

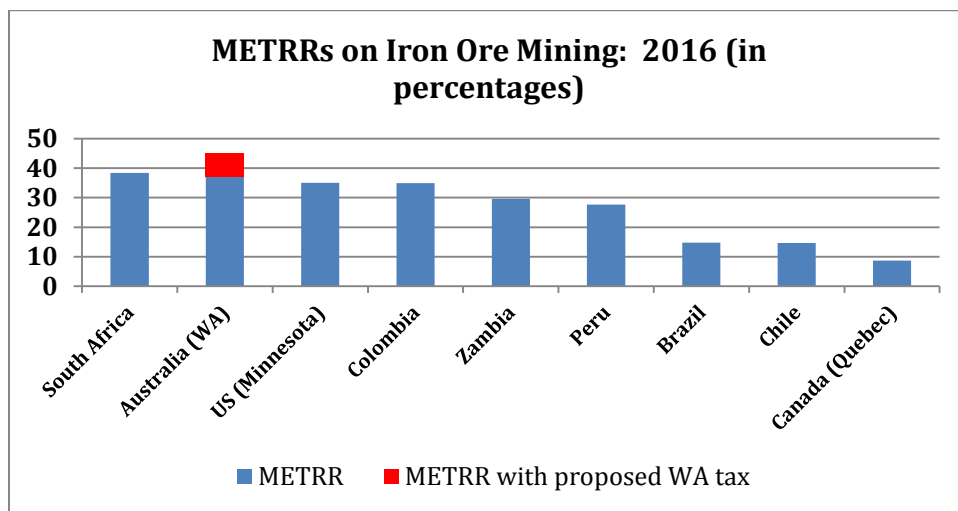
**A 2016 Update of Effective Tax Rates on Australia Mining and an Evaluation of
Proposed Increases in Taxation of Iron Ore**

By Duanjie Chen and Jack Mintz

September 2, 2016

Summary

- In this paper we update our analysis of effective tax and royalty rates on new investment in iron ore mining. We also consider the impact of raising a tax on iron ore production from 25 cents to \$5 per ton.
- Australia would become the world’s highest taxing jurisdiction for iron ore if the \$5 tonnage tax were to be adopted.
 - The marginal effective tax rate will increase from 37 per cent to 45 per cent.
 - It would almost double the overall royalty rate in WA on iron ore.



- As a flat rate unrelated to profitability, it would increase the burden when prices are low.
- The proposed tonnage tax contravenes a number of the guiding principles applied through the recent WA Government’s Royalty Review.

Introduction

In our report on Australia’s 2015 tax competitiveness¹, we found that metallic mining (iron ore) bore a higher tax and royalty burden in Australia compared to eight other countries. This arose from a relatively high Australian company tax burden as well as a higher royalty on production revenues compared to most of the surveyed economies.

¹ J. Mintz, P. Bazel and D. Chen, “Growing the Australian economy with a competitive company tax,” Minerals Council of Australia, Melbourne, Australia, March 2016.

This report provides an update for 2016 as well as an evaluation of a tonnage charge that is subject to debate in Western Australia with a proposal to increase the levy from 25 cents to \$5 per ton (all values in this report are in Australian dollars unless indicated).² We estimate that at recent average prices the fiscal burden on Western Australian investment would jump dramatically from 37 to 45 percent, even higher than found in high-taxed countries Colombia, South Africa and United States. Australia would become the world's highest taxing jurisdiction for iron ore.

The approach used in this report to measure the tax burden on new investments is explained in the previous report and not reported here. We specifically measure the marginal effective tax and royalty rate (METRR) that incorporates company income taxes (and provisions), any sales taxes on capital purchases, capital-related taxes and royalties or mining taxes.

We first provide an economic evaluation of per unit (tonnage) taxes in a cyclical economy. We then turn to our international comparison before concluding this short report.

