

PGM production in Southern Africa, Part I: Production and Market Trends

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Tables:

Table S1. PGE prices in US\$ and ZAR per gram and per tonne [1–4].

Currency	Metal	2010	2011	2012	2013	2014	2015
US\$/g	Platinum	51.9415	55.4443	50.0070	47.8908	44.6217	33.9541
	Palladium	17.0595	23.7437	20.8745	23.4566	26.0386	22.3445
	Rhodium	79.0610	65.0844	40.9916	34.3724	37.7524	30.7008
	Gold	39.5455	50.4767	53.6918	45.6541	40.8315	37.3045
	Iridium	20.6456	33.3040	34.2801	26.5710	17.8819	17.4961
	Ruthenium	6.3803	5.3322	3.6092	2.4316	2.0940	1.5313
US\$/t	Nickel	21,804	22,890	17,533	15,018	16,865	11,831
US\$/t	Copper	7533	8814	7950	7326	6945	5952
ZAR/g	Platinum	380.2446	402.8994	410.8666	462.5351	484.2026	434.0603
	Palladium	124.8865	172.5390	171.5090	226.5462	282.5518	285.6457
	Rhodium	578.7765	472.9514	336.7945	331.9725	409.6616	392.4705
	Gold	289.4977	366.8011	441.1416	440.9325	443.0736	476.8913
	Iridium	151.1390	242.0116	281.6518	256.6258	194.0418	223.6666
	Ruthenium	46.7080	38.7477	29.6542	23.4843	22.7223	19.5763
ZAR/t	Nickel	159619	166336	144054	145046	183007	151244
	Copper	55148	64050	65318	70755	75357	76095

Table S2. Prill split and base metal content of ores [5].

Location	Ore	Pt	Pd	Rh	Au	Cu	Ni
		Prill split in %				Ore grade in %	
Western Limb	Merensky	63.233%	28.083%	4.550%	4.150%	0.092%	0.225%
	UG2	56.800%	31.700%	10.825%	0.700%	0.010%	0.108%
Eastern Limb	Merensky	60.000%	30.025%	3.075%	6.875%	0.085%	0.210%
	UG2	45.350%	44.650%	8.500%	1.525%	0.030%	0.138%
Northern Limb	Platreef	41.900%	49.400%	3.300%	5.400%	0.100%	0.180%
Zimbabwe	MSZ	48.400%	39.900%	4.200%	7.500%	0.140%	0.220%

Table S3. Mining data 2010 [6–41].

