



## Company report

# ***Antofagasta PLC*** (LON: ANTO)

**Rating: Sell (PT: GBP 840, -10.8% downside)**

- ANTO is a small player with cost of production right at the industry average.
- Similar to other copper mining companies, ANTO's valuation is weighed down by its highly capital intensive nature.
- Current market price implied long-run average copper price of \$6,141 in today's dollar, which is at the high-end of what we consider reasonable.
- The stock is at best fairly value with no upside potential.
- The valuation is highly sensitive to a price decrease in the next 5 years, which we believe is a real possibility.
- We see downside risk of 21% if China's demand collapse where price may react in a similar fashion to 2008 financial crisis.

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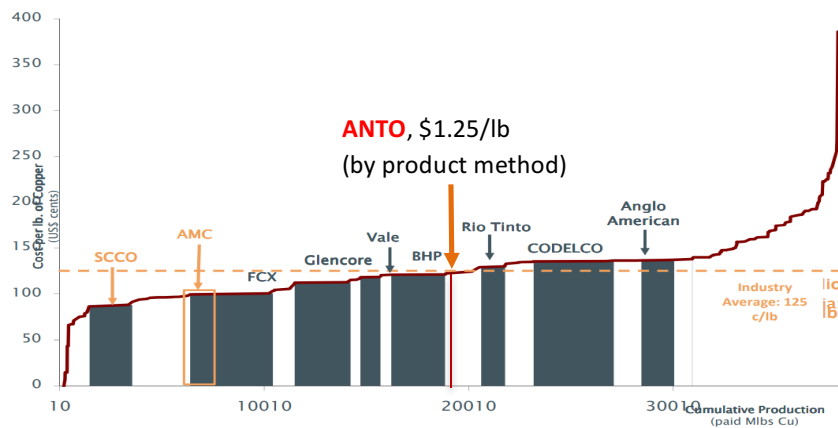
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## Company Overview

According to Bloomberg: 'Antofagasta plc owns and operates copper mines in Chile and conducts exploration activities in Chile and Peru. The Group also operates a rail network servicing the mining region of northern Chile, as well as operates a concession for the distribution of water in this region.'

ANTO is a relatively small player in the industry, producing 0.7 million tons in 2017. It's production cost is right at industry average of \$1.25/lb on a by-product basis (production cost minus revenue from selling by-product base metals from the same mine).

**Exhibit 1: Copper industry supply curve (by product method)**



Source: SCCO, Bloomberg

ANTO is listed in the London Stock Exchange but is also traded over the counter in the US. Despite its stock denominated in GBP, the company provides financial statements in USD, which we used in our analysis.

## Exhibit 2: ANTO went down by 6.2% year-to-date (S&P500 down by 0.6% during the same period)



Source: Bloomberg

## Revenue projection

**Methodology.** We project revenue based on production volume of copper and other metals driven by the company's expansion plan and price level of those commodities in the world market. Our projection is focused on copper since it made up the majority of revenue over 90%.

## Exhibit 3: Estimated copper revenue as a percentage of total revenue

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
% Copper to total revenue	90%	92%	92%	92%	89%	93%	94%	94%	93%	92%	90%	91%	92%	92%

Source: Bloomberg, Analysts' estimate

**Copper price.** Our copper price assumes a mild China slow down. Within our forecast period, average copper price is \$6,122 in today's dollars which is higher than 25-year average inflation-adjusted price of \$4,979. About 45% of copper is used in infrastructure and construction while China accounts for half of global demand. Thus, any slowdown in China will have a material impact on the price level. Our projection started with real copper price, which is adjusted for inflation.

## Exhibit 4: Copper price projection

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Real Copper Price (\$/t)	NA	NA	NA	NA	NA	NA	7,500	6,800	6,500	5,500	5,000	6,000	6,000	6,000
Nominal Copper Price (\$/t)	7,959	7,332	6,863	5,511	4,868	5,827	7,500	6,936	6,763	5,837	5,412	6,624	6,757	6,892

Source: Bloomberg, Analysts' estimate

**Production forecast.** For production figures in 2018, we have taken the average of the management's guidance. Historically, actual production has been within the range of prior guidance figures. For future years, we project production based on the company expansion plans in all of its 5 locations (Los Pelambres, Centinela, Antucoya, Zaldivar, Minnesota).

**Los Pelambres.** Currently, management is undertaking incremental expansion plan at Los Pelambres. It will be carried out in two phases to simplify the permit application process and spread the cost over a longer period. During phase 1, which was approved in February 2018, the company will build a concentrator plant at \$780mm, and a desalination plant and a water pipeline at \$520mm, for a total of \$1.3bn. This project is to be completed by 2021, and it will gradually raise production by 55,000 tons of copper per year. Phase 2 is estimated to start after 2021, and it will require approximately \$500mm and will incrementally raise copper production by 35,000 tons per year. We believe that this increase will be spread over a period of four years, as it is in Phase 1.

**Centinela** is also considering its own expansion plan with two alternatives. First, it is considering the construction of a second concentration near its current concentrator. It will increase production by 180,000 tons of copper. This project will cost \$2.7bn, and if approval is given in 2018, first production is expected in 2022. An alternate development option is expanding the existing concentrator. The consensus is that this alternative will be only about 25% (i.e. \$675mm) and will expand capacity by less than half of building a new construction. This alternative is still under study and will not be implemented until 2018. As of now, we believe that these two options are equally likely. Given the opaqueness of the Centinela capital projects until at least the end of 2018, we forecast the likely production increase and the additional capital as weighted averages of their current probabilities.