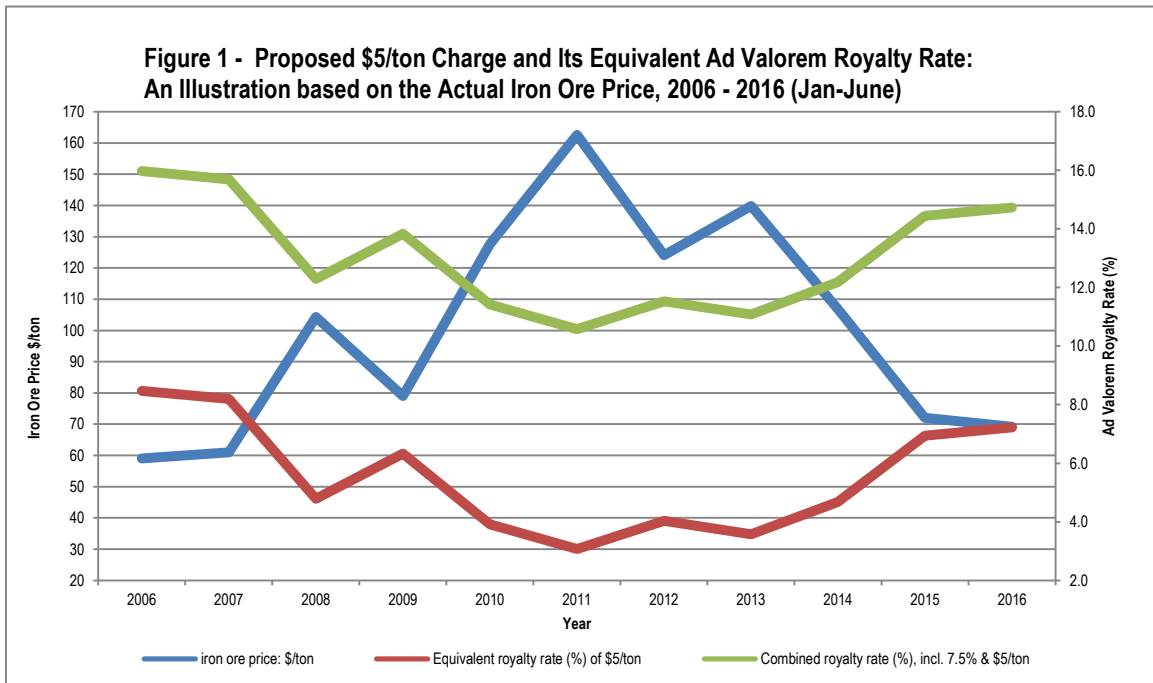
Economic Impacts of Per Unit Taxes in Mining

Over the past decade, the price of iron ore demonstrated its cyclicity, swinging from \$59/ton in 2006 to a peak of \$163/ton in 2011, and back to \$70/ton for the first half of 2016.

For the two major iron ore miners, Rio Tinto and BHP Billiton, and at the 2016 price of \$70, the *effective* ad valorem royalty rate, including the existing 25-cent/ton production charge, is 7.85 percent ($= 7.5\% + \$0.25/\70). The effective production charge declines with prices with its more meaningful impact affecting investment when prices are low, given the rate is a fixed amount on output and unrelated to prices.

But what if this 25-cent tonnage charge is increased to \$5? At the same presumed price of \$70/ton, the two major miners pay \$10.25/ton ($= \$5 + \$70 \times 7.5\%$), which is equivalent to an effective royalty rate of 14.6 percent, almost double the current royalty rate. More importantly, as shown in Figure 1, the effective ad valorem royalty rate would be pro-cyclical: the lower (higher) the iron ore price, the higher (lower) the effective royalty rate.

² The 25 cent levy is a charge for mining leases granted to a company under State Agreements.



Any tonnage charge, or “unit tax” in general, can result in an effective tax or royalty rate to move directly against the movement in sales price and hence profit. It is bound to tax *relatively* more when the profit is low and hence exacerbate the economic cycle, creating more risk for the private producers. On the other hand, because of the unpredictable fluctuation in commodity prices, applying this unit-tax approach to tax commodity sales stabilizes government revenues so long as production varies less, thereby shifting risk from the public to private sectors. But such revenue stability can be short-lived during a prolonged commodity down turn when miners with relatively high break-even costs are forced out of business, thereby negating stabilization benefits.

Per unit excise taxes have been used in some countries when the mining transfer price at the pit’s mouth is difficult to estimate. However, given their burden when prices are low, the per unit taxes are relatively low to avoid harmful economic impacts during downturns.³ However, this also implies that the per unit taxes raise less revenue than ad valorem taxes during price booms.