Mine	Ore milled, processed [1000t]	Headgrade [g/t]	Pt	Pd	Rh	Au	Ru	Ir	TotalPGMs	Ni	Cu
						[kg]				[1000 t]	
Western Limb											
Impala Rustenburg	13531	4.60	24704	13021	3450		7436 ^c		48611	4.9	nd
Marinkana (Lonmin) ^e	11644	4.65	16592	8291	2573	428	4004	990	32449	3.4	2.0
Pandora ^e	391	nd	639	320	31	18	173	33	1196	0.1	0.1
Union	5543	3.37 ^a	8618	3813	1321	99	2293 ^c		16046	0.8	0.3
Tumela	4488	4.02 ^a	8590	3992	1301	128	2163 ^c		16046	1.0	0.5
Dishaba	1908	4.79 ^a	4434	2035	547	105	865 ^c		7881	0.8	0.4
Bathopele	3107	3.02 ^a	4014	2319	700	40	1267 ^c		8301	0.3	0.1
Thembelani + Khuseleka	3414	4.09 ^a	6501	3320	831	176	1517 ^c		12168	1.4	0.7
Siphumelele + Khomani	2349	4.70 ^a	5593	2529	479	244	794 ^c		9395	1.4	0.9
Western Limb TRF	5087	1.18 ^a	1228	394	54	102	176 ^c		1851	0.3	0.2
Bafokeng	2407	4.31 ^a	5312	2181	381	295	658	127	8954	2.3	1.4
Kroondal	2154	3.80 ^a	7561	3753	1222	54	2282 ^c		14818	0.4	0.1
Zondereinde	2038	5.20 ^a	6877	3297	812	236	nd	nd	11223 ^a	nd	nd
Marikana (Aquarius)	2230	2.65	2339	1084	393	23	835 ^c		4652	nd	nd
Platinum Mile RF	7000	0.58	324	171	51	12	101 ^c		647	nd	nd
Chromite TRF	293	2.28	110	40	30	0	82 ^c		263	nd	nd
Crocodile River	1266	4.10	1887	808	319	13	579	133	3739	nd	nd
Eland	1329	4.20 ^a	3336 ^d	1689 ^d	556 ^d	nd	nd	nd	998 ^d	nd	nd
Pilanesberg	2906	1.75	1042 ^b	nd	nd	nd	nd	nd	1703	nd	nd
Tharisa	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Sylvania Chromite TRF	907	nd	nd	nd	nd	nd	nd	nd	698	nd	nd
Northeastern Limb											
Limpopo	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Bokoni	1044	4.12	1953	1309	196	112	346 ^c		3805	0.7	0.4
Marula	1545	4.36	1987	2058	417		771 ^c		5233	0.2	nd
Twickenham	25	4.20	102	91	17	3	31 ^c		241		
Modikwa	2288	4.73	3824	3603	683	82	1188 ^c		9299	0.5	0.3
Smokey Hills	398	3.58	430	443	89	37	nd	nd	998 ^a	nd	nd
Southeastern Limb & Satellite Intrusions											
Booyssendal (Everest)	150	3.09 ^a	159	87	21	3	nd	nd	268 ^a	nd	nd
Two rivers	2918	3.95	3994	2313	669		1437		8414	0.4	nd
Mototolo	2262	3.33 ^a	6265	3685	1060	85	2138 ^c		13148	0.6	0.2
Blue Ridge	1082	2.36	997	492	157	16	361 ^c		2006	nd	nd
Nkomati	3308	nd	nd	nd	nd	nd	nd	nd	1490	9.7	5.2
Northern Limb											
Mogalakwena	10380	2.60 ^a	7720	8029	468	822	485 ^c		16701 ^a	8.5	5.6
Zimbabwe											
Zimplats	4095	3.56	4930	3975	439		1114 ^c		10458	3.1	nd
Mimosa	2277	3.86	2869	2172	230		692 ^c		5962	2.8	nd
Unki	0	0.00	0	0	0	0	0	0	0	0.0	0.0

Italic values present calculated values or estimations. Abbreviations: nd – no data, TRF – Tailing Retreatment Facility.

^a Data represents 4E.

^b Estimate based on prill split.

^c Calculated by subtracting reported production quantities of single elements from total PGE production.

^d According to [42], reported values present 100% Eland and 50% Mototolo. However, subtraction of Mototolo production, as reported by Angloplatinum results in negative values. Presented value presents value as reported by [42].

^e Production quantities of individual elements for each mine were obtained by multiplying the share of individual metal quantities delivered in concentrate for each mine and for the whole company by the company's total production for each element.

Note: The ownership of mines is presented in a separate Excel sheet that is provided in the Supplementary material 2.

Table S4. Mining data 2011 [6–41].

