Vacancies for technicians are estimated at over 700, excluding the iron-and-steel sector, the cement industry and Chemplex, which produces critical chemicals and explosives used in mining.

The government has advertised vacancies for 314 graduate cadetships (University scholarships) for professional posts and another 406 for technical posts in mining-related disciplines. Many are for irrigation projects but the government is seeking 20 geology graduates, 68 for survey positions, 144 civil engineers and over 60 mechanical and electrical engineers.

The number of university graduates needed in mining disciplines is estimated at between 480 and 550, but the maximum capacity of mining-related departments at the University of Zimbabwe is 124 students per year, meaning that it will take 4 to 5 years to supply existing needs, let alone providing for the anticipated recovery and growth of the industry in a post-crisis environment.

'In the longer term,' the report says, 'the flow of graduate learners from the University of Zimbabwe is at risk due to the serious depletion of academic staff in mining engineering, metallurgical engineering, electrical engineering, geology, survey and chemistry. Only five geologists were expected to graduate in 2007 and none for the subsequent 4 years as the department is being restructured' (Viewing, 2007:56).

Vacancies for academics at the University of Zimbabwe have reached such a stage that courses in mining, metallurgical and electrical engineering as well as in geology and survey are at risk. The vacancy rate in the Faculty of Engineering in mid-2007 was 66 percent while in the geology and chemistry departments of the Faculty of Science the vacancy rate was 62 percent. In geology only three academics were in a post out of an establishment of 16, while the departments of mining engineering, metallurgy and survey had a total of 5 people in post against an establishment of 35.

The Zimbabwe School of Mines (ZSM) in Bulawayo was established to train selected employees sponsored by mining companies on a block release basis. The School has an annual capacity of 160 students who are prepared for the Mine Managers Certificate of Competency, but both trainers and examiners are in short supply.

A survey undertaken by the Government – The Zimbabwe National Human Resources Survey, 2006 – concluded that as many as 70 percent of 1,519 graduates surveyed indicated a wish to emigrate – 76 percent for graduates and 86 percent for postgraduates. The University itself estimates that, of 2,800 students who graduate each year, only about 700 wish to stay in Zimbabwe.

The Viewing report sets out a number of detailed proposals for remedying the situation, virtually all of which require substantial injections of funding, both in local and foreign currency, as well as the normalization of relationships with the international community so that many more Zimbabwean students can be trained abroad, more expatriates recruited, and increased resort to inter-company transfers.

The unequivocal message of the report is that, going forward, the shortage of skills will be a binding constraint on mining exploration, investment and development.

2.6 INVESTMENT

The primary criteria influencing mining investment are mineral potential and infrastructure according to a World Bank Survey (1992). The survey of forty international mining companies from North America, Europe, Australia, South Africa and Japan found that a guarantee of mining rights before starting exploration was 'an essential precondition'. Other critical factors are a well-established mining code, contractual stability, profit repatriation, a guaranteed fiscal regime and access to foreign exchange. Accelerated depreciation and amortization and realistic exchange rates are important but 'less essential'.

The survey found that respondent companies were generally not prepared to work in countries with mandatory local-majority participation, either government or private, though some companies saw minority local participation and mandatory training of nationals as positive factors. Mandatory provision of social services, restrictions on wage negotiations and limitations on expatriate personnel are 'minor disincentives'.

There is greater concern about political risk and corruption than about macroeconomic stability because mining projects are export-oriented and partially de-linked from the domestic economy. Higher risk premiums are required to justify investment in emerging markets with an average return on equity of 25 to 30 percent, a payback period of 2 to 4 years compared with a return of 20 percent and a payback period of 5 to 6 years in industrial economies.

While mining houses are confident of being able to cope with market and technical risks, they have concerns about three main areas of political risk:

(a) Restrictions on a company's ability to do business – obtaining exploration and mining rights, securing ready access to foreign exchange, being allowed to export directly, rather than through a state-owned market authority, and the risk of losing mining rights or legal title as a consequence of host government action.

(b) The ability to control costs and maintain competitiveness – the risk of unilateral changes to the tax regime; the risk of price-control imposition or controls on inputs or output; the requirement that companies undertake marginal value-adding investments that may not be profitable; the requirement to carry out infrastructure, community or social investments not prescribed in the original investment agreement; and the risk of employment quotas set by the state.

(c) Ready access to foreign exchange to finance inputs and offshore payments for management fees, debt service, capital repayments and dividends.

Experience shows that major mining companies, regions or countries invest up to 10 percent of mineral production value in exploration, but in sub-Saharan Africa there has, until recently, been

massive underinvestment of around 1 to 2 percent of production value. The relationship between exploration investment and production value changes over time with immature mining states needing to invest as much as 20 percent of production value to kickstart the industry. As production takes off so this ratio falls to between 5 and 10 percent in a fast-growing mineral economy. At maturity, the ratio falls further to between 2 and 5 percent.

Contemporaneous data – since 1997 – on gross capital formation by sector are not available but figures for the 1973–1996 period show investment in mining averaging 25 percent of output (both at current prices). However, these figures are seriously distorted by the abortive BHP Hartley Platinum project in 1995/6, as a result of which the investment/output ratio rose steeply from a 26-year average of 15.6 percent to 25 percent, because of investment of 44 percent of gross output in 1995 and 47 percent in 1996.

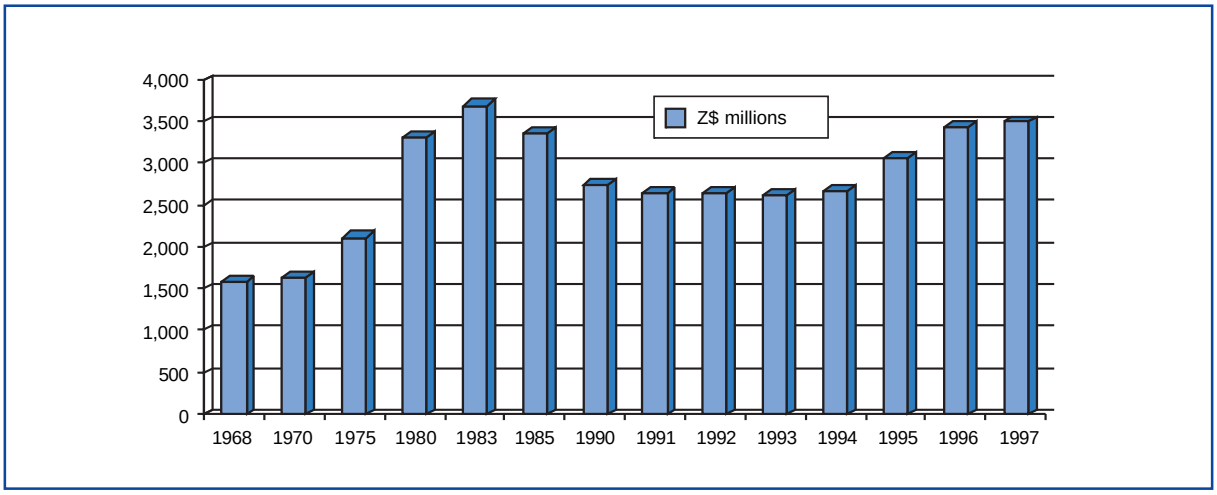
Were contemporary data available they would show a steep decline in mineral investment since the late 1990s with very few new projects, other than in platinum, and falling exploration expenditure, especially since 1998. Over the long haul, since 1968, the investment to gross-output ratio is estimated at between 10 and 12 percent.

There is no objective measure of underinvestment nor is there a breakdown between exploration spending and investment in mine development. But during two periods of vigorous industry expansion for which data are available – the Hartley platinum project in the mid-1990s and the period of nickel development and ferrochrome expansion (1968–1971) – investment levels were substantially above the long-run average of 10 to 12 percent. At the height of the Hartley investment, the investment averaged over 45 percent of gross output, while during the earlier nickel/ferrochrome period it averaged 21.5 percent.

Assuming a very conservative depreciation factor of 10 percent, Figure 4 shows that the industry's capital stock peaked in the early 1980s at Z$3.7 billion at constant 1990 prices. It also shows a substantial increase in the capital stock during the 1970s, followed by a decline and marked recovery when platinum investment took off in the mid-1990s.

However, the 10 percent depreciation factor used is conservative in the light of the decade-long period (1983–1993) when net investment was negative and during which period there was a backlog in replacement investment. Although there are no data for the post-1997 period, mining companies say that, outside the platinum and diamond sectors, investment in both exploration and new capacity has been minimal. In his address to the Chamber of Mines Annual Congress in 2007, the President of the Chamber said that no new exploration licences had been issued since 2003 despite the fact that companies had applied for new exclusive prospecting

Figure 4: Mining industry estimated capital stock (Constant 1980 Zimbabwe dollars)



Source: Own calculations based on Central Statistical Office data

orders. 'The exploration boom which peaked in 1996 has fast declined and dwindled from that time and Zimbabwe has failed to attract exploration dollars from international investors since 1999'.

This anecdotal evidence suggests that there is a substantial investment backlog in the industry and that the capital stock is not only smaller than estimated in Figure 4, but because investment levels have been low for most of the last 20 years, much of the equipment being used is ageing or obsolete.

In summary, because both production and investment have declined, the industry has 'immature' status which means that above-normal levels of investment in both exploration and productive capacity will be required during the post-crisis period.

2.7 PROFITABILITY

Data on profitability are very crude. For the period 1968–1996 (latest available) the gross return on sales revenues averaged 22.6 percent fluctuating wildly between industry-wide losses in 1995/6 and peak returns of more than 40 percent in both 1974 and 1994. Profit figures are gross operating profits, before depreciation and tax, as are the output figures.

After adjustment for depreciation of 10 percent and an effective tax rate after depreciation allowances and other tax breaks of 15 percent, the net return on sales averages 16 percent over the 28-year period. The relatively low level of investment over the period implies that this return was deemed inadequate in the light of above-average risks, vividly illustrated by recent policy pronouncements, of investing in the Zimbabwe mining sector as well as the severe operating challenges experienced during much of the period.

2.8 SIZE OF OPERATIONS

There are no up-do-date figures. The most recent refer to 1995, where there was a total of 94 separate mining operations, down from 200 at the end of the sanctions period (1979).

Three trends stand out:

- The decline in the number of mines, especially during the 1980s.

Table 12: Size of operations by employees

Employees	1979 Number of Mines	1989 Number of Mines	1995 Number of Mines
Less than 10	30	8	9
11 to 20	24	14	9
21 to 50	51	13	15
51 to 100	29	15	9
101 to 200	26	17	11
201 to 300	4	5	9
301 to 500	8	6	6
501 to 750	7	8	9
751 to 1000	7	5	7
Above 1000	14	10	10
TOTAL	200	101	94
	%	%	%
% Employees up to 50	17.4	1.6	1.7
% Employees 51 to 200	11.8	8.1	5.7
% Employees 201 to 500	37.3	8.3	6.7
% Employees 501 to 1000	13.3	22.0	45.9
% Employees Over 1000	20.2	60.0	40.0

Source: Central Statistical Office, Harare. Census of Industrial Production (Various issues)

- The declining share – in terms both of number of units and total employment – of small mines. In 1979, over half the mines (105 out of 200) employed no more than 50 people. By 1995, this number had fallen to 33 (35 percent of the total).
- Growing concentration of output in the hands of large producers so that by 1995, 17 mines (18 percent of the total) with upwards of 500 workers accounted for almost 86 percent of employment compared with a third in 1979.

Anecdotal evidence suggests that since the mid-1990s the trend towards concentration of activity in the hands of medium- to large-scale mines has intensified at the expense of the missing middle in the form of small- to medium-scale formal mining operations. At the same time, there has been an explosion in the number of informal-sector artisanal miners though there are no statistics because their operations are essentially illegal in that they are outside both the tax and currency control nets.

Recently (2006/7) it appears that there has been a sharp decline in such artisanal activity reflecting operational difficulties – access to inputs – increased efforts to control black market activities by the authorities and technical mining problems. Specifically, in the last few years, informal-market miners have exploited the 'easiest' gold-panning and alluvial-diamond opportunities. Today more capital and know-how is needed and because these are often not available, industry sources believe that artisanal activity, certainly in gold, has peaked for the time-being.

Section 3

The Deepening Crisis – Performance 2007–2009

3.1 THE DIAMOND INDUSTRY

Although diamond production started on a small scale well before the crisis began to deepen from 2007, developments in the diamond industry illustrate graphically the problems encountered by mining companies on the one hand and the capricious and predatory conduct of the government and its supporters on the other.

The extent of Zimbabwe's diamond wealth is not known. Much of the country lies on the 'Zimbabwe Archean Craton' where kimberlitic deposits are frequently found. The craton runs across the country from north-east to south-west continuing into Botswana where some of the world's largest diamond mines are located. Diamonds were discovered in 1971 at River Ranch close to the South African border by Kimberlitic Searches, a subsidiary of De Beers. In 1991, De Beers surrendered its concession after a dispute with the government over the marketing of gems and an Australian-Canadian joint venture took over the mine, which started production in 1995. Production ceased in 1998 because of low diamond prices and Bubye Minerals was appointed by the auditing firm KPMG to administer the property. Ownership of the mine subsequently became embroiled in Zimbabwe politics and in May 2007 the Kimberley Process Review Team was informed that the mine had been banned from exporting diamonds which were being stockpiled[3].

Diamonds were produced and exported on a small scale during the 1990s but commercial exports in 2000 were worth only $1.7 million, increasing to a peak of $44 million in 2005 before halving to $22.6 million in 2008 (unpublished Reserve Bank of Zimbabwe figures). Rio Tinto Zimbabwe (RioZim), in which Rio Tinto plc has a 78 percent stake, discovered kimberlitic deposits at Murowa in 1997/8 and began mining in 2004, producing kimberlitic diamonds, with an average value of $65 per carat. Initially, RioZim intended to operate for the first three years on a small scale followed by possible expansion though this has remained on hold partly due to uncertainties surrounding the government's indigenization programme, and more recently by the sharp downturn in the diamond industry internationally.

In 2006 there was a diamond strike at Marange in eastern Zimbabwe which spawned a thriving black market and widespread smuggling of stones, before the government stepped in and ordered that diamonds be sold to the state-owned Minerals Marketing Corporation of Zimbabwe (MMCZ). The Kimberley Process has since produced a 'footprint' of the Marange diamonds which, it says, come in two qualities. Some 90 percent are coarse very low-quality stones worth between $6 and $10 a carat and the remaining 10 percent are gem or near-gem quality with an average value of around $150 a carat[4].

The Marange concession was held by the world's main diamond producing company, De Beers from the early 1980s through until 2006 when an Exclusive Prospecting Order was awarded to a British company, African Consolidated Resources. The day after trial mining began in December 2006, the government ordered the company to close and handed control to the state-owned Zimbabwe Mining Development Corporation (ZMDC). At the time, the Minister of Mines said there was no need for foreign investment and the ZMDC would develop the property on its own.

At the end of 2006 it was estimated that there were 15,000 to 20,000 'illegal' artisanal miners working in the diamond fields, but in May 2007 a Kimberley Process Review Team which overflew the area in a helicopter concluded that very little mining was taking place, legal or illegal. The ZMDC itself

[3] The Kimberley Process Certification Scheme, is a UN agreed process designed to certify the origins of rough diamonds from sources free of conflict. The process, established in 2003, is aimed at preventing rebel groups and governments from financing military campaigns and human rights abuses using the proceeds of diamond sales.

[4] Kimberly Process puts the proportion of gem quality far higher at 40 percent.

Table 13: Zimbabwe diamond production and exports

Year (carats)	Exports (carats)	Production (US$ millions)	Exports ($) average	Price per carat	Exported to
2003	26,870	26,870	2,219	82.5	EU (100%)
2004	18,481	44,454	3,582	193.8	"
2005	261,538	248,264	39,429	150.8	""
2006	264,585	1,046,025	30,057	113.6	EU (99%)
2007	489,170	695,015	23,377	47.8	EU (74%), UAE (14%), China (9%) South Africa (3%)
Total	1,060,644	2,060,628	98,665	117.7	-
2008 (RBZ)	287,900	n.a.	22,600	79.0	n.a

Note: Figures for 2008 are from the RBZ. For previous years from the Kimberley Process.

Sources: Kimberley Process and Reserve Bank of Zimbabwe

produced an estimated US$15 million worth of diamonds in its first full year of operations, which explains the gap between Murowa exports and total exports in 2007 (Table 14).