In other words, a unit tax such as the tonnage charge on iron ore mining in Western Australia (WA), particularly with a rather high rate such as the proposed \$5/ton, directly

³ Excise tax is largely intended as a luxury tax (e.g., on boats) for redistributive purposes, or sumptuary tax (e.g., on tobacco) to discourage harmful consumption, or a revenue tool (e.g., on gasoline) for dealing with negative externalities or funding earmarked services.

contravenes three of the five guiding principles applied through the recent WA Government's Royalty Review⁴: equity, efficiency and stability.

How would Australia Compare in 2016 with the new Tonnage Tax?

When setting taxes and royalties, governments look to raise revenues to fund their public services, ensure a fair share of economic rents from extractive industries and attract investment to grow the industry. International comparisons help determine whether the fiscal system is not over-burdensome that it would discourage investment compared to other jurisdictions.

For reference purposes, the Appendix provides a cross-border comparison of the statutory tax and royalty provision for nine iron ore exporting countries in the global market (Table A1). These nine countries are Australia (WA), Brazil, Canada (Quebec), Chile, Peru, South Africa, the United States (Minnesota) and Zambia.

As Table A1 shows, aside from the company income tax (CIT) that is related to profitability, Australia has the highest royalty rate (7.5 percent) based on iron ore mining revenue, plus a \$0.25 tonnage charge. The second highest revenue-based royalty rate is found in South Africa (up to 7 percent), which is followed by Zambia (6 percent on open cast mining and lower otherwise), Colombia (5 percent) and Brazil (2 percent). Other countries including Canada, Chile, Peru, and four of the five U.S. mining states tax their miners on income. The exception is Minnesota, the top iron ore mining state in the U.S., where the mining royalty is *solely* a tonnage charge at US\$2.60/ton for 2015 and indexed annually based on the GDP deflator.

Based on our cross-border review of the statutory tax and royalty provisions (Table A1), Table 1 provides our estimates of the marginal effective tax and royalty rate (METRR) for the iron ore mining industry among these nine countries.

Note that, to convert the tonnage charges in Western Australia and Minnesota, respectively, to their equivalent ad valorem royalty rates, we applied two cross-border assumptions to our METRR model: an iron ore price of \$70/ton and a profit margin of 15 percent (note if prices increase (decrease) compared to \$70 per tonne, the METRR in countries with royalties based on revenues or output would decline (increase)). With these price and profit-margin assumptions, iron ore miners under the current WA mining royalty regime appear to incur the second highest METRR (37 percent) and the highest METRR that is solely attributable to mining levies (22.3 percent). The METRR for the major WA iron ore miners could jump to 45 percent should the current tonnage charge of \$0.25 be raised by 19 times to \$5.

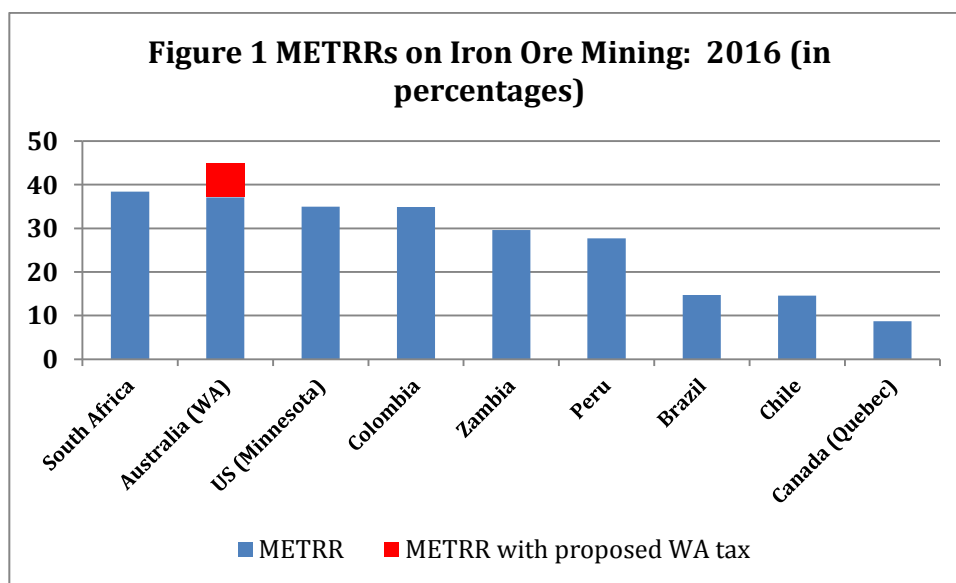
⁴ Refer to Government of Western Australia, Mineral Royalty Rate Analysis: Final Report (2015), page 19, http://www.dmp.wa.gov.au/Documents/Minerals/Mineral_Royalty_Rate_Analysis_Report.pdf