Mine	Ore milled, processed	Head grade	Pt	Pd	Rh	Au	Ru	Ir	TotalPGMs	Ni	Cu
	[1000 t]	[g/t]				[kg]				[1000 t]	
Western Limb											
Impala Rustenburg	14054	4.60	26708	14472	3595		7847 ^c		52622	5.4	nd
Marinkana (Lonmin) ^e	11643	4.40	18789	8859	2359	505	4472	724	35203	4.1	2.4
Pandora ^e	394	nd	683	323	25	21	188	23	1320	0.1	0.1
Union	4786	3.39 ^a	7742	3308	1338	96		2126 ^c	14611	0.6	0.3
Tumela	4192	3.91 ^a	8051	3677	1318	125		2223 ^c	15394	0.8	0.4
Dishaba	1865	4.78 ^a	4590	2058	590	136		879 ^c	8253	0.8	0.4
Bathopele	2440	3.08 ^a	3354	1865	593	37		1046 ^c	6895	0.3	0.1
Thembelani + Khuseleka	3514	4.03 ^a	6787	3427	910	207		1466 ^c	12797	1.4	0.8
Siphumelele + Khomani	2756	4.07 ^a	5758	2614	519	289		561 ^c	9741	1.5	1.0
Western Limb TRF	4982	1.23 ^a	1219	374	60	122		82 ^c	1857	0.2	0.2
Kroondal	3782	3.75 ^a	12338	6033	2336	96		4479 ^c	25282	0.6	0.2
Bafokeng	2305	4.35 ^a	4949	2019	367	273	635	122	8365	2.1	1.3
Zondereinde	1591	5.60 ^a	5576	2572	668	183	0	0	8998 ^a	nd	nd
Marikana (Aquarius)	1950	2.34	1782	887	316	18		656 ^c	3659	nd	nd
Platinum Mile RF	4400	0.68	374	202	55	17		128 ^c	775	nd	nd
Chromite TRF	122	2.97	85	30	23	0		58 ^c	196	nd	nd
Crocodile River	903	4.00 ^a	1649 ^b	683 ^b	277 ^b	19 ^b	nd	nd	2629 ^a	nd	nd
Eland	1531 ^d	4.42	2620 ^d	1332 ^d	427 ^d	nd	nd	nd	nd	nd	nd
Pilanesberg	2761	1.55	1214 ^b	nd	nd	0	0	0	1983	nd	nd
Tharisa	505	nd	nd	nd	nd	nd	nd	nd	107.0	nd	nd
Sylvania Chromite TRF	1411	nd	nd	nd	nd	nd	nd	nd	1163	nd	nd
Northeastern Limb											
Limpopo ^e	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Bokoni	1046	nd	nd	nd	nd	nd	nd	nd	3175 ^a		
Marula	1542	4.39	2001	2067	417		780 ^c		5265	0.2	nd
Twickenham	198	3.47 ^a	26	20	9	0		20 ^c	74	nd	nd
Modikwa	2284	4.56 ^a	3680	3331	709	99		1021 ^c	8839	0.5	0.4
Smokey Hills	242	3.55	399 ^b	408 ^b	91 ^b	9 ^b	0	0	907 ^a	nd	nd
Southeastern Limb & Satellite Intrusions											
Booyseindal (Everest)	1340	2.76 ^a	1638	901	276	28	567 ^c	3410 ^a	2.8	nd	
Two rivers	2950	3.94	4119	2384	697		1508 ^c		8709	0.4	nd
Mototolo	1151	3.27 ^a	6526	3787	1009	102		1894 ^c	13319	0.6	0.2
Blue Ridge	327	2.30	302	147	48	5		109 ^c	611	0.0	0.0
Nkomati	5259	nd	nd	nd	nd	nd	nd	nd	1520	10.1	5.2
Northern Limb											
Mogalakwena	10835	2.91	8868	9089	587	1174	nd	nd	19176 ^a	10.1	6.6
Zimbabwe											
Zimplats	4223	3.56	4930	3975	439		1114 ^c		10458	3.1	nd
Mimosa	2311	3.91	2974	2279	238		737 ^c		6228	2.9	nd
Unki	1284	3.64 ^a	1440	961	82	139	nd	nd	2254 ^a	nd	nd

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^a Data represents 4E.

^b Estimate based on prill split.

^c Calculated by subtracting reported production quantities of single elements from total PGE production.

^d According to [33], reported values present 100% Eland and 50% Mototolo. However, subtraction of Mototolo production, as reported by Angloplatinum results in negative values. Presented value presents value as reported by [33].

^e Production quantities of individual elements for each mine were obtained by multiplying the share of individual metal quantities delivered in concentrate for each mine and for the whole company by the company's total production for each element.

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Table S5. Mining data 2012 [6–41].