This assessment was subsequently proved wrong and towards the end of 2008 there were numerous media reports of police and military action against 'illegal miners' resulting in an unknown number of fatalities. In January 2009 the Council of EU Foreign Ministers noted 'with concern the growing trade in illicit diamonds that provide financial support to the regime. In this context, it also condemns the violence inflicted by state sponsored forces on diamond panners and dealers at Marange/ Chiadzwa. The Council supports action to investigate the exploitation of diamonds from the site at Marange/Chiadzwa and their significance in possible financial support to the regime and recent human rights abuses. It calls on the Kimberley Process to take action with a view to ensure Zimbabwe's compliance with its Kimberley obligations'.[5]

Table 14 shows that, except for 2007, Murowa accounts for over 92 percent of the country's official diamond exports. In 2007 this share fell to 30 percent.

Confusion surrounds the extent and value of Zimbabwe's diamond deposits. In October 2008, the Governor of the Reserve Bank of Zimbabwe (RBZ), Mr Gideon Gono spoke of 'reliable estimates' that Zimbabwe could earn US$1.2 billion ***a month*** from diamond sales.[6] He believed there were as many as 500 'illegal diamond syndicates operating in the eastern region of Manicaland, adding 'We have investors who are able to mine and bring US$1.2 billion every month…'. In a subsequent draft Monetary Policy Statement (January, 2009) the $1.2 billion a month estimate was repeated though this was excluded from the published Monetary Policy statement of February 2, 2009. Petra Diamonds[7] estimates world diamond production at 168 million carats worth $12.1 billion (2007) suggesting that the RBZ's $14.4 billion for Zimbabwe's future annual production is far-fetched.

Table 14: Murowa production and exports

Year	Murowa production (carats)	Official Zimbabwe exports (carats)
2005	252,000	261,538
2006	240,000	264,585
2007	145,000	489,170
2008	263,000	287,900

Sources: Rio Tinto Diamonds, Kimberley Process and the Reserve Bank of Zimbabwe

[5] Statement issued by the Council of European Union Foreign Ministers, January 2,6 2009.
[6] Address at the Outstanding Law Officers' Award Ceremony in Harare (October, 2008).
[7] Petra Diamonds: http://petradiamonds.com/d/market.php

3.2 MINING INDUSTRY PERFORMANCE DURING THE COMMODITIES BOOM

From 2003 until mid-2008 the mining industry was progressively constrained by supply side problems that prevented Zimbabwe producers from exploiting the unprecedented global boom in metal and mineral prices. While mining companies worldwide were riding the crest of the commodity price supercycle their counterparts in Zimbabwe struggled to survive.

This situation changed radically for the worse in the latter half of 2008 when the collapse of demand and prices forced base metal producers, in particular, to suspend operations, retrench staff and shelve expansion projects. So long as world markets were buoyant they had been able to maintain or increase export revenues despite lower volumes, but with the collapse of metal prices internationally they were overwhelmed by the combination of demand and supplyside constraints.

Table 15 shows that with the exception of PGMs, mineral production has fallen steeply since 2004, with a particularly sharp decline in 2008. Towards the end of 2008 production of both nickel and ferrochome was suspended, while the country's largest gold producer, responsible for 60 percent of gold output went onto a care-and-maintenance basis.

Figures 5 and 6 show how output contracted dramatically in the latter half of 2008 when production of base metals plunged 44 percent compared with the first half of the year. Between the second half of 2004 and 2008, base metal tonnages were down by three-quarters, during which period precious metal volumes halved, almost entirely due to the collapse of gold production to 1.27 tonnes in the second half of 2008 from 10.8 tonnes in the comparable period of 2004. Indeed, monthly gold output during 2004 exceeded the 1.27 tonnes produced in the latter half of 2008. Despite this, overall precious metal output – diamonds excluded – increased during 2008 reflecting the increased production of platinum group metals.

Table 15: Volume of mineral production (2004–2008)

Mineral	2004	2006	2007	2008	% Change 2008/2004
Gold (tonnes)	21.3	11.4	7.0	3.6	- 83
Ferrochrome (tonnes)	193,000	201,000	187,000	110,000	-43
Coal (tonnes)	3.3 million	2.1 million	2.08 million	1.51 million	- 54
Nickel (tonnes)	10,216	8,824	8,582	6,019	-41
Palladium (kgs)	3,564	4,022	4,000	3,887	+9
Platinum (kgs)	4,437	4,998	5,086	5,004	+13
Chrome ore (tonnes)	665,000	700,000	614,000	312,000	-53

Source: Chamber of Mines of Zimbabwe (2009)

Figure 5: Base metal tonnages (July-December 2004 to July-December 2008)

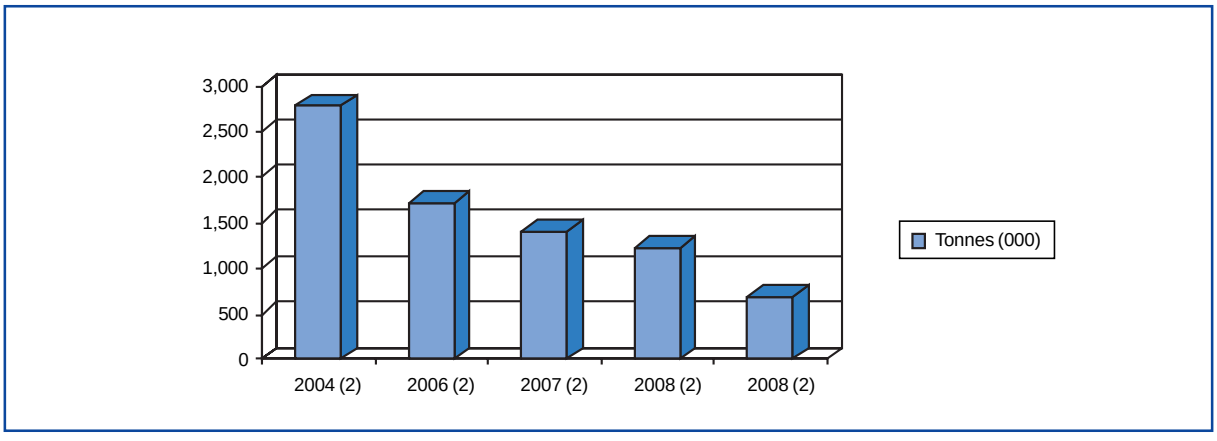
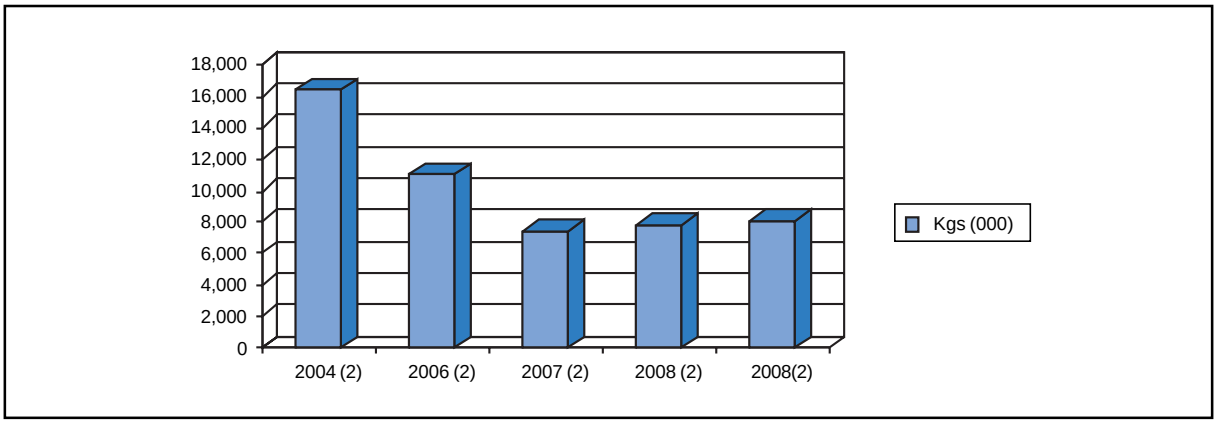


Figure 6: Precious metal output (July-December 2004 to July-December 2008)



The decline gathered pace at the start of 2009 when nickel and ferrochrome producers ceased production or went on a care-and-maintenance basis pending some recovery in export demand. Cash flow problems arising from the inability – or refusal – of the Reserve Bank of Zimbabwe to pay gold producers for gold deliveries to the central bank, forced the closure of gold mines across the country. At the end of 2008, gold producers were owed more than US$30 million. The country's largest producer, Metallon Gold, responsible for some 60 percent of annual output, was at a standstill in January 2009, because it was owed some US$20 million by the RBZ.

Recovery prospects hinge on a return to macroeconomic stability, itself partly contingent on a resolution of the political crisis, and an upturn in global demand. But even with favourable market and policy preconditions in place recovery will be constrained by serious domestic supplyside bottlenecks.

3.3 CONSTRAINTS

Seven main constraints stand out:

1. Policy uncertainty and unpredictability.
2. The supply of skills.
3. Physical infrastructure – most notably electricity, but also transport and water.
4. Macroeconomic policy – specifically exchange rate and inflation management.
5. The fiscal regime.
6. Corporate and national governance – restrictions on foreign ownership, extent of compulsory state participation in ownership (if any), remittance of dividends and management fees, and official interference in operational decision-making.
7. National sustainability strategy – government policies designed to influence the nature and pace of resource exploitation.

Given the dominance of policy-related domestic constraints, industry policy will be a major – conceivably the major – determinant of the pattern and speed of recovery and expansion. During the crisis period mining has been increasingly accorded 'Golden Goose' status with special state provisions for some mineral exporters, initially gold and subsequently platinum. In 2007/8 this strategy was broadened to encompass ownership with a legislative requirement that a minimum of 26 percent of mining companies be owned by indigenous operators with a further 25 percent acquired by the state on a 'free carry' basis, meaning that payment for the equity will come from future dividend streams generated by the company.

Considerable uncertainty surrounds the future of this legislation, which effectively lapsed when parliament was dissolved for the March 2008 elections. In the light of the growing realization that there will be no recovery of the mining sector without substantial foreign direct investment (FDI), the more so given the 2008/9 downturn in metal prices, this legislation will have to be revised, if not abandoned altogether.

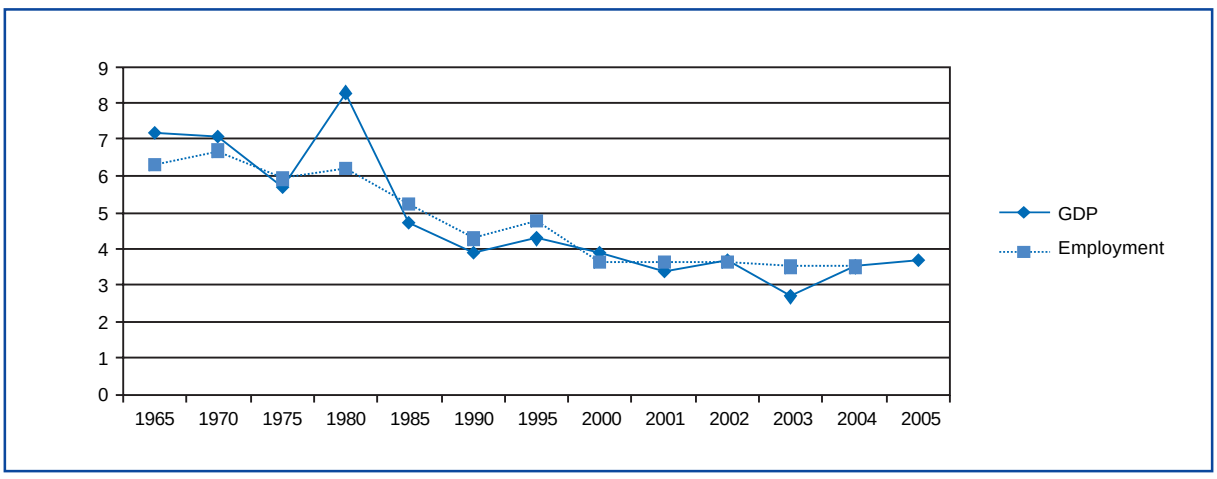
These policies, in tandem with the central bank's foreign-exchange management, help account for the steep decline in mining industry spending on exploration and investment. In a post-crisis environment it will be essential to revise and, in some instances, reverse these policies if the industry is to exploit its potential to the full. It is therefore likely that the speed and nature of mining industry recovery and expansion will depend primarily on the private sector response to a new mining industry policy dispensation.

While Zimbabwe has extensive and diverse mineral deposits, it is not ranked as one of sub-Saharan Africa's resource-rich economies because – coal, platinum and chrome excluded – deposits are relatively small and also relatively expensive to exploit. Consequently, while mining has traditionally been a major source of foreign exchange earnings – today ***the*** major exporter – its contribution to GDP has not only been tiny but it has declined over the long run (Figure 7).

The country's failure to exploit its mineral wealth to the full during the protracted commodity price boom since 2002 is attributable to:

- ***A difficult, indeed increasingly hostile, business environment:*** Since the late 1990s the operating environment for mining companies has become increasingly uncertain with question marks over the royalty and tax regime, exchange-rate management and, most recently, the ownership regulations. New legislation, enacted in 2007, requires foreign-owned mining companies to divest 51 percent of their equity stakes to indigenous Zimbabwean investors. Of this, 25 percent must be allocated to the state which will pay for its stake in the mines from future dividends.
- ***Deteriorating physical infrastructure:*** Erratic availability of electricity and rail transport has hindered production and increased operating costs.
- ***Scarce foreign exchange:*** Restricted access to foreign currency has stifled new and expansion investment projects and increased downtime on the mines, thereby undermining productive efficiency and raising operating costs.
- ***Exchange-rate mismanagement:*** The long-run strategy of maintaining an over-valued exchange rate has deterred new investment and curbed output growth.
- ***The skills exodus:*** With mining skills in scarce supply internationally, Zimbabwe has become a substantial exporter of skilled mining personnel – geologists, engineers, technicians and managers.
- ***Declining international competitiveness:*** The combination of rapidly rising operating costs, deteriorating infrastructure, scarce skills and an overvalued exchange rate has undermined competitiveness.

Figure 7: Mining's share of GDP and formal sector employment (%)



Sources: Central Statistical Office, Harare. National Accounts (various editions)

From the above it follows that the key priorities that will have to be tackled if mining is to become the lead sector in a post-crisis economy, as it is well-positioned to do, are:

- The re-establishment of macroeconomic stability – low inflation, positive real interest rates, a competitive exchange rate and a business-and investment-friendly tax regime.
- Substantial investment in physical infrastructure, especially transport and power.
- The creation of an investment-friendly institutional environment – ownership and market entry regulations, tax regime, appropriate environmental laws and the repeal of existing legislation deemed inimical to the development of a modern, technologically-progressive mining industry.
- A medium-term (five year) hybrid programme of investment in industry specific training and skills development and measures to encourage the return of skilled Zimbabweans along with appropriate incentive packages for immigrants/ expatriates to close the skills gap that would otherwise threaten accelerated development of the mining sector.
- Measures to encourage downstream value-addition activities.

Section 4

International Experience and Policy Recommendations for Recovery

4.1 THE LONG-TERM OUTLOOK FOR MINERAL PRICES

Between 1980 and 2003 policies around the world concerning the mining industry were influenced by declining real prices for metals and minerals. Resource nationalism retreated and privatization, often partial, took hold as governments sought new sources of finance for investment, deterred by depressed prices. Global demand for metals and minerals fell in the early 1990s and only returned to its long-run growth rate after 1997. Because many mines were operating well below installed capacity as demand began to recover in the late 1990s, they were able to increase production by bringing idle capacity back into production meaning that investment remained unusually low.

But with the trend growth rate of demand running well ahead of that of supply, prices increased sharply from 2003 to early 2008, boosted by abnormally high and rising metal intensities in China and sparking an investment boom. Between 2003 and 2007 global investment in non-ferrous metals more than quadrupled to US$9 billion but, as the global financial crisis worsened, demand weakened and mineral prices peaked in the first quarter of 2008, since then investment and output have fallen sharply. The fruits of the recent investment boom will not be felt for several years, especially given lengthy delivery-lags in the mining suppliers sector and the acute worldwide scarcity of technical skills.

Over the long haul (1970–2005) global metals and minerals demand has been increasing at 3.1 percent annually – somewhat below the trend growth rate of GDP, thereby reflecting declining metal intensities of GDP. This secular decline in intensities reversed in the mid-1990s, partly reflecting the transfer of commodity-intensive manufacturing activities to the emerging economies. The reversal was most marked in China during the 1990s where the metal intensity of GDP rose very rapidly, especially from 1998 due to the explosive growth of manufacturing and extremely high levels of commodity-intensive investment in infrastructure. China's metal intensities are 7.5 times as high as in high-income economies and four times greater than in developing regions.