**Table 1: Marginal Effective Tax and Royalty Rates on Iron Ore Mining: by Country
2016 (in percentages)**

Ranking	Country	METRR (all levies)	Mining Levies Only	Other Taxes (incl. CIT)
1	South Africa	38.4	20.4	17.7
2	Australia (WA current)	37.1	22.3	15.4
	Australia (WA with proposed tax)	44.9	30.2	15.4
3	United States (Minnesota)	35.0	10.8	23.2
4	Colombia	34.9	14.6	13.3
5	Zambia	29.6	17.5	12.1
6	Peru	27.7	13.3	16.6
7	Brazil	14.7	5.8	9.8
8	Chile	14.6	6.9	8.3
9	Canada (Quebec)	8.7	8.8	0.6

**Tax reforms since our March 2016 report reduced Zambia’s METRR from 42.8 per cent to 29.6 per cent moving Zambia’s ranking from one to five and Australia from the third highest jurisdiction to second. Note: Due to tax interactions (e.g., mining levies are generally deductible for corporate income tax purposes), effective tax rate solely attributable to the mining levies and that to other taxes do not add to the total of all levies.*

Increasing the tonnage tax to \$5 would move Australia from the second highest taxing jurisdiction for iron ore to the highest taxing jurisdiction surpassing the current highest South Africa.



Our concern is also with respect to economic efficiency, specifically with respect to investment and risk-taking. As pointed out earlier (Figure 1), for a given unit tax such as the tonnage charge for iron ore mining in Western Australia, the lower (higher) the unit price, the higher (lower) is its equivalent ad valorem royalty rate, which will in turn affect the METRR positively. That is, any given tonnage charge will impact the METRR in the opposite direction of price movement thereby exacerbating the economic cycle as after-tax returns will be more variable than pre-tax returns.

Conclusions

As found in our earlier report, Australia's mining tax regime is not competitive relative to eight other competing jurisdictions. It would even be less competitive if the tonnage tax on iron ore is increased from 25 cents to \$5 per tonne. The tonnage tax would also increase risk faced by private producers as after-tax returns would become more variable. Overall, a per unit levy imposes additional costs on an industry compared to the ad valorem levy.

Table A1. Company Income Tax and Mining Royalty and Rent Tax for Metallic Mining, by Country (2016)

	Australia	Brazil	Canada*	Chile	Colombia	Peru	South Africa	U.S.*	Zambia
Company income tax rate	30%	34%, including a basic CIT (15%), a surcharge (10%) and a social contribution on net profit (9%); allowing a deduction for the nominal cost of equity.	26% - 30%, combining federal (15%) and provincial CIT rates (11% - 14%) (average provincial rate is 11.7%).	24%, with profits adjusted for inflation.	34.54%, combining the 25% CIT, 9% CIT for equality, and 6% surtax on "CIT for equality rate."	28%, which will be further reduced to 26% by 2019.	28%, except for gold mining for which the CIT rate is determined by: $34 - 170/x$, with x = ratio of taxable-to gross-income (multiplied by 100).	35% - 41%, combining the federal (35%) and deductible state CIT rates as below: AK: 0 - 9.4% AZ: 6.5% MN: 2.45% for mining (vs. 9.8% in general) NV: No CIT UT: 5%	30% or higher for mining income; it is determined by: $30 + [a - (ab/c)]$, where, $a=15%$, $b=8%$ and c =ratio of the assessable income to gross sales; it is 30% when $c \leq 8%$.
Exploration	Fully expensed	Amortized over the useful life of the mine.	Fully expensed, with additional tax credit provided in BC (20%) and Quebec (12%).	Expensed.	Written-off within at least five years, but allows expensing of unsuccessful explorations.	Amortized within three years,	Fully expensed	70% expensed with the balance of 30% being capitalized and amortized within 60 months.	Fully expensed.
Development	Amortized over the life of the mine (which is assumed to be 25 years in our report).	Amortized over the useful life of the mine.	30% annual depreciation allowance, but fully expensed in Quebec.	Depreciated like fixed assets (see below).	Written-off in at least five years.	Amortized within three years,	Fully expensed	70% expensed with the balance of 30% being capitalized and amortized within 60 months.	25%SL
Depreciated	Buildings:	Buildings:	25%	Buildings:	Buildings:	Buildings:	All items	14.3%	Buildings:

<p>on: [yrs: number of years as official useful life; SL: straight line; DB: declining balance]</p>	<p>2.5%; M&E: 5%. But taxpayers have the option of self-assessing the effective useful life by asset type, and certain mining capital assets may be written off using 200% of the DB rate.</p>	<p>4% SL; M&E: 10% SL, but the normal rate can be increased by 50% for two-shift operations and doubled up for three-shift operations.</p>	<p>annual allowance for all mining assets, with a conditional 100% accelerated allowance, which will be phased out after 2020.</p>	<p>2% SL; M&E: 11.11% SL, which can be tripled for new or imported M&E; Automobiles: 14.29% SL.</p>	<p>20 yrs; M&E: 10 yrs, with additional 25% allowance for every eight-hour shift; Automobiles & computers: 5 yrs; Both SL and DB are allowed.</p>	<p>5% SL; M&E: up to 20% SL (incl. vehicles) but no more than that recorded by financial accounting.</p>	<p>of capital expenditure incurred in relation to any mine can be deducted from mining income. Other depreciable assets (e.g., housing for workers) are amortized in 10 years. Inventory is valued at the lower of cost or net realizable value; LIFO is not allowed.</p>	<p>for the depreciable mining assets except for buildings which are amortized at 2.6%</p>	<p>10% initial allowance and 5%SL annual allowance ; M&E: 25%SL annual allowance</p>
<p>Inventory accounting (FIFO = first-in-first-out, and LIFO = last-in-first-out)</p>	<p>Can be valued at cost, market-selling value, or replacement price, but LIFO is not permitted.</p>	<p>Only FIFO and average-cost accounting are allowed.</p>	<p>FIFO.</p>	<p>With inflation adjustment, FIFO and weighted-average-cost accounting are allowed.</p>	<p>All conventional methods including FIFO and LIFO are permitted.</p>	<p>All conventional methods are allowed.</p>	<p>Inventory is valued at the lower of cost or net realizable value; LIFO is not allowed.</p>	<p>Optional.</p>	<p>Inventory is valued at the lower of cost or net realizable value.</p>
<p>Royalty, or mining tax</p>	<p>The <i>ad valorem</i>^a royalty on metallic mining product is levied by states and varies by product, ranging from 2.5% to 7.5%. For the same type of minerals, the royalty rate varies to take</p>	<p>A “federal” royalty (CFEM) is levied on the mineral sales revenue net of taxes, insurance and freight costs. The royalty rate varies by product: Gold: 1%;</p>	<p>Mining tax ranging from 10% to 17% except for Quebec where a 3-tier (16-22%) progressive rate scheme applies. The tax base is largely a mining rent with all capital expenditure</p>	<p>Mining tax is based on corporate income with certain adjustments; Royalty rate is progressive from 0 to 14%, based on sales volume and operational margin.</p>	<p>Royalty base: revenue at mine pit. Royalty rate varies by product: Nickel: 12%; Gold: 4%; Iron/copper: 5%; Deductible for CIT.</p>	<p>Three categories, all based on “operating profit”: (1) Mining royalty payable by all: 1%–12% (minimum 1% of revenue); (2) Special mining tax by metallic miners:</p>	<p>Royalty rate is varied by mining product and the stage of processing: Copper: 0% Gold: 0.5%-5%, and Iron ore: 0.5%-7%.</p>	<p>Severance tax: AK: 3-tier progressive rate on net income: 3%/5%/7% (\$100k+) AZ: 2.5% on 50% of net profit; MN: a production tax on sellable iron ore</p>	<p>The <i>ad valorem</i> rate is 3% for underground mining operations, and 6% for open cast mining operations, which were 6% and 9% previously.</p>