Mine	Ore milled, processed	Head grade	Pt	Pd	Rh	Au	Ru	Ir	Total PGMs	Ni	Cu
	[1000 t]	[g/t]				[kg]					[1000 t]
Western Limb											
Impala Rustenburg	10654	4.38	21265	11584	2804		2563 ^c		38215	4.8	nd
Marinkana (Lonmin) ^f	10367	4.49	17478	8372	2963	514	4105	889	33808	3.6	2.1
Pandora ^f	432	nd	828	404	42	28	230	38	1543	0.2	0.1
Union	3919	3.37 ^a	6038	2685	1108	51	1948 ^c		11830	0.3	0.1
Tumela	3292	4.12 ^a	6288	2929	1091	94	1729 ^c		12131	0.5	0.3
Dishaba	1857	4.82 ^a	4207	1945	595	116	859 ^c		7722	0.6	0.4
Bathopele	2518	2.85 ^a	3280	1880	593	37	1106 ^c		6895	0.2	0.1
Thembelani + Khuseleka	3274	4.14 ^a	6234	3192	904	193	1488 ^c		12012	1.3	0.6
Siphumelele + Khomani	2439	4.16 ^a	5279	2418	541	249	746 ^c		9233	1.2	0.8
Western Limb TRF	4883	1.24 ^a	1310	476	77	128	96 ^c		2087	0.3	0.2
Kroondal	3744	3.63 ^a	12667	6452	1973	108	3555 ^c		24755	0.6	0.2
Bafokeng	2214	4.07 ^a	4696 ^e	1931 ^e	380 ^e	243 ^e	nd	nd	7249 ^{a, e}	1.8	1.1
Zondereinde	1934	5.10 ^a	5549	2608	768	171	nd	nd	9096 ^a	nd	nd
Marikana (Aquarius)	1820	2.32	1757	804	308	15	798 ^c		3683	nd	nd
Platinum Mile RF	4800	0.52	205	114	30	12	49 ^c		409	nd	nd
Chromite TRF	327	2.90	88	28	23	0	9 ^c		148	nd	nd
Crocodile River	815	4.04 ^a	1534	635	258	18	nd	nd	2444 ^a	nd	nd
Eland	704	4.49	648 ^d	364 ^d	nd	nd	nd	nd	Nd	nd	nd
Pilanesberg	3068	1.85	1832 ^b	nd	nd	nd	nd	nd	2994	nd	nd
Tharisa	1094	0.00	137 ^b	36 ^b	18 ^b	0 ^b	27 ^b	9 ^b	227	0.0	0.0
Sylvania Chromite TRF	1445	nd	nd	nd	nd	nd	nd	nd	1297	nd	nd
Northeastern Limb & Satellite Intrusions											
Limpopo ^f	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Bokoni	864	nd	nd	nd	nd	nd	nd	nd	2920 ^a	nd	nd
Marula	1579	4.19	1959	2018	420		768 ^c		5165	0.2	nd
Twickenham	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Modikwa	2224	4.51	33688	3410	590	102	904 ^c		8695	nd	nd
Smokey Hills	331	3.66	247 ^b	253 ^b	56 ^b	6 ^b	nd	nd	562 ^a	nd	nd
Southeastern Limb											
Booysendal (Everest)	1210	2.82 ^a	1214	632	206	17	429 ^c	2498 ^a	nd	nd	
Two rivers	3103	3.86	4250	2537	723		1565 ^c		9075	0.6	nd
Mototolo	2466	3.33 ^a	7019	4224	1038	119	1922 ^c		14322	0.6	0.2
Blue Ridge	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Nkomati	6388	nd	nd	nd	nd	nd	nd	nd	1191	7.02	3.7
Northern Limb											
Mogalakwena	10480	2.81 ^a	8641	9279	564	1262	nd	nd	19164 ^a	9.0	5.8
Zimbabwe											
Zimplats	4393	3.53	5304	4224	479		1230 ^c		11238	3.8	nd
Mimosa	2324	3.93	3005	2333	241		737 ^c		6316	3.9	nd
Unki	1535	3.43 ^a	1831	1262	147	207	nd	nd	3433 ^a	2.5	1.7

Italic values present calculated values or estimations. Abbreviations: nd – no data, TRF – Tailing Retreatment Facility. ^a Data represents 4E. ^b Estimate based on prill split. ^c Calculated by subtracting reported production quantities of single elements from total PGE production. ^d Values of individual mine and element were estimated by multiplying the share of the respective mine's total PGE production of the company's total PGE production by the company's production of the respective individual element. ^e 4E production quantities were estimated based two quarterly reports that reported production values. Therefore, sum of single elements and total 4E production might differ. ^f Production quantities of individual elements for each mine were obtained by multiplying the share of individual metal quantities delivered in concentrate for each mine and for the whole company by the company's total production for each element.

Note: The ownership of mines is presented in a separate Excel sheet that is provided in the Supplementary material 2.

Table S6. Mining data 2013 [6–41].