Over the next 20 years, however, China's metal intensities are forecast to stabilize and decline as will those in other emerging markets so that demand growth for metals and minerals will slow from 2015 onwards (World Bank, 2009). Until then, metal demand is forecast to grow 4 percent a year – slightly greater than world GDP – slowing thereafter to around 2.7 percent a year which would be considerably slower than GDP growth.

Supply growth will depend on the pace of resource exhaustion and the quality of new sources of supply on the one hand and the speed at which new deposits are located as well as the improvements in the technology with which commodities are discovered and exploited. Over the long run, metal production costs have declined because the pace of technological advance has more than offset the increased cost of new facilities and, very often, the declining quality of new resources.

The combination of slowing demand – after 2015 – and increased supply points to some weakening in the prices of extracted commodities, though they are expected to remain above their levels of the 1990s, which should be sufficient to ensure fresh investment in new capacity (World Bank, 2009).

Prior to the onset of global recession in the latter half of 2008, there were solid grounds for believing that mining would be the lead sector in Zimbabwe's post-crisis economic recovery, initially as spare and mothballed capacity was brought back on line, and subsequently as industry and investor confidence blossomed giving rise to new investment in exploration and development. Such expectations

have had to be revised in the wake of the sudden end to the 2003-2008 commodity price boom and downgraded forecasts both of long run global economic growth and demand for metals and minerals.

Zimbabwe is disadvantaged too because exploration has been at a standstill since the early 2000s and because years of escalating hyper-inflation and the deterioration of the physical infrastructure, especially the provision of power, water and transport, have undermined cost competitiveness right across the economy. Zimbabwe has lost considerable technical and professional capacity not just from the unprecedented exodus of skills, but the simultaneous decline in the education system's ability to regenerate skills domestically.

The 2008/9 global recession is likely to mean that mining projects already underway or on the drawing board internationally will put back decisions on fresh investment, the more so if the downturn is protracted and the direction of travel of Zimbabwe's transitional political arrangements remain unclear. The country already suffers from very poor ratings for investment and doing business generally and for mining investment in particular.

On the demand side, while it is likely that gold producers in Zimbabwe will benefit from reinvigorated global scepticism about the viability of the currencies of the Organization for Economic Co-operation and Development (OECD) countries forced to borrow and print money to mitigate the impact of recession, in both the short- and medium-term demand for two of Zimbabwe's leading mineral exports, platinum and ferrochrome, could be adversely affected. Depressed short-term demand for motor vehicles in particular will have adverse repercussions for both ferrochrome and platinum while the campaign for smaller, more costly, but more efficient motor vehicles will reduce the rate of demand growth for both minerals over the long run.

Taken together these global influences suggest that while mining may still be the lead sector in Zimbabwe's economic growth over the 2010-2020 decade the industry's prospects look much less promising in 2009 than at the height of the commodity price boom in 2006–2008.

4.2 INTERNATIONAL EXPERIENCE AND THE RESOURCE CURSE

The argument that resource-rich economies grow more slowly than those with a diversified export basket has its origins in the experience of developing economies as a whole over the last 30 years. Developing countries which in 1980 relied on non-fuel primary commodities for upwards of 70 percent of their export earnings increased their per capita incomes by only 0.4 percent a year between 1980 and 2006. In fuel exporting nations, per capita GDP grew 1.1 percent a year while in diversified export economies, reliant mostly on the export of manufactured goods or services, the comparable figure was 1.6 percent a year (World Bank, 2009).

Furthermore, there is a strong correlation between low incomes and commodity dependence. Non-fuel commodities account for 60 percent of the exports of low-income countries compared with 33 percent in high-income states. The World Bank (2009) contrasts resource-dependence with resource-richness to demonstrate that 'resource dependency primarily reflects low levels of GDP, not resource richness'. (World Bank, 2009:99). It shows that while the top 20 non-oil resource-dependent countries have an average annual per capita income of $1 099, the annual income of the top 20 resource-rich countries is 11 times greater.

Three main adverse consequences of resource-reliance are identified in the recent literature:

- Commodity booms result in exchange-rate appreciation which undermines competitiveness in the non-commodity sectors of the economy (Dutch Disease).

- Volatile commodity prices accentuate economic cycles, encouraging governments to overspend during upswings and borrow heavily in an effort to maintain elevated expenditure levels during downswings, thereby reducing growth over the medium-term.

- Resource abundance encourages rent-seeking and corruption by public officials and business leaders while also increasing the risk of civil unrest as rival groups squabble over mineral or oil deposits.

4.3 RESOURCE MANAGEMENT

Today, Resource Curse theory is in retreat with recent research suggesting a positive relationship between resource abundance and GDP growth (Collier and Goderis, 2007, and Lederman and Maloney, 2007). Evidence within SADC is striking too, specifically the marked contrast between the long-run growth performance of the DRC and Zambia on the one hand with that of Botswana on the other (Table 16). From the table it is obvious that it is not the possession of resources that matters but their management. Sound management in Botswana translated into the best long-run growth track record in sub-Saharan Africa, while mismanagement in the DRC and Zambia had negative socio-economic consequence.

Table 16 contrasts the consequences of the sound and efficient resource management policies adopted by Botswana with those of the DRC and Zambia. The role of political and institutional influences cannot be overestimated. The DRC endured decades of rapacious misgovernance by rent-seeking elites culminating in years of civil unrest and internecine strife, while Zambia's governance record for the last quarter of the 20th century helps to explain the country's poor economic performance, substantial inflows of foreign aid notwithstanding.

A second crucial aspect of vital contribution of efficient management in the growth in resource-rich countries is illustrated in Table 17, which contrasts strong productivity growth in Botswana with the negative contributions of total factor productivity in the DRC, Zambia and Zimbabwe. Here too the lesson is not that resources are a curse but their mismanagement is.

Figure 8 shows Human Development Index (HDI) figures for five Southern African countries[8]. Botswana's HDI increased more than 28 percent over the period (1975-2005), while that of the DRC was effectively unchanged while in Zambia and Zimbabwe the index declined some 7 percent. In South Africa, the HDI increased marginally (almost 4 percent).

Table 16: Zimbabwe and regional comparators: GDP growth 1960–2008

Country	1960-2002 (% p.a.)	2003-2008 (% p.a.)
Botswana	7.5	5.3
DRC	0.2	7.0
South Africa	3.1	4.5
Zambia	2.3	5.8
Zimbabwe	2.6	-7.1

Source: Amor Tahari, Dhaneshwar Ghura, Bernadin Akitoby and Emmanuel Brou Aka: 'Sources of Growth in sub-Saharan Africa' IMF Working Paper 04/176 (2004), and IMF Regional Economic Outlook for sub-Saharan Africa (October 2008)

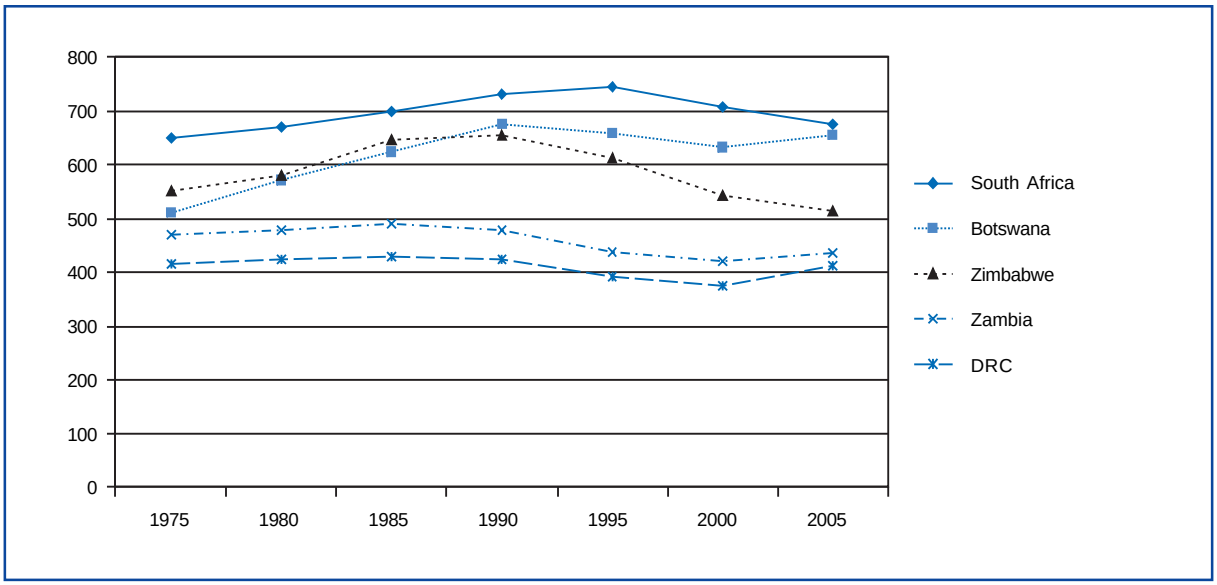
Table 17: Sources of growth 1960–2008 (% p.a.)

Country	GDP Growth	Physical Capital	Labour	Total Factor Productivity
Botswana	7.5	3.8	1.7	2.0
DRC	0.2	1.1	1.6	- 2.4
South Africa	3.1	1.5	1.4	0.1
Zambia	2.3	1.7	1.6	-1.0
Zimbabwe	2.6	1.6	1.8	-0.7

Source: Amor Tahari, Dhaneshwar Ghura, Bernadin Akitoby and Emmanuel Brou Aka: 'Sources of Growth in sub-Saharan Africa' IMF Working Paper 04/176 (2004)

[8] The Human Development Index, computed annually by the UNDP, seeks to measure human welfare using three indicators – income per head, education and life expectancy at birth.

Figure 8: Human development index: Selected Southern African countries



Source: UNDP, Human Development Report (2007/8)

A second indicator of Botswana's prudent application of mineral rents is its education spend, which at 10.7 percent of GDP (2005) was substantially higher than in other regional resource-rich countries. In Namibia the figure was 6.9 percent, 5.4 percent in South Africa, 4.6 percent in Zimbabwe and between 2 and 3 percent in Angola and Zambia. (UNDP: Human Development Report, 2007/8).

Why then is Botswana different? Why did diamond wealth not develop into resource curse effects, including political instability? Why was macro-economic policy sound and why did the government invest so heavily in education, health care and infrastructure? Robinson (2008) seeks to answer these questions by reference to institutional influences, most notably 'the long process of state and institution formation inherited from the Tswana states' (Robinson, 2008:5) that make up Botswana, as well as the strong, pragmatic leadership of the country's leading politicians. He notes that parliamentary institutions inherited from colonialism remained in place in Botswana in contrast to most other African countries where presidential institutions were introduced and expanded after independence.

The country managed to evade the resource curse trap not through reliance on heterodox policies so often advocated by critics of market-driven economies, but by the efficient adoption and implementation of orthodox strategies. In Robinson's words: 'The issue is not finding the binding market failure, it is trying to achieve an institutional and political environment which is conducive to making socially desirable choices' (Robinson, 2008:14).

But because its success is 'a complex outcome of history, institutional building and interests' (Robinson, 2008:15) Botswana is not a good role model for countries like DRC, Zambia or Kenya which have very different historical experiences and ethnic compositions. The lesson is that the resource curse thrives where institutions are weak, where ethnic rivalries are strong and where political elites put private satisfaction ahead of social gains.

Successful though it has been, the Botswana model is not without its shortcomings. Very little progress has been achieved in reducing the country's excessive dependence on a single industry, diamonds, which account for 88 percent of exports, and this despite decades of government-driven diversification strategies. Indeed, in the 2009 budget the Botswana Finance Minister, in a country with decades of budget surpluses behind it, warned that fiscal deficits could reach as much as 10 percent of GDP in the 2009/10 and 2010/11 fiscal years.[9] Fortunately, years of prudent management

[9] Budget Speech, February 2009.

have left the country with over US$9 billion in reserves that will comfortably finance even very large budget deficits for a several years. But private sector forecasts suggesting that growth could turn negative in 2009 and 2010 and the projected exhaustion of diamond resources after 2030, mean that diversification of the economy must be top priority.

Export performance too has been disappointing. The share of exports in GDP has remained constant since 1997, while the share of non-mining exports in non-mining GDP actually fell by ten percentage points between 1997 and 2006. Productivity in transport and manufacturing has been declining since the late 1990s. In 2006, its export concentration ratio of 73 percent was the continent's highest for non-oil countries after Mali and Guinea-Bissau. (Delechat and Gaertner, 2008).

There must be concern too over the income inequality. Botswana's Gini coefficient of 60.5, measuring income equality (the higher the figure the more unequal the pattern of income distribution) is the second highest in Southern Africa, after another resource rich country, Namibia (74.3)[10].

While Botswana's experience refutes Resource Curse theory it suggests that the country has yet to find a sustainable development strategy. By the time that diamond revenues are projected to decline sharply - from 2030 onwards – the country must have developed new growth engines. Given the weak performance of manufacturing and agriculture, accounting for 4 and 2.2 percent of GDP respectively, compared with mining's 33 percent and 16 percent for government, financed primarily by mineral revenues, it is far from clear how growth will be sustained over the long-term. The lesson is that fiscally responsible management, including the plough-back of mining rents into health, education and infrastructure, is not enough.

International experience shows that a temporary increase in export revenues invariably leads to unsustainable levels of procyclical government spending of a kind that was difficult to reverse when commodity prices fell. Often too fiscal difficulties have been exacerbated by the imposition of higher windfall taxes, designed to ensure that the government increases its share of mineral rents during the good times. On the revenue side, governments have been slow to reduce taxation in line with mining rents, resorting to domestic and offshore borrowing to close budget gaps.

Such policies have adverse implications for long-run growth, partly because the efficiency of government spending programmes deteriorates during the boom – administrations trying to do too much too quickly – but also because investment in mining exploration and expansion is deterred by price-driven changes in taxes and royalties. The evidence suggests that investors are as concerned – if not more so – with tax uncertainty and volatility as the absolute level of taxation.

(a) Because Zimbabwe is not a resource-rich country with a dominant commodity sector it is peculiarly vulnerable to Dutch Disease effects which could constrain the rebuilding of other sectors of the economy. This vulnerability arises from the mismatch between the mining sector's small shares of both output and employment – less than five percent of GDP and formal sector employment – while it accounts for well over half of merchandise exports. Invariably Dutch Disease means that one sector benefits at the expense of others. In post-crisis Zimbabwe this will be a crucial consideration, since a Dutch Disease-inspired overvalued exchange rate would hamper the recovery of agriculture, manufacturing and tourism, all of which will face severe challenges to their competitiveness.

(b) With the advent of dollarization, Dutch Disease effects arise indirectly in the form of appreciation of the currency – dollar or rand – adopted to replace the national currency. Dutch Disease effects will continue to influence sectoral growth patterns because if the reference currency appreciates the competitiveness of all sectors is compromised. Currency devaluation is not an option with the result that adjustment takes the form either of lower real wages and prices or increased productivity, or a combination of the two.

[10] UNDP: Human Development Report (2007/8).

(c) Zimbabwe's straitened post-crisis fiscal position will tempt policy-makers to exploit the mining industry golden goose. This would be unfortunate. Policy-makers should focus instead on establishing a transparent, stable fiscal regime with minimal exemptions and special cases that treats all players equally and equitably.

(d) At the same time, because mining will deplete mineral resources over time, it is imperative that the state secures a fair share of mineral rents for reinvestment in productive assets and human capital – a so-called portfolio management strategy of economic development.

(e) Criticism of Sovereign Wealth Funds not-withstanding there is a strong case for Zimbabwe to establish such a fund that would earmark some proportion of mining rents for reinvestment. The priorities should be set by government and could encompass an element of targeted investment in mining communities, or investment designed to alleviate perceived bottlenecks hampering mining development: transport, power, water and skills generation. The critical requirement is ensuring that mineral rents are not used to finance government consumption spending, or that the extent to which this occurs is minimized. The reason is simple. mining rents represent depletion of natural capital and where they are used to finance consumption the country is consuming its capital.

4.4 THE MINING INDUSTRY INVESTMENT CLIMATE IN ZIMBABWE

How Mining and Exploration Companies Rate Zimbabwe

The most comprehensive survey of the attractiveness of mining investment in Zimbabwe is that compiled annually by the Fraser Institute in Canada.[11] Zimbabwe has been included in the Fraser surveys since 2001/2 while the inclusion of other – potentially rival – investment locations in the sub-Saharan region provides a basis for inter-country comparisons.