	<p>into account processing costs: the higher rate applies to bulk material, and the lower ones to further processed forms, largely benchmarked to 10 percent of the mine head value.</p> <p>In Western Australia, there is also a \$0.25/ton charge on iron ore after the mine life exceeds 15 years. This levy is not a part of the general royalty regime but often included in the state agreement between the government and the miner.</p>	<p>Copper: 2%; Iron ore: 2%; Deductible for CIT.</p>	<p>res expensed, except for N&L, which provides a less generous allowance for development expenditures and depreciable assets.</p>			<p>2%–8.4%; (3) additional special mining contribution by metallic miners with “tax-stability agreement”: 4%–13.2%.</p>		<p>at \$2.60 per ton (2015), which is indexed by the implicit GDP deflator; NV: 5% on net income, similar to the CIT base; Utah: 2.6% of taxable value, which is the gross value net of the \$50,000 annual exemption per mine and multiplied by 80%.</p>	
<p>Other taxes (excluding property taxes)</p>	<p>A national transfer tax of 5.6% on real estate including land and</p>	<p>Transfer tax on immovable property of 4%.</p>	<p>Provincial sales tax in BC (7%), SAS (5%) and Man (8%). Transfer</p>	<p>A stamp duty on debt financing: 0.6%; and an equity-based</p>	<p>A progressive equity tax on net wealth over COP 1 billion;</p>	<p>N/A</p>	<p>0.25% security transfer tax, a stamp duty on securities</p>	<p>State sales tax: AK: 1.76 AZ: 8.17% MN: 7.2%</p>	<p>10% property transfer tax on transfers of company</p>

	buildings and structure.		tax on real estate at 1.5%	municipal license fee: 0.25%–0.5%, payable annually (but capped at 8.000 UTM).	the top annual rate on net worth surpassing 5 billion pesos (\$2.5 million) is 1% for 2016 (1.15% for 2015).		s transfer.	NV: 7.94% UT: 6.68%	shares, land, buildings and structures and mining rights.
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* Canada includes all but three provinces that have little metallic mining.

** The U.S. includes five top mining states as listed in the text. Among them, Nevada does not have a company income tax in general; the 5-percent tax on net mining income is based on a version of taxable income similar to that for the federal CIT and deductible for federal CIT purposes like the state CIT in other states.

References:

- (1) Ernst & Young, 2016 Worldwide Corporate Tax Guide (online).
- (2) For Australia, the federal and various state government websites and the information provided by the Minerals Council of Australia.
- (3) For Brazil, <http://www.pwc.com/gx/en/industries/energy-utilities-mining/mining/territories/brazil.html>, and <http://latinlawyer.com/reference/topics/46/jurisdictions/6/brazil/>
- (4) For Canada, Natural Resources Canada, various provincial government websites, PWC, Tax Facts and Figures, Canada 2016.
- (5) For Chile, <http://www.pwc.com/gx/en/industries/energy-utilities-mining/mining/territories/chile.html>
- (6) For Colombia, various official tax documents and <http://latinlawyer.com/reference/topics/46/jurisdictions/8/colombia/> (section 6).
- (7) For Peru, <http://www.pwc.com/gx/en/industries/energy-utilities-mining/mining/territories/peru.html>
- (8) For South Africa, <http://www.pwc.com/gx/en/industries/energy-utilities-mining/mining/territories/south-africa.html>
- (9) For the U.S., <http://www.pwc.com/gx/en/industries/energy-utilities-mining/mining/territories/united-states.html> and various government websites including: <http://www.tax.alaska.gov/programs/index.aspx>; State of Arizona, 2014 Tax Handbook; Minnesota's Mining Laws, April 2016, http://files.dnr.state.mn.us/lands_minerals/mn_mining_laws.pdf <http://www.house.leg.state.mn.us/hrd/pubs/ss/ssmngtax.pdf>; Utah, <http://tax.utah.gov> and <http://www.rules.utah.gov/publicat/code/r865/r865-16r.htm#E4>
- (10) For Zambia, Library of Congress, <http://www.loc.gov/law/foreign-news/article/zambia-mines-and-minerals-bill-and-related-income-tax-amendment-bill-tabled-in-parliament/>, <http://www.imf.org/external/pubs/ft/scr/2015/cr15153.pdf> (Annex 1), and *Zambia Daily Mail*, June 15, 2016, <https://www.daily-mail.co.zm/?p=69579>