Mine	Ore milled, processed	Head grade	Pt	Pd	Rh	Au	Ru	Ir	Total PGMs	Ni	Cu
	[1000 t]	[g/t]				[kg]					[1000 t]
Western Limb											
Impala Rustenburg	10897	4.32	20105	9936	2872		9265 ^c		42178	4.0	nd
Marinkana (Lonmin) ^f	11248	4.54	18862	8532	2202	500	4518	743	34856	3.3	2.0
Pandora ^f	574	nd	1098	506	39	34	306	40	1990	0.2	0.1
Union	3786	3.34 ^a	4842	2081	833	37	1386 ^c		9180	0.3	0.1
Tumela	3063	4.45 ^a	6172	2767	975	71	1630 ^c		11615	0.8	0.3
Dishaba	1698	4.80 ^a	4131	1752	473	108	683 ^c		7147	0.7	0.3
Bathopele	2509	2.81 ^a	3144	1721	530	34	950 ^c		6379	0.3	0.1
Thembelani + Khuseleka	3711	3.95 ^a	6710	3198	816	204	1301 ^c		12230	1.6	0.6
Siphumelele + Khomani	1950	4.46 ^a	4346	1846	369	196	417 ^c		7172	1.4	1.0
Western Limb TRF	5321	1.41 ^a	1692	604	99	150	156 ^c		2702	0.3	0.2
Kroondal	4624	3.55 ^a	14753	7274	2449	125	4354 ^c		28956	0.4	0.2
Bafokeng	2010	4.38 ^a	4474 ^e	1847 ^e	390 ^e	211 ^e	nd	nd	6922 ^{a,e}	1.6	1.0
Zondereinde	2116	4.90 ^a	6021	2855	717	163	nd	nd	9756 ^a	nd	nd
Marikana (Aquarius)	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Platinum Mile RF	3400	0.75	204	111	30	11	56 ^c		413	nd	nd
Chromite TRF	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Crocodile River	243	3.91 ^a	475	197	80	6	nd	nd	757 ^a	nd	nd
Eland	nd	nd	720	400 ^d	120 ^d	1 ^d	497 ^d		1737 ^d	nd	nd
Pilanesberg	3737	2.00	2588 ^b	nd	nd	nd	nd	nd	4230	nd	nd
Tharisa	3866	nd	984 ^b	257 ^b	132 ^b	2 ^b	190 ^b	62 ^b	1627 ^b	nd	nd
Sylvania Chromite TRF	2013	nd	nd	nd	nd	nd	nd		1255	nd	nd
Northeastern Limb											
Limpopo ^f	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Bokoni	1526	3.56 ^a	nd	nd	nd	nd	nd	nd	4848 ^a	nd	nd
Marula	1794	4.19	2033	2084	431		791 ^c		5338	0.2	nd
Twickenham	198	4.02 ^a	283	275	23	9	3 ^c		593	nd	nd
Modikwa	2166	4.48	3623	3351	713	94	1066 ^c		8845	0.6	0.3
Smokey Hills	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Southeastern Limb & Satellite Intrusions											
Booysendal (Everest)	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Two rivers	3172	4.02	4598	2795	814		1726 ^c		9934	0.6	nd
Mototolo	2568	3.30 ^a	7286	4190	1179	119	2098 ^c		14872	0.8	0.4
Blue Ridge	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Nkomati	7558	nd	nd	nd	nd	nd	nd	nd	3152	23.2	9.9
Northern Limb											
Mogalakwena	11031	2.90 ^a	9718	9854	618	1188	nd	nd	20834 ^a	11.4	7.2
Zimbabwe											
Zimplats	4683	3.53	5616	4454	482		1247 ^c		11799	3.9	nd
Mimosa	2381	3.95	2843	2254	247		746 ^c		6089	3.2	nd
Unki	1570	3.40 ^a	1899	1296	150	201	nd	nd	3535	1.3	1.6

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Note: The ownership of mines is presented in a separate Excel sheet that is provided in the Supplementary material 2.

Table S7. Mining Data 2014 [6–41].