The main yardstick developed by the Institute is its Policy Potential Index (PPI), which serves as a 'report card' to governments on the attractiveness, or otherwise, of their policies from the viewpoint of a minerals exploration company. While geological and economic evaluations are always requirements for exploration, in today's globally competitive economy, mining companies pay increasing attention to a country's policy climate.

The PPI is a composite index measuring the overall policy attractiveness of the 68 jurisdictions in the most recent survey (2008). It measures the effects on mining exploration and investment of government policies including uncertainty concerning the administration, interpretation and enforcement of existing regulations; environmental regulations; regulatory duplication and inconsistencies; taxation; uncertainty surrounding indigenous land claims and protected areas; infrastructure; socio-economic agreements; labour issues; the geological database; political stability and security.

The PPI is normalized to a maximum score of 100. A jurisdiction that ranks first in every policy area would have a score of 100; one that scored last in every category would have a score of 0. Since no location scored first in all categories, the highest score (2008) was 97.0 (Quebec), while Honduras tied for last place in each category, scoring the lowest grade ever recorded in the survey of zero. Zimbabwe was ranked second from bottom with a score of 2.9.

Since Zimbabwe's first inclusion in the survey in 2002, the country's position has deteriorated dramatically, in absolute as well as in relative terms. Until 2008, Zimbabwe's scores of 2 (2006) and 3 (2007) for the PPI were the two lowest scores recorded for any jurisdiction since the launch of the survey in 1997.

[11] The Fraser Institute, Annual Survey of Mining Companies (2007/8) was sent to approximately 3,000 exploration, development and mining consulting companies around the world. The survey represents responses from 372 of those companies.

Table 18: Policy potential index: Selected Africa countries and world averages

Country	2002	2003	2004	2005	2006	2007	2008
Botswana	35	49	47	74			
Ghana	49	45	47	60	61	45	63
South Africa	45	47	43	32	45	29	35
Tanzania	56	41	41	35			
Zambia	38	24	31	50			
Zimbabwe	22	20	26	8	2	3	3
World Average	53	48	51	47	42	38	49
Highest	85	85	85	94	87	78	89
	(Chile)	(Chile)	(Chile)	(Ireland)	(Chile)	(Australia)	(Finland)
Lowest	20	19	20	8	2	3	0
	(Russia)	(Indonesia)	(Philippines)	(Zimbabwe)	(Zimbabwe)	(Zimbabwe)	(Honduras)

Source: Fraser Institute, Annual Surveys of Mining Companies (2002–2008)

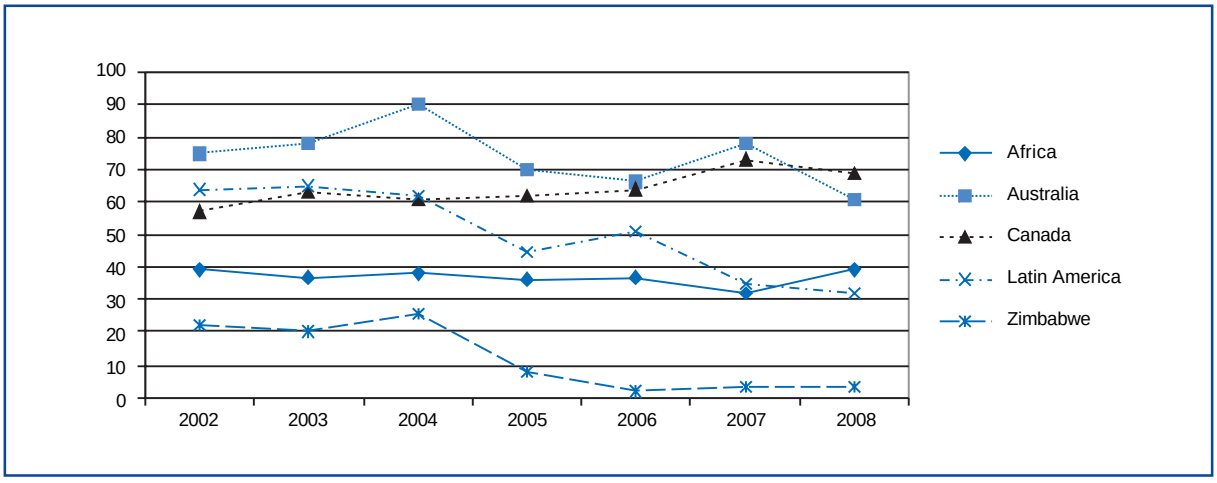
Table 18 shows slight deterioration in the global policy environment for mining exploration and investment over the 2002 to 2008 period, with the average index down 8 percent. The Zimbabwe index declined 88 percent between its peak in 2004 and 2008.

Figure 9 depicts regional trends showing how more developed regions – Australia and Canada – have substantially higher PPIs, while in Africa the policy index trended downwards, partly reflecting the steep decline in Zimbabwe, before recovering slightly in 2008. Latin America too shows a declining trend, in part the result of 'Resource Nationalism' spearheaded by the Chavez government in Venezuela.

Composite Index

The Fraser Institute composite index combines both the policy potential index and results from the 'best practices' questions, which in effect rank a jurisdiction's 'pure' mineral potential, given 'best practices'. The index is weighted 40 percent by policy and 60 percent by mineral potential, which is probably unstable under extreme conditions – such as in Zimbabwe in 2008 – because extremely adverse policies and infrastructural conditions are likely to offset much of the mining industry's potential for profitability. On this index Zimbabwe scores 20 percent (2008), which puts it in 60th place out of 68 jurisdictions. It ranks below all other African locations, except Mali (14 percent).

Figure 9: Policy potential index: Regional trends



Source: Fraser Institute, Annual Surveys of Mining Companies (various editions)

Table 19: Zimbabwe mineral potential index: Assuming current regulations and land use

	2007/8	2006/7	2005/6	2004/5	2003/4	2002/3	2001/2
Score	0.17	0.06	0.13	0.22	0.44	0.31	0.29
Rank	67/68	65/65	62/64	61/64	42/53	39/47	33/45

Source: Fraser Institute, Annual Surveys of Mining Companies. (2002–2008)

The Fraser Institute believes that the Current Mineral Potential Index (Table 19) is the best indicator of investment attractiveness. This is based on respondents' answers to the question asking whether or not a jurisdiction's mineral potential under the existing policy environment encourages or discourages exploration. Clearly, this takes account of mineral potential, meaning that some jurisdictions, which rank high in the policy potential index but have limited mineral potential, will rank lower in the Current Mineral Potential Index. At the same time, jurisdictions with a weak policy environment but strong mineral potential will do better. However, there is considerable overlap between the two indexes partly because good policy will encourage exploration, which in turn will increase the known mineral potential.

Table 20 shows the mineral potential of jurisdictions, assuming their policies are based on 'best practices'. In other words, this index represents a jurisdiction's 'pure' mineral potential since it assumes a 'best practices' policy regime. However, although Zimbabwe fares better than in Tables 17 and 18, it still ranks as the least attractive African location amongst the ten listed (Tables 17 and 18).

The Fraser Survey is valuable also because comparisons can be made between the scores of different countries within Africa and globally that will be Zimbabwe's competitors for mining and exploration investment in the future.

Table 22 shows that pure mineral potential has improved in all African countries with the exceptions of South Africa, Zambia and Zimbabwe. Indeed, as shown in Table 18, this improvement is a global phenomenon that reflects, at least in part, investor optimism during the boom years, especially 2007/8 when metal prices reached record highs.

Table 20: Mineral potential assuming no land use restrictions and industry 'Best Practices'

	2007/8	2006/7	2005/6	2004/5	2003/4	2002/3
Score	0.74	0.56	0.90	0.60	0.83	0.76
Rank	55/68	62/65	34/64	53/64	31/53	33/47

Source: Fraser Institute, Annual Surveys of Mining Companies. (2007/8 and 2003/4)

Table 21: Zimbabwe and African comparators
Mineral potential assuming no land use restrictions and industry 'Best Practices'

Country	2007/8 Score	2007/8 Ranking	Earliest (year) score	Earliest ranking
Botswana	0.85	45/68	0.84 (2005)	31/64
Burkina Faso	0.93	24/68	0.70 (2005)	52/64
DRC	0.96	15/68	0.88 (2004)	27/53
Ghana	1.00	1/68	0.84 (2003)	25/47
Mali	0.94	20/68	0.83 (2005)	32/64
Namibia	0.86	43/68	n.a	n.a
South Africa	0.87	42/68	0.93 (2003)	13/47
Tanzania	0.89	35/68	0.81 (2005)	35/64
Zambia	0.80	52/68	0.91 (2005)	21/64
Zimbabwe	0.74	55/68	0.76 (2003)	33/47

Source: Fraser Institute, Annual Surveys of Mining Companies. (2007/8)

Arguably, during an unprecedented, protracted minerals boom, potential would have been expected to improve, especially given the rapidity of technological progress. But because assessments are made by different respondents at different times, they are bound to reflect a degree of subjective bias, so that the real value of the comparisons is less the trend over time and more the shift in sentiment between different regions and countries. Table 23 reflects an improvement in all regions, but especially the more developed regions – the US, Europe, Asia and Canada.

Table 22: Pure mining potential: Regional averages

Region	2007/8	2003/4
Canada	91	82
US	81	65
Australia	90	99
Africa	88	81
Latin America	80	86
Asia	96	84
Europe	86	70

Source: Fraser Institute, Annual Surveys of Mining Companies (2007/8 and 2003/4)

Room for Improvement

This is calculated by subtracting each country's score for mineral potential current conditions and regulations from its score for mining potential under best practices. When asked about Zimbabwe's mineral potential under current conditions, only 6 percent of respondents said its potential was either attractive or neutral. But under a best practices regulatory regime, where managers are able to focus on mining potential rather than government-related issues, 56 percent of respondents said Zimbabwe's potential was either neutral or encouraging.

Accordingly, Zimbabwe's score in terms of 'Room for Improvement' is 57 percent, making it 8th from the top in the list of countries where the room for improvement is greatest (Table 23). This table is particularly informative because it highlights just how Zimbabwe could boost its mining investment and output merely by moving towards the best practice frontier in terms of mining regulations.

Comparative factors are crucial. Some countries are not intrinsically attractive from a mining

Table 23: Room for improvement: Zimbabwe and comparators

Country	Room for Improvement (% of respondents)
Venezuela	65
Ecuador	64
Kazakhstan	62
Zimbabwe	57
Russia	55
India	46
South Africa	43
DRC	42
China	38
Botswana, Tanzania	18
Ghana	17
Namibia	7
Chile	3

Source: Fraser Institute, Annual Surveys of Mining Companies (2007/8)

viewpoint, but attractiveness may be improved by a positive regulatory environment. In a world where countries are vying with one another to achieve best practice regulatory environments, as is probably still the case at present – though this may be changing in some countries in response to the growth in resource nationalism – some jurisdictions become considerably more attractive so that relativities change reflecting a global 'catch-up'. Thus, the *relative* attractiveness of Botswana or South Africa may have declined because Ghana and Zambia have reformed their regulatory environments.

Table 24: Room for improvement: Zimbabwe and selected African comparators

Country	2007/8	Earliest (year)
DRC	42	40 (2003/4)
Zimbabwe	57	54 (2001/2)
South Africa	44	35 (2001/2)
Zambia	8	38 (2004/5)
Ghana	17	28 (2002/3)
Botswana	18	17 (2004/5)
Tanzania	18	4 (2004/5)

Source: Fraser Institute, Annual Surveys of Mining Companies (2007/8)

Indeed, as Table 24 shows, this is precisely what has happened. Countries like South Africa, the DRC, Zimbabwe and Tanzania have moved away from the best practices frontier, as a result of which

their room for improvement score has increased. This means that their relative attractiveness as mining investment destinations has deteriorated. In contrast, Zambia and Ghana have reduced their room for improvement scores substantially.

Factor Analysis

The annual surveys also provide an analysis of 12 factors that contribute to the ability of countries to attract exploration investment. Companies were asked to rate the 12 factors for each jurisdiction on a scale of 1 to 5.

Scale

1 = encourages exploration investment
2 = not a deterrent to exploration investment
3 = mild deterrent to exploration investment
4 = strong deterrent to exploration investment
5 = would not pursue exploration investment in this region due to this factor

Tables 25 and 26 show the findings for Zimbabwe for the first year in which the country was included in the survey (2001/2) and the most recent year (2007/8). The percentages in Table 25 measure positive responses – namely the percentage of

Table 25: Percentage of respondents saying factors encourage exploration investment or are only a 'mild deterrent' (2001/2 and 2007/8)

		2007/8	2001/2
1.	Uncertainty concerning the administration, interpretation and enforcement of existing regulations	0	10
2.	Environmental regulations	57	77
3.	Regulatory duplication and inconsistencies (including federal/provincial or federal/state and interdepartmental overlap)	11	24
4.	Taxation regime (including personal, corporate, payroll, capital taxes and the complexity associated with tax compliance)	6	15
5.	Uncertainty concerning indigenous land claims	16	21
6.	Uncertainty concerning which areas will be protected as wilderness or parks	39	74
7.	Infrastructure	19	29
8.	Socio-economic agreements	5	19
9.	Political stability	5	4
10.	Labour regulation/employment agreements	17	24
11.	Geological database (including quality and scale of maps and ease of access to information)	21	47 (2003/4)
12.	Security	4	9 (2003/4)
13.	Availability of Labour and Skills	15	n.a.

Table 26: Percentage of respondents saying factors are either a 'strong deterrent' to exploration investment or would not invest at all because of this factor (2001/2 and 2007/8)

		2007/8	2001/2
1.	Uncertainty concerning the administration, interpretation and enforcement of existing regulations	90	76
2.	Environmental regulations	22	12
3.	Regulatory duplication and inconsistencies (including federal/provincial or federal/state and interdepartmental overlap)	85	43
4.	Taxation regime (including personal, corporate, payroll, capital taxes and the complexity associated with tax compliance)	77	55
5.	Uncertainty concerning indigenous land claims	79	50
6.	Uncertainty concerning which areas will be protected as wilderness or parks	39	5
7.	Infrastructure	38	23
8.	Socio-economic agreements	85	63
9.	Political stability	95	77
10.	Labour regulation/employment agreements	56	41
11.	Geological database (including quality and scale of maps and ease of access to information)	52	20 (2003/4)
12.	Security	83	87 (2003/4)
13.	Availability of labour and skills	55	n.a.

Source: Fraser Institute, Annual Survey of Mining Companies. (2007/8)

respondents who believed that a factor either actively encourages exploration investment or is not a deterrent to such investment.

Lessons from the Surveys

Two aspects stand out from Tables 25 and 26:

- The sharp deterioration over the period in all but one of the factors influencing exploration investment. The remarkable exception is the apparent marginally improved investor perception of the security situation.
- The degree to which the environment is hostile to new investment. Ironically, the most attractive aspect of the investment environment is the laxity of environmental regulations.

The Fraser surveys contain valuable lessons for policy-makers in post-crisis Zimbabwe. In the eyes of potential investors Zimbabwe has considerable mineral potential, though as noted above, being mineral diverse is not the same as being mineral rich. But this potential will not be realized without major changes to, and improvements in, almost all of the13 factors listed in Tables 25 and 26.

Some of the required changes – security and political stability – are beyond the influence of industry bureaucrats and policy-makers, but most – the fiscal regime, policy stability and consistency, labour legislation and developing a geological database – fall squarely within the realm of *Doing Business*[12] reforms discussed in the main UNDP report (reference).

[12] Doing Business reforms are those advocated in the World Bank's annual Doing Business reports.

Section 5

Natural Resources and Economic Development

Growth and development theory and literature focus on income and employment levels and on how, and why, they change. This focus on income and output ***flows*** means that scant attention is paid to the ***stock*** of wealth or net worth and how it grows or declines. Yet this is a vital area for development policy because an increase in the stock of wealth enhances a country's growth potential and capacity.

This aspect is often – indeed usually – overlooked in contemporary analyses of and policies for poverty reduction. With the exception of specific discussion of the environmental repercussions of rapid economic growth, such analyses usually sidestep the question of whether, in their pursuit of rapid income growth, countries damage or even destroy their natural resource (wealth) base. A country may appear to be raising billions in new revenue by taxing platinum earnings but, in effect, this revenue arises from the consumption (depletion) of a natural resource. The revenue from platinum or gold does not necessarily increase a country's fiscal space or net wealth. It depends on how that revenue is spent.

Natural resources differ from other types of wealth because they are not produced – they are a gift. Because they do not have to 'earn' a rate of return – as produced wealth must – they generate economic profits (so-called economic rents) instead. Because exhaustible resources can only be depleted, there are no sustainable platinum or gold mines but countries that mobilize and re-invest the income (rents) generated by their natural resource wealth build sustainable economies.

The problem is compounded because resource-rich countries tend to have low savings rates. This aspect is crucial because it means that where, in pursuit of rapid poverty reduction, a government grows its economy by consuming natural wealth (oil or mineral deposits), its people may get richer but only by living off the country's natural capital which is being depleted. On the other hand, where rents are well-managed – as in Botswana, Malaysia or Norway – they become an important source of development finance for recycling in the form of investment in the infrastructure, schools, hospitals or programmes of economic diversification.

Natural resources therefore play two distinct roles in the development process:

- they are a source of subsistence – in agriculture, forestry or mining, and
- they are a source of development finance – important providers of profits (savings) and foreign exchange.

Developed and emerging economies are very different because asset accumulation is not a significant factor in rich countries, where growth depends on technological change, institutional innovation and efficient institutions. Growth arises from the efficiency with which assets are exploited, not from an increase in assets. But in poor countries, growth is driven by the accumulation of assets which can only happen as a result of saving. Without the creation of savings for investment, there is no way that a poor country will escape from the poverty trap.

The enclave nature of mining sectors invariably means production and consumption linkages with the rest of the economy are limited. Consequently, fiscal and foreign exchange linkages – the recycling of mining revenues to the fiscus and mining export earnings – become the transmission channels through which mining influences economic development.

Although governments of well-managed economies – notably Botswana – have successfully recycled mineral rents into infrastructure and human capital investment, they have had much less success in diversifying their economies, thereby highlighting the problems that policy-makers have experienced in developing linkages between an enclave mining sector and the rest of the economy.

This consideration and historical experience, especially but not only in sub-Saharan Africa,

substantiates the need for an explicit portfolio-management development strategy. Experience worldwide shows that market-driven forces – on their own – are unlikely to achieve the desired diversification of the economy. Where fiscal linkages are pre-eminent, they should be used, within an appropriately market-incentive framework, to foster diversification.

5.1 WEALTH AND ECONOMIC DEVELOPMENT

World Bank estimates suggest that the bulk of global wealth (58 percent) – excluding oil exporters – takes the form of intangible capital defined as human capital and the quality of formal and informal institutions. Produced assets or produced capital account for a further 16 percent while the balance of 26 percent is natural capital or natural resources (World Bank, 2006b).

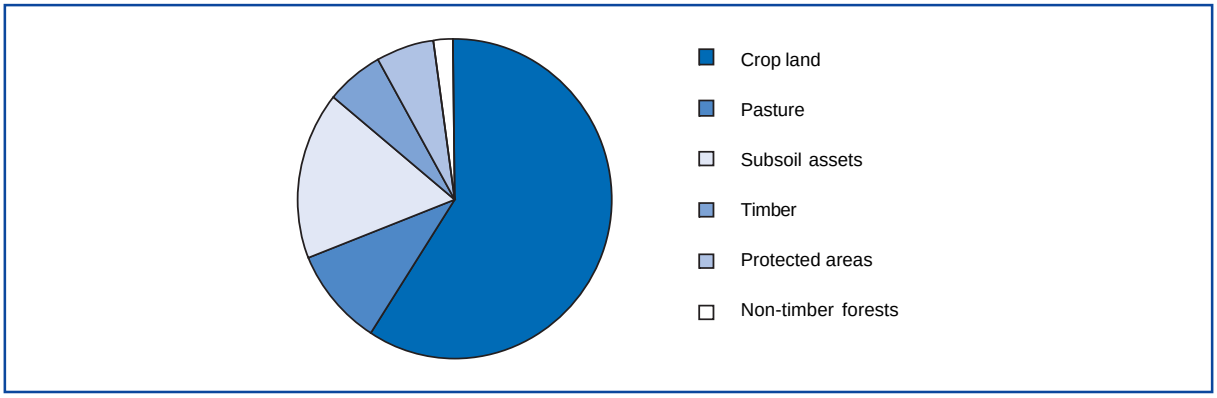
Over time, the share of natural capital falls with rising income per head, but the share of produced capital tends to be virtually constant across income groups, with some increase in middle-income states as a result of the increased capital-intensity of productive processes as countries go through what Professor Michael Porter (1990) and the World Economic Forum have called the investment stage of economic development.

Natural capital is subdivided in six categories dominated in low-income countries by agricultural resources (Figure 10).

Natural capital in Zimbabwe (2000) estimated at US$1,531 per head of population accounts for 16 percent of total wealth, while produced capital's share is 14 percent with intangible capital accounting for 70 percent. Subsoil assets (mineral wealth) contribute 20 percent of natural capital while cropland's share is 23 percent and pasture 17 percent. Non-timber forest resources and timber account for most of the balance (36 percent), with protected areas contributing the remainder of 4 percent.

Given that Zimbabwe is not classified as a mineral rich economy in the same sense as South Africa, Botswana, DRC, Ghana or Zambia, the relative share of subsoil assets in natural capital (20 percent)

Figure 10: Shares of natural wealth in low-income countries (2000)



Source: World Bank: 'Where is the Wealth of Nations?' (2006)

Table 27: Wealth estimates for selected sub-Saharan countries (2000)

Country	Natural wealth %	(of which) subsoil assets %	Produced capital %	Intangible capital %	Total wealth US$ billions	Mineral wealth US$ billions
Botswana	7.8	0.6	22.0	70.2	67.9	0.40
Ghana	12.9	0.6	6.6	80.5	196.0	1.10
Namibia	6.4	0.1	15.1	78.5	69.9	0.07
South Africa	5.7	1.9	12.2	82.1	2,623.7	49.90
Zambia	27.1	2.0	10.6	62.3	64.9	1.28
Zimbabwe	15.9	3.1	14.3	69.8	121.6	3.77

Source: World Bank: Where is the Wealth of Nations (2004)

is surprisingly high. Indeed Table 27 suggests that Zimbabwe's mineral wealth, while insignificant relative to South Africa, is substantially greater than that of designated mineral rich states like Botswana, Namibia and Zambia.

Despite this, Table 28 shows that, by sub-Saharan standards, Zimbabwe is not a wealthy country with per capita wealth less than one-quarter of that in Botswana and only 16 percent of that in South Africa and lower even than in resource-poor states like Lesotho and Swaziland.

Table 28: Wealth per capita: Zimbabwe and comparators US$ (2000)

Country	Wealth per head	Country	Wealth per head
Mauritius	60,284	Ghana	10,635
South Africa	59,629	Zimbabwe	9,612
Botswana	40,592	Kenya	6,609
Namibia	36,907	Zambia	6,654
Swaziland	27,738	Malawi	5,200
Lesotho	15,477	Mozambique	4,232

Source: World Bank: Where is the Wealth of Nations? (2006)

The methodology used in arriving at these estimates is in its infancy and the database, especially of subsoil assets, is incomplete in most, if not all, of the countries. Accordingly, the data in these tables need to be interpreted cautiously. But precisely because Zimbabwe is not a wealthy country, and because it's reliance on natural wealth – especially subsoil assets and agricultural land and forests – is deemed to be substantially greater than in all of the listed comparator countries, except Zambia, it is essential that a post-crisis development strategy should take note of wealth accounting considerations.

5.2 'GENUINE' SAVINGS

By taking account of aspects that do not feature in conventional national income accounts, wealth accounting seeks to estimate a country's 'genuine' savings. In resource-rich countries traditional measures of net savings that focus on fixed capital to the exclusion of the depletion and degradation of natural resources overstate a country's wealth. The concept of genuine savings or adjusted net savings gives a better idea of sustainability because explicit account is taken of changes in natural resources, environmental quality and human capital as well as of valuation changes in produced assets. Negative genuine savings in a country means that wealth is being consumed – a state of affairs that is unsustainable over the long run.

Genuine saving is calculated by deducting natural resource depletion (minerals, forests, land degradation) and environmental damage from net national savings. Current spending on all levels of education and skills development is then added back to adjust for investment in human capital. Technically, the loss of skills through emigration should also be taken into account but the database is usually inadequate for this, as is certainly the case in Zimbabwe.

The importance of the genuine savings concept in the context of the mining industry in post-crisis Zimbabwe is underlined by the stark contrast between African countries with high genuine savings rates (Botswana and Namibia with savings of over 20 percent and 30 percent of GDP respectively in 2003) and major oil exporters like Angola (-7.8 percent of GDP) and Nigeria with a negative savings rate of 34 percent of GDP.

Table 29: Crude estimates of genuine savings (% of GDP): Zimbabwe and comparator countries

Country	Net saving	Education spending	Energy depletion	Mineral depletion	Forest depletion & pollution damage	Genuine savings
Angola	44.2	4.4	- 55.9	0.0	- 0.5	-7.8
Botswana	29.8	5.6	0.0	- 0.5	- 0.5	+34.4
Ghana	8.4	2.8	0.0	- 1.5	- 4.2	+ 5.5
Namibia	14.4	7.4	0.0	- 0.3	- 0.5	+21.0
Nigeria	17.3	0.9	- 50.8	0.0	- 1.4	-34.0
South Africa	2.4	7.5	0.0	-1.0	- 2.1	+6.8
Tanzania	5.1	2.4	0.0	- 0.2	- 0.5	+6.8
Zambia	- 3.9	2.0	0.0	- 2.5	- 0.4	-4.8
Zimbabwe	3.3	6.9	0.0	- 0.6	- 1.8	+7.8

Source: World Bank: Where is the Wealth of Nations? (2006)

Savings ratios in Zimbabwe, in common with most low-income countries, are low – indeed negative in recent crisis years. World Bank estimates for 2000 put the ratio of genuine saving to Gross National Income (GNI) at 7.8 percent (Table 29). Although in 2000 Zimbabwe's economy was contracting, its savings rate was positive, meaning that while living standards were falling the country was still able to invest for the future.

By contrast countries like Angola and Nigeria have grown very rapidly thereby reducing poverty but at the cost of consuming natural resources in the form of oil and gas. The lesson is that only when wealth and savings indicators are taken into account is it possible to assess whether growth is sustainable.

But even with positive genuine savings of 7.8 percent of GNI, Zimbabwe still had a savings gap of 0.7 percent of GNI, measuring how much extra saving was needed to maintain wealth per capita at unchanged levels. This is because in 2000, when the estimates were made, population was growing by 2 percent annually which, for wealth per capita to be maintained, translated into a genuine savings requirement of 8.5 percent of GNI.

All but five of 32 sub-Saharan countries for which calculations were made were in the same category. Many were experiencing positive net saving per capita but wealth per capita was declining because the rate of population growth exceeded that of wealth creation. The exceptions included resource-rich states like Botswana and Namibia that managed their resource rents efficiently.

5.3 THE RESOURCE CURSE

History shows that in some parts of the world – especially sub-Saharan Africa – resource extraction has failed to deliver sustainable increases in the rate of socio-economic development. Studies of this 'Resource Curse' theory distinguish between the 'internal' and 'external' explanations – the latter including long term declines in the terms of trade of mineral exporters, the volatility of export earnings and Dutch Disease effects leading to currency overvaluation. Internal explanations focus on policy errors by governments, as a result of which countries over-consume. This happens because income levels that justify high levels of private and public sector consumption fail to take account of the depletion of natural resources so that consumption levels cannot be sustained over time.

Macroeconomic analysis suggests that the exploitation of natural resources should contribute to faster economic growth. Experience in countries such as Botswana and Norway shows that the mere existence of a rich natural resource base does not predestine a country to failure. Where natural wealth fails to translate into socio-economic advance, policy is normally at fault as evident from the stark contrast between successful resource-rich African economies like Botswana and failures like Nigeria and Zambia. Academic researchers explain this in terms of the rent-seeking behaviour of politicians whose conduct fosters patronage and fractional politics, as is the case in Zimbabwe.

The crucial role of economic policy is illustrated in Figure 11.

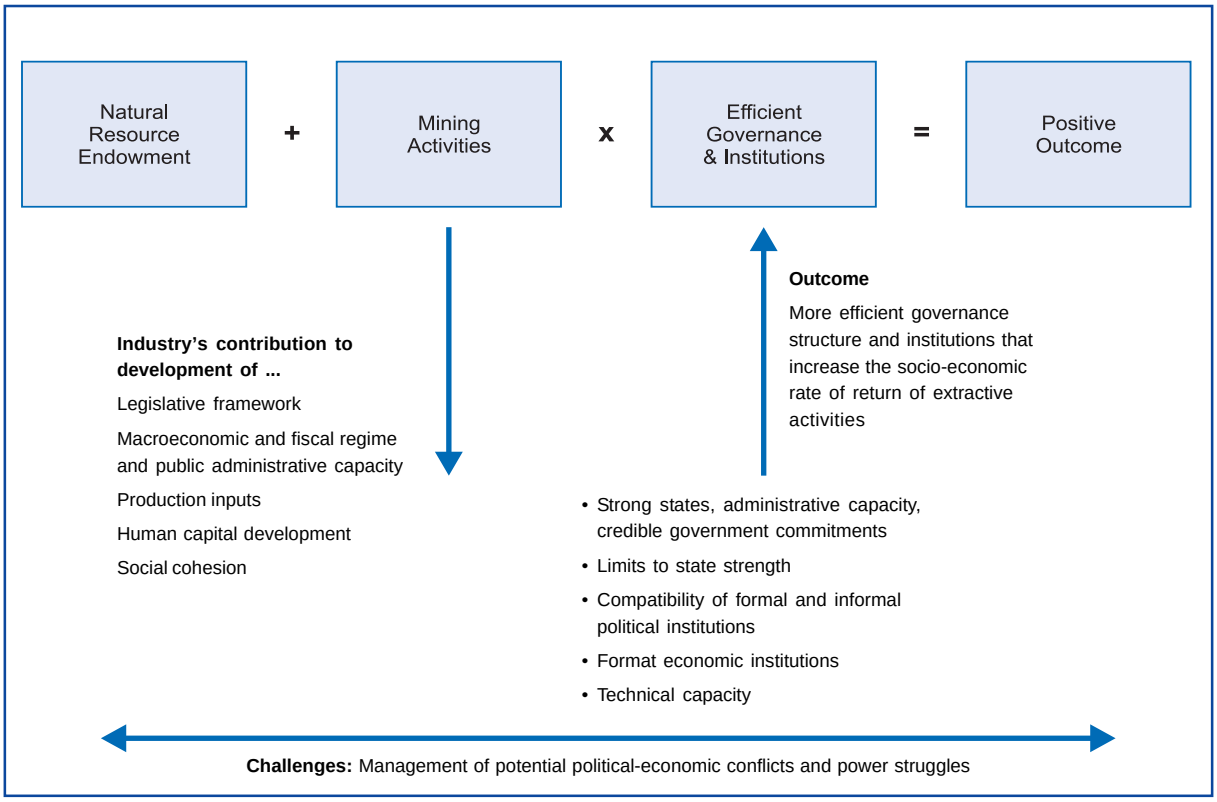
Natural Resources + Mining Activities + Sound Macroeconomic Policies = Positive Outcomes

Natural Resources + Mining Activities + Rent-Seeking = Negative Outcomes

Because Zimbabwe is not a resource-rich country in the same category as Botswana or Nigeria, it is far less susceptible to the Resource Curse. But its natural wealth is being depleted and, especially during commodity price booms, such as that since 2002, it will be vulnerable to adverse Resource Curse and Dutch Disease effects, particularly if the commodity boom should coincide with a medium-term surge in aid and foreign direct investment inflows.

Two broad approaches for tackling resource-curse problems are mooted in the literature – creating special oil, or mineral, funds that restrict government discretion in spending resource rents, or transferring the proceeds directly to the people, with minimal governmental intermediation. However, apart from Norway – a country with strong institutions and a healthy democracy – the experience of oil funds has been disappointing and the evidence from a number of emerging markets suggests that such funds have not been able to insulate oil revenues from appropriation by governments (Birdsall and Subramanian, 2004).

Figure 11: The composition of effective governance



Source: International Council on Mining and Metals (ICMM). The Challenge of Mineral Wealth (April 2006)

This is not an issue of technical financial management but of the failure of public oversight and accountability – the checks and balances provided by a vibrant democracy and free media.

For these reasons, there is strong support for the direct distribution of mineral wealth to the people. It is argued that families make more rational and efficient spending decisions than do governments, especially where the latter have ready access to substantial revenue inflows generated by oil wells or mines. Where the marginal cost of raising revenue is very low – even close to zero – there is little incentive for governments to spend wisely or to provide adequate public services. Critics of such direct distribution policies argue that it is simply impossible to prevent intervention by the authorities at national or local level.