Mine	Ore milled/ processed	Head grade	Pt	Pd	Rh	Au	Ru	Ir	Total PGMs	Ni	Cu
	[1000 t]	[g/t]				[kg]					[1000 t]
Western Limb											
Impala Rustenburg	6183	4.34	11652	5596	1423		3042 ^c		21713	2.0	nd
Marinkana (Lonmin)	5810	4.39	11452	5543	202	343	2834	739	20771	2.2	1.4
Pandora ^f	281	nd	609	271	1	21	179	42	1102	0.1	0.1
Union ^f	2007	3.13 ^a	3036	1508	448	28		573 ^c	5593	0.4	0.1
Tumela	2232	3.92 ^a	4238	2186	641	43		907 ^c	8014	0.8	0.3
Dishaba	1239	3.92 ^a	2563	1262	286	60		357 ^c	4527	0.8	0.2
Bathopele	1904	2.85 ^a	2693	1667	405	28		601 ^c	5395	0.6	0.1
Thembelani + Khuseleka	1549	3.96 ^a	3238	1817	369	85		479 ^c	5987	1.4	0.4
Siphumelele + Khomani	627	4.18 ^a	1497	726	102	68		96 ^c	2489	1.1	0.3
Western Limb TRF	5151	1.33 ^a	1690	618	85	136		147 ^c	2676	0.9	0.9
Kroondal	4830	3.53 ^a	13460	6838	2444	130		4672 ^c	27544	1.0	0.6
Bafokeng	2112	4.29 ^a	4187 ^e	1727 ^e	366 ^c	197 ^e	nd	nd	6477 ^{a, e}	1.5 ^e	0.9 ^e
Zondereinde	1724	5.00 ^a	5234	2539	671	136	nd	nd	8581 ^a	nd	nd
Marikana (Aquarius)	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Platinum Mile RF	2400	0.61	93	48	13	4		25 ^c	183	nd	nd
Chromite TRF	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Crocodile River	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Eland	nd	nd	677 ^d	439 ^d	112 ^d	1 ^d	nd	nd	1168 ^{a, d}	nd	nd
Pilanesberg	3364	1.99	2679 ^b						4378		
Tharisa	3913	nd	1341 ^b	350 ^b	180 ^b	2 ^b	259 ^b	84 ^b	2217	0.0	0.0
Sylvania Chromite TRF	2510	nd	nd	nd	nd	nd	nd	nd	1525	nd	nd
Northeastern Limb											
Limpopo ^f	27	nd	39	35	2	1	6	2	84	0.0	0.0
Bokoni	1743	3.59 ^a	5500	nd	nd	nd	nd	nd	5501 ^a	nd	nd
Marula	1794	4.19	2179	2282	473			917 ^c	5851	0.3	0.0
Twickenham	240		309	298	68	11		88 ^c	774	0.1	0.0
Modikwa	1972	4.28	2758	2551	542	85		805 ^c	6742	0.6	0.5
Smokey Hills	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Southeastern Limb & Satellite Intrusions											
Booysendal (Everest)	1517	2.60 ^a	1621	786	208	42	nd	nd	2658 ^a	nd	nd
Two rivers	3279	4.01	4964	2911	879	1868	nd	nd	10623	0.6	0.00
Mototolo	2632	3.17 ^a	6781	4105	1117	125		2047 ^c	14175	1.0	0.4
Blue Ridge	0	0.00	0	0	0	0	0	0	0	0.0	0.0
Nkomati	7930	nd	nd	nd	nd	nd	nd	nd	5250	22.9	10.1
Northern Limb											
Mogalakwena	11731	3.03 ^a	10121	10719	646	1335	nd	nd	22254	15.4	10.7
Zimbabwe											
Zimplats	5939	3.47	6795	5602	632		1593 ^c		14623	4.8	nd
Mimosa	2453	3.92	3124	2466	264		797 ^c		6651	3.3	nd
Unki	1598	3.10 ^a	1709	1301	159	196	nd	nd	3382	1.7	2.5

Note: The ownership of mines is presented in a separate Excel sheet that is provided in the Supplementary material 2.

Table S8. Processed ore type in 10⁶ t.

Ore type	2010	2011	2012	2013	2014	2015
Merensky	17.990	17.547	14.024	14.218	8.548	20.578
UG2	54.829	62.200	55.217	55.532	45.254	69.159
Platreef	10.380	10.835	10.480	11.031	11.731	11.725
MSZ	6.372	7.818	8.252	8.634	9.990	9.406
No information available	16.193	8.336	14.523	13.984	15.169	7.371

Table S9. Ore grade in g 6E/t and g 4E/t.