Ultimately, the solution lies in reforming governance. Resource Curse experience shows that the greater a country's natural wealth, the less susceptible it is to political and institutional reform and the more vulnerable it is to war and civil unrest (Angola, Equatorial Guinea, Chad, the DRC). The richer is the state – the lower the marginal cost of raising revenue – the less likely it is to adopt policies designed to attract investment and to diversify its economic base. Accordingly, resource curse effects become self-perpetuating, as in Nigeria or Angola.

It is this consideration that justifies the Sovereign Wealth Fund (see Box page 47) approach, provided three principles are enshrined in the legislation establishing such institutions:

1. Revenue derived from resource rents should be paid to a Wealth Fund charged with managing the capital and ensuring that interest or dividend income be reinvested in produced or intangible assets. Fund revenues should be 'ring-fenced' from other sources of public revenue.

2. The Fund should operate with a parliamentary mandate, whereby the representatives of the people stipulate how the revenues should be used. The Board of the Fund should be required to report periodically to parliament, rather than to the government.

3. Transparency: SWFs – the exception is the Norwegian Fund – have a dismal record in this regard. The fund must be subjected to public audit processes, preferably by reputable

international audit firms and the results published timeously so that the public knows how much is being collected and how it is spent.

5.4 MANAGING WEALTH – A PORTFOLIO MANAGEMENT STRATEGY

Recent analysis of this kind highlights the necessity of adopting a portfolio management strategy in resource rich, especially mineral- and oil-rich, economies. Some assets in any country's wealth portfolio are exhaustible and can only be transformed into other assets through the investment of resource rents. Exhaustible resources can only be depleted. There are no sustainable mines, but there are sustainable mining countries that are succeeding in translating mineral rents into physical assets (produced capital) and human capital. Using resource rents for consumption is tantamount to consuming capital. Accordingly, for mining assets to become a platform for sustained development, resource rents must be mobilized and channelled into productive and profitable investment.

Given the crude nature of some of the assumptions underlying the calculations of wealth, depletion and genuine savings, such conclusions may appear to be theoretical abstractions from reality. But they contain a kernel of truth crucial to future mining policy (and also the management of other natural resources from farmland to forests and tourist attractions) – namely that sustainable development requires that the excess profits (rents) of natural resource-depleting activities like mining be invested in the creation of new assets and not used for consumption.

This is a three-stage process involving:

- estimating – and possibly managing – the rate of resource depletion;
- extracting the rents necessary to cover the resource depletion gap through taxation of mining companies, or dividends from state-owned mining enterprises; and
- ensuring that the proceeds are invested, via a Wealth Fund, in profitable and productive assets, tangible and intangible.

5.5 ECONOMIC RENTS

This is a highly complex not to say controversial field. Natural resources, unlike output created by human activity, yield large 'rents' or windfall gains that are rewards in excess of effort. Such rents are extracted either by the state or the owners, who may be foreign or local corporations. Mining creates genuine wealth from previously sterile rock and enables the extraction of economic rents.

The economic rent of mining has been defined as 'the value of the product less all the direct and indirect costs of production, including the minimum return to capital required to make an investor commit funds in the first place' (World Bank: 1992). Those rents can be used both to support present consumption and to invest in human and physical capital to improve living standards.

Much of the policy debate surrounding the role of the mining industry in a strategy for sustainable development focuses on the definition of economic rents and how they should be extracted and used. There are, however, many unknowns and uncertainties that complicate policy formulation.

The concept of depletion is one such fuzzy area because of value-additions to a large proportion of mineral production. This means that when calculated on a mine-head basis the real extent of depletion is exaggerated because value-added is greater. Thus, the depletion element should be reduced and restated on a net basis that takes account of the extent of recycling (value-addition). Account needs to be taken too of the costs of final closure, including any rehabilitation of the mine site and associated facilities.

Furthermore, because costs and revenues accrue at different stages in the life of a mine, they need to be converted to present value in order to calculate the true economic rent earned by the mine, which raises the difficult issue of determining an appropriate rate of social discount[13] , probably in the region of 2 to 4 percent.

[13] The social rate of discount is defined as the rate at which a society discounts future additions to consumption relative to present benefits.

Section 6

A Mining Strategy for Post-Crisis Zimbabwe

6.1 LINKAGES

Mining may contribute to poverty reduction in a number of ways – the most direct linkages being job and income generation along with opportunities for growth for lateral or downstream businesses. Indirect benefits include linkages through infrastructural investment – new and better roads or railways, access to water supply and social services provided by large-scale mines (schools, clinics and housing).

Other major benefits are indirect – increased foreign-exchange earnings and greater government revenue.

While rich mineral endowments provide scope for economic development and poverty reduction, many economies driven by extractive industry activities have failed to leverage this wealth efficiently. Governments blame exploitive foreign investors and multinational mining companies for this, but often states have consumed rather than invested mineral rents. Zimbabwe has experienced the worst of all worlds. The industry has stagnated at a time of booming commodity prices while rents extracted by the state have not been reinvested in wealth creation.

Linkages and impacts are best analysed under three headings – economic, social and political, and environmental. Because medium- and large-scale mining projects are capital- and skills-intensive, the trickle-down impact on economic development is limited. In Zimbabwe, because of the combination of declining value added, structural changes within the mining industry and technological progress, formal mining sector employment has fallen while real earnings have declined.

In Ghana, foreign companies have invested US$5 billion in new gold mining projects since 1986 but total employment has fallen by a third as the industry has become progressively more capital-intensive and more efficient.

It follows that mining's main economic contribution is more likely to be indirect than direct in the form of the promotion of exports thereby easing the foreign exchange constraint and the generation of government revenue. In Botswana, for instance, the mining industry accounts for 40 percent of GDP, 90 percent of exports and half government revenue, but employs less than 10,000 people. In Chile in the 20 years to 2005, the contribution of mining to national employment fell from 2 percent to 0.8 percent but mining's contribution to GDP doubled to 16 percent over the period.

While the direct employment impact may be small, evidence from a number of countries suggest a substantial multiplier effect in the form of indirect job creation. The Obuasi gold mine in Ghana is estimated to have created some 30,000 indirect jobs – double total direct employment in the country's gold mining industry. But there is also evidence that the expansion of large-scale mining projects in Ghana has displaced thousands of artisanal miners in recent years.

An important indirect effect too is the investment by foreign mining groups in training and health facilities, including the establishment of schools, apprenticeship schemes, post-primary scholarships and some of Africa's most advanced HIV and AIDS prevention and treatment programmes.

As noted elsewhere, in post-crisis Zimbabwe, revenue generation for the state will likely be diluted because major new investments will be foreign-financed, meaning that part of the income generated will be captured by offshore investors. At the same time, Zimbabwe's recent history will force the government to offer more generous conditions to foreign investors – at least initially – than it would like pending the establishment of a track record as an investment friendly location for mining companies.

Negative economic impacts are cushioned or offset where the foreign investors inject a package of assets – not just capital but technology, skills, managerial know-how and export market access. Furthermore, the degree of reliance on private foreign capital can be reduced where projects are

funded by multinational private-public consortia in which a group of foreign companies, foreign governments, the host government and an international agency like the World Bank's private sector investment arm, the International Finance Corporation (IFC), come together to provide the investment package. With this investment model, the host government is able to enhance its bargaining power using a 'divide-and-rule' approach because it is negotiating with a diverse group of investors, with different agendas, rather than a single, dominant, multinational mining house.

6.2 STRATEGIC GOALS

Given this background, a strategy for mining in post-crisis Zimbabwe should take account of five main considerations:

1. Fostering investment, both domestic and (especially) foreign in major projects.

2. Encouraging investment in value-added operations that will increase both export revenues and mineral rents.

3. Ensuring that mining rents are mobilized by the state for investment in produced assets and intangible capital, thereby ensuring that wealth per capita is not eroded by resource depletion.

4. Providing an appropriate social environment in terms of worker welfare, including health and safety considerations.

5. Environmental protection.

This is a classic trade-off situation in the sense that policy measures adopted to foster investment limit the scope and extent of measures aimed at maximizing mineral rent collection by the state. Similarly, social and environmental policies are likely to reduce the return on capital invested thereby possibly deterring investment and reducing mineral rents. At the same time, by establishing a clear and stable mining policy regime, the state can improve the investment environment thereby lowering the risk premium and returns required by mining houses, lenders and investors.

All of which means that a mining strategy must take the form of a delicately-balanced compromise between the measures taken to achieve the five goals outlined above. Policies change with global market conditions. Recently, as foreign direct investment in resource industries has surged, so policies have become increasingly nationalistic. The bargaining power of resource-rich countries has increased relative to that of mining exploration and development companies.

Mining companies, especially foreign groups, who are long-term players, need to be able to take a 10- to 20-year view, possibly longer. They are understandably wary of obsolescing bargain[14] considerations, as illustrated by the recent dispute between Zambian mining companies and the government following the latter's decision to exploit the obsolescing bargain by raising taxes and royalties during the commodity price boom. This was subsequently partially reversed under pressure from the mining companies and falling copper prices.

For their part, governments prefer flexibility because, as recent global experience shows all too clearly, the mining industry is susceptible to boom-and-bust pressures reflected in underinvestment in the 1980s and 1990s resulting in a price boom since 2002, and in all probability, overshooting of both prices and investment in new capacity.

The recent stand-off in Zambia between mining companies and the government over changes to the fiscal regime are a perfect illustration. Because it desperately needed foreign investors to revive the Copper Belt at a time when copper prices were low and Zambia's international investment image was poor, the Zambian government negotiated long-term arrangements with foreign-owned mining companies that now look to be too generous to the investors. Bargains struck in the early 2000s have now begun to obsolesce with the Zambian tax

[14] By 'Obsolescing Bargain' is meant that once an investment outlay has been made and the project completed and operational, the authorities feel empowered to revise the 'rules of the game' – by raising taxes, insisting on state participation in ownership, demanding the employment or promotion of local personnel or stipulating domestic content requirements. The bargain obsolesces because the investor's bargaining power is diminished once the capital is invested and the project or business becomes captive to government policy changes, unless explicit protection is provided under international investment protocols.

authorities seeking to increase royalty payments and impose higher corporate taxes, including a windfall tax levied on the price of copper.

Although parallels between Zambia and Zimbabwe are imperfect, there are important similarities. At the start of the 21st century Zambia had a run-down infrastructure, a severe shortage of skills, a daunting external debt overhang and a copper mining industry operating at less than one-third of capacity. The country had a 20-year record of poor economic performance along with an unattractive investment environment and a poor investment image internationally.

In at least one respect, Zimbabwe is worse off than Zambia, whose turnaround came just in time to catch and benefit from the global commodity price boom. But Zimbabwe is almost a decade behind, meaning that it has missed out on the abnormally favourable global environment since 2002 and will therefore start the post-crisis period in catch-up mode, severely constrained by bottlenecks in respect of skills, foreign exchange and physical infrastructure.

This is likely to necessitate tilting the balance in favour of objectives 1 and 2 – fostering new investment and encouraging greater value-addition – relative to the other three goals. It might be argued that this justifies a fine-tuning approach based on an activist mineral strategy that discriminates between different projects, commodities and time horizons.

But because mining investment decisions are long-term in nature with a time horizon in excess of ten years and because extractive industries and utilities are susceptible to 'Obsolescing Bargain' considerations – witness the recent experience of the mining industry in Zimbabwe, subjected to a bewildering and fast-changing array of government regulations in the fields of ownership and the foreign exchange and tax regimes – the case for policy stability, and against fine-tuning, is overwhelming.

In its 'Strategy for African Mining' (1992), the World Bank argued that the future development of the mining sector in Africa 'will largely depend on attracting new high risk capital from foreign mining companies' with the technical and managerial capability to find new deposits and develop new mines.

Mineral development, the report argued, requires that governments focus on 'the regulation and promotion of the industry and that private companies take the lead in operating, managing and owning mineral enterprises'. Only in South Africa, and 'possibly' Zimbabwe, was the domestic private sector strong enough to take the lead.

Sadly in the 16 years since that report was published, three developments have changed the face the Zimbabwe industry:

- State participation has increased;
- Some major foreign players have divested, notably Lonrho, Union Carbide and Anglo American Corporation of South Africa, though it still has one major platinum project; and
- With the substitution of foreign for local ownership by new foreign players like South Africa's Metallon and China Steel, the domestic private sector has shrunk.

6.3 A SECOND-BEST STRATEGY?

This, coupled with existing severe constraints in terms of foreign exchange, domestic savings, skills and infrastructure underlines the necessity for foreign investors to play the lead role in reviving Zimbabwe's mining sector. Although Zimbabwe does possess mineral resources not available elsewhere – especially platinum and chromite – the country must still compete in global markets for foreign capital and entrepreneurship, meaning that a new post-crisis minerals dispensation must be internationally competitive.

There is no simple, optimal, model for the fiscal, operating and ownership regimes in post-crisis Zimbabwe. The need for competitiveness, especially in the immediate post-crisis period when the infrastructure, domestic savings, skills and foreign currency constraints will be particularly severe, implies that during these years priority will have to be given to promoting investment, even if this means, as it almost certainly will, a failure to extract mineral rents to the extent required to sustain the national capital stock.

The logic underlying such an approach is the creation of a suitably investment-friendly environment within the mining sector that will reduce risk premiums while fostering greater investment. To cushion the impact on mineral rents, the tax structure should be designed to ensure that windfall gains are captured by the state.

6.4 RENT SHARING

The global shift towards more investor-friendly policies, especially in the 1990s (see Box below), has since proved fragile as was predicted in 1997 by Omorogbe when he wrote: 'When conditions change it is reasonable to assume that the developing countries will again make efforts to assume "permanent sovereignty" over their natural resources in whatever way is possible and that since it is the second time around they will achieve more success. Any supposed "incentives" or stabilization measures which have come into existence during this period and which appear to run counter to nationalistic ideals are likely to prove problematic in the long run'.

Between 2002 and 2008 the obsolescing bargain that had disappeared from the industry vocabulary returned, fostered by mistaken optimism that mineral and metal prices would stay at very high levels for long periods. By late 2008 some of this optimism had dissipated to be replaced by more sober assessments of the mining industry's long-term prospects.

From a policy viewpoint the crucial lesson is that rent-sharing strategies should observe two cardinal principles:

- They should be determined by long-term considerations, given the long-term nature of extractive industry investment, rather than seeking to exploit short-run windfall gains during boom years and being forced to offer generous incentive packages during periods of weak demand and prices.
- Section 6.3 highlights the degree to which mining investors put a premium on stability in respect of taxation and investment and ownership regulations.

Mining Code Reforms in Africa

Three generations of mining code revisions in African countries have been identified (Campbell, 2004)

1. *In the 1980s under pressure from donors and international lenders, African governments experimented with state withdrawals and privatization as a means of attracting foreign direct investment (FDI). Part of the policy packages were the granting of generous – in some cases over-generous – incentives designed to attract foreign participation.*
2. *The second generation of reforms in the early to mid-1990s involved increased state regulation, often to protect the environment but also to increase the state's revenue from taxation.*
3. *Third generation reforms from 2000 onwards, under encouragement from the World Bank, sought to facilitate as well as regulate foreign investment. The 1998 mining code in Tanzania, for instance, allowed 100 percent foreign ownership, introduced guarantees against nationalization and expropriation and permitted unrestricted repatriation of both capital and dividends.*

Many of these reforms were designed at a time of depressed metal and mineral prices and while they may well have been excessively generous they were successful in terms of attracting substantial inflows of FDI and fostering the rapid expansion of the gold sector in Tanzania.

By 2006-2008, the commodity price pendulum had swung to the point where resource nationalism became popular once again, encouraging some governments to return to the obsolescing bargain strategies of the 1960s and 1970s, whereby codes were amended or even revoked, taxes and royalties increased and state ownership programmes revived. Consequently, a number of African countries, including Tanzania, the DRC, Algeria, South Africa and Zambia have backtracked on previous liberalization moves or sought to increase mining taxation revenues.

There is no one-size-fits-all formula for the sharing of rents between producers and governments in extractive industries. Over time the many changes in tax and participation policies around the world underline the practical difficulties experienced in finding the right balance between fostering investment and expansion and ensuring that development is sustainable. If royalties and taxes are too high, mining development will be stifled, while if they are too low a country will fail to finance investment in intangible and produced assets to replace the depletion of natural wealth.

6.5 TAXATION

Designing a minerals tax regime involves striking a very difficult and delicate balance between multiple objectives. A recent joint study by the International Council on Mining and Metals (ICMM) and the Commonwealth Secretariat emphasizes the common ground that exists between mining companies and governments. Both parties, it says, have an interest in developing fiscal regimes that are perceived to be legitimate. The report pinpoints six crucial areas:

(i) Governments should design tax regimes whose overall effect is neutral and progressive and which maximize revenues from mining over the long term. This means creating incentives for sustained investment perhaps with 50-year timescale. Clearly no tax system can be inflexible and the aim should be to build in the flexibility necessary to secure the lasting support of stakeholders.

(ii) Tax systems should be simplified, thereby making it easier for governments to calculate, collect and audit tax payments

(iii) Profit-based (income), rather than revenue-based (royalties), taxes are preferred, to ensure that the system is both progressive and neutral with respect to investment decisions.

(iv) Project-specific tax agreements are discouraged on the grounds that they can create administrative overload as well as encouraging investors to bargain for better terms than provided for in the tax code. There is a danger too that other investors will be dissatisfied and themselves seek similar favourable treatment, thereby prejudicing the revenue base.

(v) In mining, because of the location-based nature of a large-scale activity there are often strong arguments for some degree of fiscal decentralization so that there is a ploughback of revenue to the location.

(vi) Transparency is crucial. The taxation of mining, how the revenue is spent and by whom and the terms of individual agreements and where these are negotiated, should be made public.

There are two broad fiscal approaches:

(a) Taxes based on mineral wealth or on the inputs or actions required to exploit the deposits – ***in rem*** taxes – mineral royalties, property taxes and withholding tax.

(b) Taxes based on the net revenue earned from mining activity – ***in personal taxes*** – profit or income tax capital gains tax and withholding profit tax.

Each tax has advantages and drawbacks. Royalties are attractive to governments because they provide revenue stability and predictability, they are easy to administer, there is little risk of tax evasion and are less susceptible to corruption. But, on the downside, they raise operating costs thereby adding to variable costs which may make projects less attractive to investors. Income or profit taxes generate revenue only when a mine becomes profitable, they are more difficult to administer and there is greater scope for tax avoidance. These considerations tend to mean that where a country's tax or revenue department is professionally weak, royalty taxation is more appealing than profit tax. Often too, rent extraction by the state is undermined by investor incentives, such as tax holidays and accelerated depreciation allowances.

In recent years, governments have sought to shift towards progressive mining industry tax structures because traditional mineral taxes have tended to be regressive, as a result of which the government's share falls as profitability increases. In post-crisis Zimbabwe a progressive tax structure

has considerable appeal because it allows the revenue authority to adjust the tax burden, directly or indirectly, on a predetermined basis, in line with profits earned. There are a number of ways in which this can be done using taxes on production, corporate revenues or profits, state equity participation or production sharing as employed in the oil and gas industries around the world.

Profits taxes can be applied at escalating rates as taxable income increases. To avoid discriminating between small and large mining companies this can be done on a profit-to-sales ratio as in Botswana, South Africa and Namibia. This means that the tax rate depends on the profit performance of companies, in some cases by imposing two-tier tax rates – a traditional flat-rate corporate income tax supplemented by a separate tax based on the estimated resource rent earned on a particular project, which could be determined by the rate of return earned. Royalties too can be structured on a progressive basis in a manner similar to progressive taxes, the difference being that royalties are levied on revenues, not profits.

During a commodity price boom (2003–2008), there is scope for windfall taxes although, because these are usually based on the price of gold or platinum rather than the profitability of the project, they may reduce the rate of return to levels deemed unacceptable by the mining company. This is the case where, as in Zimbabwe, rampant inflation and a substantially overvalued exchange rate, erode or eliminate the windfall profits that would normally have been generated as a result of above-trend metal prices.

Carried interest participation can also be structured along the lines of a progressive tax. Under a carried equity system, the government finances its share of the costs of a project or business from its share of future project earnings. This means that the investor provides an interest-free loan to the state and is, in effect, paying an additional tax.

Production sharing agreements operate so that the excess output not earmarked to amortize the cost of developing new mines is shared between the operator and the government on a pre-agreed basis. Increasingly such production sharing agreements (PSAs) use sliding scales based on profitability or the rate of return.

Key questions are:

1. Is the legal and regulatory environment conducive to long-term mining investment and how is it influenced by mining activity?

2. Does government have the capacity to formulate macroeconomic, fiscal and social policies that foster private sector activity and sustainable long-term development?

Where governance structures, processes and institutions are efficient, Resource Curse and Dutch Disease effects are manageable, but where they are inefficient – or deteriorate over time – Resource Curse effects are likely to be negative, possibly to the point where the contribution of mining projects to national development is also negative.

Four country case studies – two in sub-Saharan Africa and two in Latin America – undertaken by the International Council on Mining and Metals (ICMM), (2006) pinpoint what the report calls 'the six most problematic policy issues' arising from the research:

(i) The adequacy and fairness of the tax regime for mining in the host country – getting the balance right between an internationally competitive tax system and extracting mining industry rents.

(ii) The revenue allocation system. Does this constrain or support the efficient and effective use of public resources, including those generated by mining? A crucial issue here is whether mineral revenues should be part of the government's overall revenue or whether some or all of the income should be 'ring-fenced' in a special fund, earmarked for public expenditure in the community where minerals are mined or for offsetting depletion of natural resources.

(iii) Conflicts over land-use and property rights. Competition for land-use between agriculture and (especially) surface mining is a serious political and economic issue in countries like Ghana and Tanzania. In Zimbabwe, as well as the 'community' aspect of competition for land, there is a political dimension though no

companies have been forced to close mines or prevented from developing them.

(iv) Environmental damage and concerns.

(v) Conflicts between large-scale and artisanal mining. African governments favour small-scale mining both because it creates more jobs and production has a lower import content. There is also no outflow of profits and dividends as is usually the case for large-scale projects. The downsides of informal mining operations are greater environmental damage, low productivity and the near-impossibility of taxing informal miners other than by an export tax, which, when levied, tends to foster cross-border smuggling.

(vi) Dealing with prospective mine closures.

6.6 OPTIMAL LEVELS OF TAXATION

In theory there is an optimal level of mining taxation that maximizes the net present value (NPV) of all social benefits that a country receives as a consequence of mining sector activities. In practice, however, this cannot be ascertained because the tax authorities have no way of knowing how a mining company's behaviour is affected in the present, and especially in the future, by changing levels of taxation.

It is impossible too for the authorities to estimate future levels of tax revenue because prices are determined in global markets and influenced by exchange-rate movements. Production costs are driven by domestic and imported inflationary pressures, but also by industry productivity levels and technical, geological considerations.

However, there are two known factors about the optimum level of mining taxation:

(a) Governments can take their share of the wealth generated by mining either in the form of taxes or non-pecuniary benefits – government-imposed requirements on mining firms that raise production costs. Examples include building and maintaining roads in remote areas that are used by the general public as well as for mining; requiring mining companies to provide schools or hospitals for their employees and others in the community where the project is located; and setting value-added or local input quotas that may be more expensive than processing products and sourcing inputs abroad. The more such requirements are imposed the lower the tax revenue and the optimal level of taxation will be.

(b) Raising taxes shifts the flow of benefits to the government from the future to the present because over the longer-run higher levels of taxes are likely to discourage exploration and development, resulting in reduced levels of future tax revenue. Higher levels of taxation may look good in the short term, while giving rise to adverse consequences over time.

6.7 OPTIMAL MIX OF TAXES

Similarly there is no optimal tax mix. Each tax has advantages and drawbacks. Mineral royalties, for instance, that impose a tax on each tonne of metal mined may influence production decisions negatively. For the firm, royalties increase production costs, encouraging management to bypass lower-grade ores, thereby shortening the life of the mine and possibly reducing the level of output.

In contrast, corporate income or profit taxes do not affect output decisions. If it is profitable to mine lower-grade ores, the mining company will do so. But the higher such profit taxes are, the greater the probability that firms will close marginal mines sooner than might otherwise have been the case while the net present value of future profit streams will be reduced, as a result of which investment projects may be abandoned.

The mix of taxes also affects the distribution of risks between the state and mining companies. Mining is inherently a high risk activity with long gestation periods and the prevalence of a wide range of technical, geological, market, economic and political risks. Profit taxes or royalties based on profitability distribute mining risks more evenly between government and developers. As profits fall, so too does government revenue, but a unit-based or value-based royalty shifts the risk towards

the firm which has to pay the royalty even when prices are depressed and the company is not making a profit. In contrast, a progressive income tax or 'additional profits' tax shifts the risk burden towards government because its revenues now depend on the mine's profitability.

6.8 UNIFORMITY VERSUS SPECIFICITY

Some countries (such as Chile) impose uniform taxes, which means that a mining company pays the same taxes as an industrial or financial one. But most have mining-specific tax codes – even in some instances, tax regimes that are specific to a single project or company. Companies often believe (Zimplats in Zimbabwe) that they are better off with specific agreements, but this is shortsighted, as Zimplats has discovered, because such agreements are particularly vulnerable to obsolescing bargain considerations.

6.9 TAX STABILITY

These arise because governments cannot guarantee tax regime stability. At some future point the government or finance minister may change, or the country's economic fortunes and its fiscal balance may deteriorate. Alternatively, a project may turn out to be far less profitable than the developer had projected (Zimplats again). Either way, the government or the mining company – possibly both – will want to re-negotiate the fiscal regime. Such is the nature of the obsolescing bargain that once a project is commissioned there is a shift in the balance of power from the investor to the state, resulting – usually – in higher tax rates. This is particularly likely when there is a populist government in office (as in Zimbabwe) and when the world is experiencing a resurgence of resource nationalism, as has been the case since 2000.

6.10 SPENDING THE REVENUE

Critically important though tax rates are, they are less so than the distribution and use of tax revenues. At the heart of the Resource Curse debate is the fact that whether mineral production boosts or impedes economic performance depends primarily on how efficiently government uses the revenues extracted from mining operations.

An immediate consideration is the establishment of a mining stabilization fund whereby during a commodity boom windfall revenues are quarantined and held in trust – possibly invested by a Sovereign Wealth Fund (see Box page 47) – for use during a period of depressed mineral prices. Such an approach has a number of attractions.

It means that the finance ministry is prevented from ratcheting up public spending during the boom to levels that will prove unsustainable once mineral prices subside. Inflationary pressures will be mitigated too because windfalls will be sterilized so as to avoid excessive monetary growth. The risk of Dutch Disease will be reduced if balance-of-payments surpluses are invested offshore by a Sovereign Wealth Fund.

There is a strong case too for earmarking part of windfall gains for reinvestment in mining areas so as to offset depletion of natural resources while simultaneously defusing community protests that local wealth is being exploited by other regions (the Niger Delta case).

6.11 SPECIAL TREATMENT FOR THE MINING INDUSTRY

There are two main reasons why the mining industry should be treated differently from manufacturing or services.

- Because mineral resources are being depleted, it is essential to recycle some of the proceeds of mining activity into investment in produced assets, such as infrastructure, and intangible capital.
- Secondly, mining sector projects are unique in a number of respects and this justifies an industry-specific tax regime (Table 30).

Table 30: Reason for special treatment tax policy responses

Reason for Special Treatment	Tax Policy Response
A lengthy and costly exploration program will precede the start-up of a mine. During this exploration period there will be no present income against which to offset these costs.	Offset preproduction (pre-income) exploration expenses against future income (loss carry-forward, amortization).
Mine development is exceptionally capital intensive and an operation will initially need to import large quantities of diverse equipment and expertise from specialized suppliers.	Provide various means to accelerate recovery of capital costs once production commences.
	Allow service costs to be carried forward and amortized after production commences.
	Reduce rate or exempt from import duties.
	Reduce rate, exempt, refund, or offset for value added tax (VAT) on imported equipment and services.
Mined product is destined for export markets.	Reduce rates or exempt from export duties.
	Exempt from VAT or zero rate exports.
Different minerals have very different labour, cost, price, value added, environmental, and social attributes.	Vary royalty rate for different groups of minerals.
The scale of operations may be small or large.	Vary royalty rate by size of production.
	Exempt small-scale operations from some types of taxes.
Mines produce raw materials that are prone to substantial price changes on a periodic basis related to the business cycle.	Waive certain types of taxes, usually royalties, from time to time for projects experiencing severe short term financial duress.
	Allow losses to be carried forward.
After mining ceases and there is no income, a mine will incur significant costs relating to closure and reclamation of the site.	Require a set-aside of funds for closure and reclamation in advance of closure and provide some sort of deduction for this set-aside against current income tax liability.
Many mining projects will have a long life span and companies fear that once their captive investment is in place, government will change the tax law, negatively affecting their returns.	Stabilize some or all of the relevant taxes for at least part of the mine life.
	Stabilize taxes by statute or in the form of an agreement.
Where the level of investment is particularly large (a megaproject), investment may be possible only under a severely modified tax system.	Enter into a negotiated agreement with the company and include special tax provisions that supplant the general tax law in whole or in part.
A company may enjoy special tax treatment for one operation but may have ongoing exploration that may lead to other operations.	Apply ring-fencing principles (accounts from the mine may not be mixed with accounts for activities outside the mine).

Source: Otto, 2004

6.12 UNIQUE ATTRIBUTES OF THE MINERAL INDUSTRY AND THE TAX POLICY RESPONSE

As noted earlier (Table 26) two-thirds of respondents to the Fraser Institute surveys believe that Zimbabwe's fiscal regime (see Box page 46) is a deterrent to exploration and development. The Chamber of Mines of Zimbabwe disputes this, with officials citing the uncertainty surrounding exchange-rate management and fiscal and ownership conditions rather than the level of taxes per se.

Small- and medium-scale mines would like to see a level playing field with progressive taxes – not royalties – pegged to profitability rather than a hybrid system of fixed imposts, unrelated to profits, and a profit tax. There is also opposition to special 'mining lease' agreements for major projects that treat smaller mines as 'second-class citizens'.

Because he is an acknowledged expert with experience in a number of African countries, heed should be paid to the views of Mr John Holloway of John Holloway and Associates. He has called for the abolition of 'rancorous special fiscal arrangements reserved for big foreign-owned mines and giving all mining the same tax regime as every other sector, while scrapping sector-specific imposts that have accumulated over the years'.

He believes too that the royalty system should be abolished because it makes little contribution to the fiscus and, as a regressive tax, it reduces investment and employment. 'In any event, a tax that assumes that coal mines are intrinsically less profitable than diamond mines shows a limited grasp of economics'. Furthermore, 'the Minerals Marketing Corporation of Zimbabwe (set up by the government in the early 1980s in an attempt to eliminate perceived transfer pricing within the industry), should be closed because it is just a royalty-type tax and an extra layer of bureaucracy' (Holloway, 2007).

According to Holloway, royalties … have given Zimbabwe the same sort of mining industry as in the rest of Africa – 'A few massive, foreign-owned "enclave" mines and thousands of artisanal operations with nothing in between'. Yet another example, if any were needed, of Zimbabwe's 'Missing Middle'.

Zimbabwe's Fiscal Regime for Mining

1. *Royalties: These are calculated as a percentage of the gross fair market value of minerals produced and sold. Royalty rates range from 1 percent for coal, 2 percent for base and industrial minerals, 3 percent for precious metals and 10 percent for precious stones. Royalty is not deductible for income and profits tax purposes.*
2. *Surface rentals – also not deductible for income tax – are imposed at varying rates during the prospecting, exploration and development stages of a mining project.*
3. *Income tax is levied at a flat rate of 15 percent of profits.*
4. *All capital expenditure incurred wholly and exclusively for mining operations is allowed as a deduction at the rate of 100 percent.*
5. *Tax losses of mining companies may be carried forward indefinitely.*
6. *Withholding tax of 5 percent is levied on dividends declared for both residents and non-residents for companies listed on the Zimbabwe Stock Exchange. For all other companies the rate of withholding tax is 10 percent.*
7. *An additional 5 percent withholding tax is levied on interest paid to both residents and non-residents.*
8. *General and administrative costs incurred by head office or by a parent company are limited to a maximum deduction of 0.75 percent of allowable deductions during the pre-production phase of a project and a maximum of 1 percent of gross income for that year during the production life of the mine.*
9. *Interest paid on borrowings is allowable as a tax deduction for borrowings by a company with a debt-to-equity ratio up to a maximum of 3 to 1. Any payments in excess of this figure are treated as dividends and taxed accordingly.*
10. *All capital goods are exempt from customs duty, import tax and surtax during the exploration phase and for a maximum period of 5 years from the grant of mining title during the development phase of a project.*
11. *Mining companies may market their products directly subject to the regulations of the Minerals Marketing Corporation of Zimbabwe.*
12. *Offshore Currency Accounts (FCAs) are allowed for mining projects on application to the Reserve Bank of Zimbabwe.*

Section 7

Recommendations

'The government's view of the mining sector must change from seeing it as a cash cow to be milked, to a prime bull that can be the source of many profitable cows' (Holloway, 2007).