6E	2010	2011	2012	2013	2014	2015
All mines	3.58	3.75	3.55	3.74	3.17	3.68
Western Limb	3.55	3.70	3.46	3.69	2.79	3.63
Northeastern Limb	4.36	4.39	4.19	4.19	4.19	4.19
Southeastern Limb	3.52	3.88	3.86	4.02	4.01	3.98
Northern Limb	nd	nd	nd	nd	nd	nd
Great Dyke	3.67	3.68	3.67	3.67	3.60	3.62
4E	2010	2011	2012	2013	2014	2015
All mines	3.42	3.43	3.38	3.41	3.22	3.53
Western Limb	3.56	3.54	3.51	3.52	3.25	3.78
Northeastern Limb	4.44	4.39	4.40	4.10	3.96	3.91
Southeastern Limb	3.32	3.00	3.16	3.30	2.96	2.60
Northern Limb	2.60	2.91	2.81	2.90	3.03	3.09
Great Dyke		3.64	3.43	3.40	3.10	3.22

Figures:

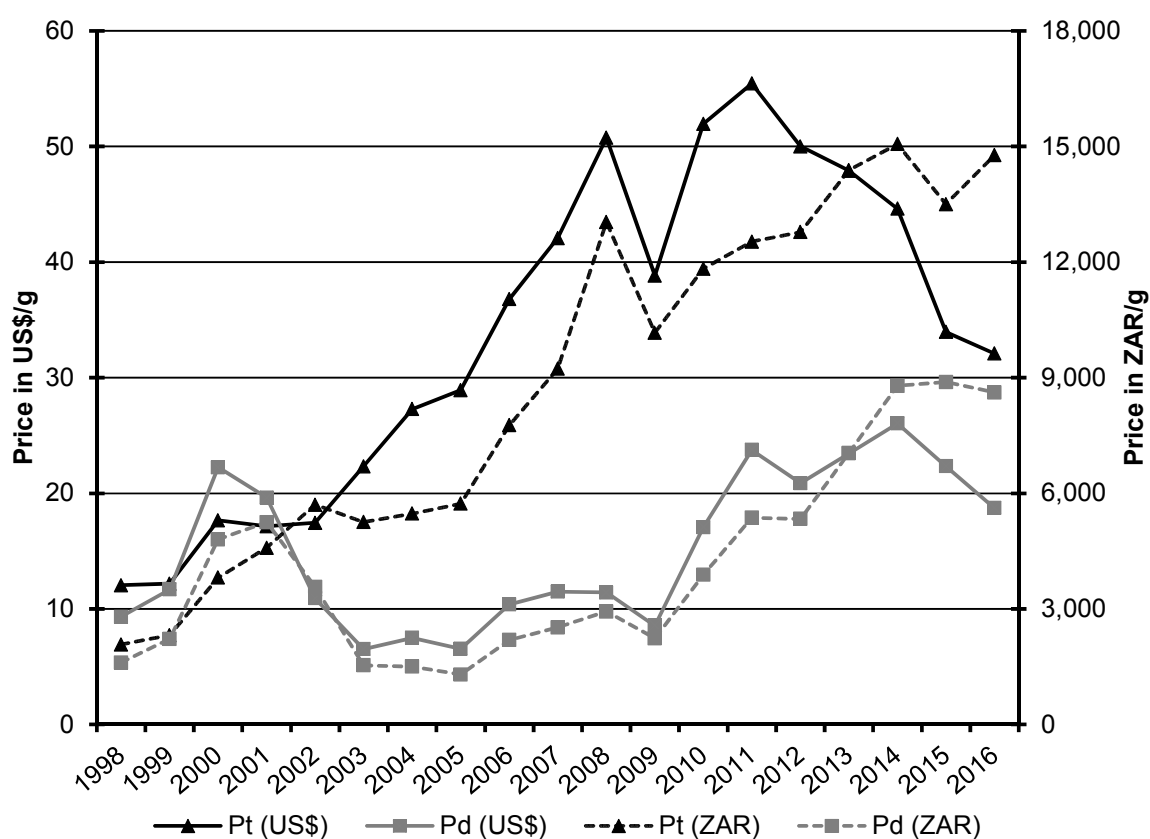


Figure S1. Pt and Pd price [43]. Prices for 2016 are average values from January to August.

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