7.1 RESOURCE MANAGEMENT

A post-crisis government will be well-advised to adopt an explicit resource management strategy for the mining industry and other sectors where resource depletion is experienced. It is accepted that this is a difficult, technical, process and one subject to error because of the many unknowns surrounding it.

But a country that has become increasingly specialized and reliant on natural resources as its agricultural, manufacturing and service sectors have contracted, will need to redress the balance and diversify away from what seems likely to be growing reliance on a relatively narrow range of mining exports, themselves vulnerable to price and demand fluctuations. Market forces alone are unlikely to achieve this. An explicit portfolio management approach will be required.

7.2 A SOVEREIGN WEALTH FUND

With estimated mineral export earnings of US$860 million in 2008 – 40 percent of all foreign earnings and more than half of merchandise export revenues – there is a prima facie case for setting up a Sovereign Wealth Fund (SWF) in post-crisis Zimbabwe. Even with the recent steep decline in base metal prices and plans for boosting output in gold, platinum and diamonds, it is not fanciful to project annual export earnings in excess of US$2 billion within a relatively short time frame of 5 to 8 years.

Sovereign Wealth Funds

Broadly defined, Sovereign Wealth Funds (SWFs) are government-owned investment corporations that invest their funds – mostly – in foreign currency assets. Usually, the funds are managed separately from central bank reserves, though, as in the case of the very successful Norwegian Fund, management may rest with the central bank. Unlike other publicly-owned funds, such as pension funds, SWFs do not have any explicit liabilities.

The US Department of Treasury defines an SWF as 'a government investment vehicle which is funded by foreign exchange assets and which manages those assets separately from the official reserves of monetary authorities'. They are financed by surplus foreign exchange earnings from commodity exports and balance-of-payments of government budget surpluses.

SWFs are not new – the Kuwait Investment Authority was established in 1953 and since then there have been two main waves of SWF creation. The first in the 1970s in the wake of the initial oil price shock (1973/4), during which period oil surplus countries set up wealth funds. The second began in 1996 when Norway established its Government Pension Fund-Global. Since 2000, the number of SWFs has grown from 20 to around 50, while managing an estimated US$2.7–$3.2 trillion of global assets.

SWFs fall into two main categories according to the source of their funds. Commodity SWFs are funded by commodity revenues, owned or taxed by the government. They may be used for fiscal stabilization (as in Botswana) intergenerational saving (Norway) or balance-of-payments sterilization – countering Dutch Disease.

The distinguishing feature of such commodity funds is that the governments seek to replace a depleted physical asset – oil or minerals – with a financial asset that can be used either for intergenerational purposes, or for investment in economic diversification. As a result of the protracted commodity price boom, a number of SWFs set up to stabilize a country's public finances have switched focus and developed into intergenerational savings funds.

Non-commodity SWFs are usually created through asset transfers from official foreign-exchange reserves. The normal criterion for assessing whether a country should establish an SWF is the Greenspan-Guidotti Rule, used to estimate when a country has excess foreign reserves. Their net return depends on the gap between the yield on their offshore investments and the cost of servicing domestic national debt.

A post-crisis SWF in Zimbabwe would be hybrid in nature, established less to stabilize public finances and more to ensure that natural resource depletion – minerals, deforestation, land degradation – be compensated by appropriate investment in human, intangible and produced assets. It would be hybrid in a second respect also – namely an investment vehicle for surpluses generated in the domestic currency as well as foreign exchange, though given the extent of dollarization, in the short-run this distinction is likely to be essentially academic. In the possible event of donor disbursements exceeding the country's absorptive capacity, a Zimbabwe SWF could also perform the vital function of sterilizing foreign currency inflows thereby countering domestic inflation and currency over-valuation.

It is suggested that a post-crisis administration adopt an explicit portfolio management approach to resource revenues whereby:

- Crude estimates are made of the annual rate of resource depletion attributable to mining operations;
- Government policy should ensure that revenues be collected to compensate for depletion; and that
- As far as practicable, such revenues be earmarked for investment in produced assets and intangible capital both within the mining sector and beyond.

Beyond these three considerations, there are a number of related issues to be tackled:

- Should the revenue be sterilized and invested offshore by an SWF to offset Dutch Disease pressures? In a dollarized economy, this consideration falls away.
- Should the revenue be treated as capital and only the annual fund income from interest, dividends and capital gains spent?
- Should a specified proportion of revenue generated by a major project be reinvested in the region where the mine is located?
- Should there be a notional allocation of funds for expenditure between physical capital, such as infrastructure, and human capital – health, education and training?
- Should there be a specific 'intergenerational' element in public sector spending to ensure that natural resource rents are invested for future generations?

How these questions are answered is less important than the over-arching principle, which is that there should be a specific fund established to manage natural resource rents. Whether this takes the form of a SWF or is merely a domestic fund is a matter for future policy-makers and politicians.

Without suitable safeguards, it is a safe bet that mining rents will find their way into consumption spending. It is also likely that windfall revenues will be spent in an unsustainable manner, with the government overspending during cyclical booms and being forced to borrow during downturns in order to maintain spending programmes. Furthermore, in the absence of an explicit fund arrangement, there is a greater likelihood of Dutch Disease overvaluation of the currency – in a post-dollarization regime – and distorted development patterns that discriminate against non-mining sectors during commodity price booms.

Above all, a transparent SWF strategy requires the state to take explicit cognizance of resource depletion issues. Government revenue mobilization and spending patterns is likely to be much more scientific and strategic than an *ad hoc* situation in which such decisions are left to the whims of politicians and finance ministry bureaucrats.

7.3 FISCAL SPACE

Post-crisis Zimbabwe will be faced with 'fiscal space' problems – room in the government budget to provide funding for priority programmes without undermining the government's financial position or macroeconomic stability. During the crisis period, fiscal space has been created in the form of quasi-fiscal spending that generated macroeconomic instability – hyperinflation, hugely negative real interest rates and a collapsing currency – while simultaneously creating an unsustainable debt burden. It is scant comfort that this domestic debt burden has been inflated away, leaving a post-crisis administration with a very low domestic debt to GDP ratio, but at the expense of the destruction of the domestic savings base, including institutional savings in the form of pensions, unit and investment trusts and household and corporate savings.

Initially, a post-crisis administration will be able to create fiscal space by drawing on donor disbursements. But foreign assistance is unlikely to be sufficient to cope with massive backlogs in terms of recurrent and capital public spending, while simultaneously creating Dutch Disease problems in a post-dollarization regime because absorptive capacity will be seriously constrained, most notably by shortage of administrative capacity in the public sector, skills (across-the-board) and physical infrastructure. Unless carefully managed, donor disbursements will lead to currency overvaluation with collateral damage to export businesses, specifically non-commodity exporters, as well as to small-scale agriculture. Accordingly, a further justification for establishing an SWF is that of maximizing fiscal space while simultaneously avoiding Dutch Disease over-valuation of the currency.

A Zimbabwe SWF will not succeed unless it is both transparent and professionally-managed. A successful SWF depends also on a very clear mandate. Provided it meets these criteria and there is no ambiguity surrounding its goals and operational procedures, an SWF could make a major contribution to macroeconomic stability while also tackling Resource Curse problems head on.

7.4 OWNERSHIP AND CONTROL

A post-crisis national mining strategy will have to be a delicate balance between securing a wealth management goal of ensuring that asset depletion is compensated by investment in future capacity, including diversifying the economy, and creating an investment-friendly environment for both domestic and foreign mining companies. As argued above, because competition for such investment – and indeed skills – is so intense, it will be essential for a national mining policy to be globally competitive.

In effect this means overtly political or nationalist goals may not be realizable. Throughout 2008 government ministers and the President himself repeatedly reaffirmed their determination to ensure that 51 percent of the country's mineral wealth be owned by Zimbabweans. In the pre-crisis Zimbabwe economy, it might have been possible to devise a production-sharing or ownership-sharing formula that satisfied this nationalist ideal while simultaneously meeting the minimum return on capital requirements of investors, foreign and local.

In the last decade however, conditions have changed. The domestic savings base has been destroyed and with it both the confidence and capacity of local investors. The state is bankrupt. What assets it has – infrastructure and parastatals – are in a state of disrepair, while the parastatal sector is also bankrupt. There is a massive infrastructure maintenance and investment deficit that will not be funded by foreign aid or offshore loans and which will be a first call on any available domestic savings.

In this situation Zimbabwe is likely to be more reliant on foreign funding – aid, offshore borrowing and foreign portfolio and direct investment – than at any time in its history. An aggressive indigenization policy, as envisaged in official pronouncements over recent years will not be feasible, implying that in a post-crisis environment the government will have to moderate its stance.

The crucial consideration will be competitiveness. Political goals that undermine Zimbabwe's future

capacity to attract investment in exploration and development will result either in the continued stagnation of the industry or in the adoption of second- or third-best development strategies in which exploration and exploitation is in the hands of 'politically acceptable' investors, including parastatals rather than better qualified global players.

7.5 A LEVEL PLAYING FIELD

It was only in the 1990s that a project-specific approach to mining investment was adopted when the government negotiated a mining lease arrangement with BHP Billiton of Australia for the development of Hartley-Chegutu platinum deposit. Previously, all investors had been treated equally.

The chequered history of what is now Zimbabwe Platinum Mines with long-running re-negotiation of the initial agreement and frequent and sudden changes to the exchange-rate regime suggest that this has not been a happy experiment. Investment by Zimplats and other platinum companies – Mimosa and Anglo American Corporation – has been adversely affected by the general uncertainty surrounding the future ownership of mining properties and the ambivalence over project-specific – and product-specific – mining lease agreements versus a generalized mining investment and fiscal regime.

7.6 DISCRIMINATORY AGREEMENTS

Current government policy (February, 2009), while subject to radical change at a time when far-reaching political change is on the negotiating table, appears to favour greater ambivalence with the authorities preferring to negotiate individual agreements with different investors, while also making arbitrary distinctions between different products – gold versus platinum group metals – different owners (indigenous, as defined in the Indigenization legislation, versus local non-indigenous and/or foreign) and at least three different size groups – large-, small- and medium-scale and artisanal.

Such complexity is undesirable on a number of counts. It opens the door to preferential treatment for politically acceptable developers with all that that entails in terms of investment efficiency and corruption. It adds to an already heavy burden on administrators and ministers charged with negotiating individual agreements. It increases the risk of political intervention of a particular project, as with Zimplats or the diamond industry, becoming political footballs because of their high profiles.

From an investor viewpoint, it increases the uncertainty and cost of project development, while also enhancing the probability of subsequent 'obsolescing bargain' amendments to the original agreement. Two likely results of this situation are an increase in the developer's required rate of return, because of perceived enhanced 'obsolescing bargain' risk as well as an increased probability of litigation, possibly international litigation, at some time in the future.

A further drawback of the selective interventions approach favoured by the present administration is the perverse way in which it disadvantages and marginalizes smaller players – precisely the opposite of what the government claims it is trying to achieve through its ownership and indigenization policies. It is the larger companies that are able to negotiate preferential exchange rates for export proceeds sold to the Reserve Bank; it is the largest companies that have been able to secure more reliable electricity supplies by paying the Zimbabwe Electricity Supply Authority in hard currency; and it is the larger players that are better able to retain skills by agreeing remuneration packages, partly or wholly in foreign currency.

For these reasons, there is much to be said for a level playing field, rules-based approach enshrined in legislation that treats all investors equally. This does not rule out minor adjustments designed to meet particular strategic objectives, such as special training schemes for artisanal players, or supplyside infrastructure assistance for mining SMEs unable to finance their own needs.

7.7 LARGE VERSUS SMALL MINES

There is no better evidence of the perversity of official policy, especially since the mid-1990s, than

the relative disappearance of efficient mining SMEs and their replacement either by inefficient, low-technology, low-productivity artisanal mines responsible for far-reaching environmental degradation or by large companies, mostly foreign owned. The more policy initiatives are used to redress the large-versus-small situation, the more concentrated the industry has become.

Industry players say that by far the most important reason for this is not, as might be assumed, uncertainty over ownership, but an erratic, incoherent foreign exchange-rate regime that changes according to the whim of the central bank and the finance ministry. Undoubtedly too, small-scale mines have been driven to the wall by the scarcity of skills and infrastructural problems, especially the supply of electricity.

The large-versus-small dichotomy is a false one. In Zimbabwe, over the years there have been as many as 4,000 small mines, most of them currently disused, many of which could be reactivated given competitive exchange rates, improved infrastructure and the return of some of the entrepreneurs and skilled technical skills that have emigrated in the past decade. At any one time an estimated 400 small-scale mines were operating alongside a small handful of major producers and varying numbers of artisanal producers. The latter's operations provoked a variety of government responses ranging from military action in the Marange diamond fields to the harassment of artisanal gold producers on the grounds that they were evading currency controls and smuggling gold out of the country, or breaching health, safety and environmental regulations.

By 2008 the number of small mines was estimated at less than 100, the number declining further during the year as small operators were forced to close by both supply constraints – mostly foreign currency and electricity – and weakening demand for non-precious metals. Mining was – no longer – an industry where, unlike the African norm, the middle thrived, but which today has descended into the missing middle trap.

There is no easy explanation of the growth of middle-sized mines – nor medium-sized farms and commercial and industrial businesses. In part, the explanation in mining is technical – diverse, often relatively small deposits that did not attract the attention of large mining companies. The light touch of the colonial administration in terms of both taxation and state regulation in very stark contrast to the post-independence classification of gold as a strategic reserve asset. Accordingly, the present regulatory environment is less investor-friendly, especially, but not only for smaller players.

Expert advice from the industry is that there is no call for specific pro-SME measures. What is needed instead is a level playing field that does not discriminate against SMEs, which could be achieved through a simpler, flatter, tax system, supply-side investment in infrastructure and skills generation and an open and competitive exchange-rate regime.

Arguably too, recovery will be more rapid in the SME sector – reactivating known, mainly gold, properties – than in the large-scale sector where, because of very low levels of new exploration spending and the long gestation period for the opening up of new major mines, it is unrealistic to expect a rapid turnround.

7.8 A BUSINESS FRIENDLY LEGAL FRAMEWORK

The pre-independence legal system worked well. So much so that there have been 'more mines in Zimbabwe than the rest of Africa put together, unexceptional grades and tonnages notwithstanding' (Holloway, 2007). Most of the desirable changes are relatively minor – along the lines of *Doing Business* reforms advocated elsewhere. These include enhancing the capability of overstretched government ministries, such as the Department of Geological Survey, tidying up burdensome environmental bureaucracy, such as the requirement for even small diggings to undertake environmental impact surveys, the computerization of records and the use of global positioning systems for the pegging of claims.

Section 8

Conclusion

Available geological evidence suggests that Zimbabwe is unlikely to become a minerals-driven economy in the same way as Botswana, Zambia or the DRC. But given appropriate, business-friendly policies, the mining sector is well-placed to reverse the decline of the last 20 years. It could easily become the fastest growing sector of the economy, the largest single contributor to exports by some distance, and an important source of public revenue to be used, not to finance government consumption spending, but job creation, diversification of the economy and poverty reduction.

So serious are the constraints, internationally as well as domestically, that there can be no quick fix, no short-term growth miracle driven by mining activity. World commodity prices seem set to remain depressed over the next two years; new projects already under way internationally will create over-supply in many segments of the industry; technological progress and the drive towards cleaner and greener vehicles and production techniques will weaken demand for products like platinum and ferrochrome, casting some doubt over the optimistic forecasts that the country could have as many as ten operational platinum mines by 2030.

Gold production should recover quickly, but there will be a 12- to 18-month waiting time for some mines because of the need to pump out water and replace damaged equipment. Gold production over the medium term, is unlikely to regain its peaks of the late 1990s, but should exceed 20 tons annually.

The potential for diamonds, methane gas and other still-to-be-discovered mineral deposits is unquantifiable. It could still be that Zimbabwe will develop into a much wealthier mineral exporter than now seems likely, but the lessons of resource curse economics and specialization in a limited range of primary commodity exports should be enough to convince policy-makers that better, if more difficult, growth paths are both available and desirable.

Over time, some mining countries, such as Botswana, have outperformed regional averages in terms of GDP growth, but this depends on two inter-related factors – the quality of economic management and the strength of institutions. In the absence of these two essential components of the mining policy mix, Zimbabwe is unlikely to exploit its mineral potential to the full. In a post-crisis environment, it is therefore essential for all sectors of the economy, not just mining, to focus on rebuilding institutions and radically reforming both the content and the management of macroeconomic policy.

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