**Antucoya and Zaldivar.** For the copper productions at Antucoya and Zaldivar, we have forecasted that they will grow on average of 2% per year, which is the terminal growth rate we assume for the entire company. There are no significant expansionary projects associated with these two locations. Overall, we believe that these production forecasts are reasonable. Antofagasta's share of worldwide copper production will remain on average 3.0-3.5% in the next decade.

**Minnesota.** Beside those locations in Chile, Antofagasta also owns Twin Metals, which is a copper, nickel, and platinum group metals project in Minnesota. During December 2017, the Department of Interior reaffirmed the right to renew two federal mineral leases. However, there is no concrete plan or any timeline for major investments or production.

**Byproducts.** The production of other byproducts such as gold, molybdenum, and silver should be related to copper production. At Antofagasta, gold and

silver are produced at both Los Pelambres and Centinela. Molybdenum is produced at only Los Pelambres. The production of these metals going forward should track the same rate of change as the copper production at these locations.

**Revenue projection.** We multiplied future production with the commodity price forecasts to arrive at total revenue. We back-tested our method on the previous five years, and they track historical data closely, with no clear directional bias. Our revenue projection shows an increase of revenue of \$4.7bn in 2017 to about \$7.1bn in 2025, a CAGR of 5.2%, which is reasonable given the capital projects at Los Pelambres and Centinela. Copper's share of total revenue will consistently remain over 90%, which is what we expect for a pure-play copper producer.

## Exhibit 5: Prices, Production forecast, Revenue projection

In \$ MM	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
<b>Copper</b>														
Nominal Copper Price (\$/t)	7,959	7,332	6,863	5,511	4,868	5,827	7,500	6,936	6,763	5,837	5,412	6,624	6,757	6,892
<b>Copper production</b>														
Los Pelambres Copper (kt)	403.7	405.3	391.3	363.2	355.4	343.8	350.0	368.3	386.7	405.0	413.8	422.5	431.3	440.0
Centinela Copper (kt)	268.2	277.5	266.5	221.1	236.2	228.3	237.5	248.8	260.0	271.3	372.5	380.0	387.5	395.3
Antucoya Copper (kt)	-	-	-	12.2	66.2	80.5	77.5	79.1	80.6	82.2	83.9	85.6	87.3	89.0
Zaldivar Copper (kt)	-	-	-	4.4	51.7	51.7	57.5	58.7	59.8	61.0	62.2	63.5	64.8	66.0
Michilla (kt)	37.7	38.3	47.0	29.4	-	-	-	-	-	-	-	-	-	-
Total Copper Production (MMt)	709.6	721.1	704.8	630.3	709.5	704.3	722.5	754.8	787.1	819.5	932.4	951.5	970.8	990.4
<b>Implied Copper Revenue (\$ MM)</b>	<b>5,648</b>	<b>5,287</b>	<b>4,837</b>	<b>3,473</b>	<b>3,454</b>	<b>4,104</b>	<b>5,419</b>	<b>5,235</b>	<b>5,323</b>	<b>4,783</b>	<b>5,046</b>	<b>6,303</b>	<b>6,560</b>	<b>6,826</b>
<b>Other Revenue</b>														
Gold Price (\$/oz)	1,675	1,357	1,266	1,160	1,256	1,280	1,338	1,362	1,379	1,406	1,434	1,463	1,492	1,522
Gold Production (koz)	299.9	293.8	270.8	213.8	270.8	212.4	200.0	210.1	220.1	230.2	267.7	273.2	278.7	284.4
Implied Gold Revenue	502.3	398.7	342.8	248.0	340.1	271.9	267.6	286.2	303.5	323.8	383.9	399.7	416.0	432.9
Molybdenum Price (\$/t)	11.9	10.0	11.4	6.7	6.8	8.2	8.1	8.3	8.3	8.5	8.6	8.8	9.0	9.2
Molybdenum Production (kt)	12.2	9.0	7.9	10.1	7.1	10.5	12.0	12.6	13.3	13.9	14.2	14.5	14.8	15.1
Implied Molybdenum Revenue	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Silver Price (\$/oz)	31.1	22.7	18.7	15.5	17.5	16.8	18.2	18.4	19.3	19.6	20.0	20.4	20.8	21.3
Silver Production (koz)	3,343	3,644	4,358	3,480	3,899	3,583	3,679	3,864	4,050	4,235	4,924	5,025	5,127	5,231
Implied Silver Revenue	104.0	82.7	81.5	53.9	68.2	60.2	67.0	71.1	78.0	83.2	98.6	102.7	106.8	111.2
<b>Implied Other Revenue</b>	<b>606.4</b>	<b>481.5</b>	<b>424.4</b>	<b>302.0</b>	<b>408.4</b>	<b>332.1</b>	<b>334.7</b>	<b>357.4</b>	<b>381.6</b>	<b>407.0</b>	<b>482.7</b>	<b>502.5</b>	<b>523.0</b>	<b>544.2</b>
<b>Implied Total Revenue</b>	<b>6,254</b>	<b>5,768</b>	<b>5,262</b>	<b>3,775</b>	<b>3,862</b>	<b>4,436</b>	<b>5,753</b>	<b>5,593</b>	<b>5,705</b>	<b>5,190</b>	<b>5,529</b>	<b>6,806</b>	<b>7,083</b>	<b>7,370</b>
Percentage of Actual	93%	97%	102%	117%	107%	93%								

Source: Bloomberg, Analysts' projections

## Cost of Goods Sold

**Methodology.** We project COGS based on cost of production per pounds. Historically, COGS does not vary with copper prices and revenue. From 2012 to 2017, COGS/Revenue have been highly volatile, ranging from 37% in a period of high copper price to 73% when price is low. On the other hand, production costs were stable around an average of \$1.79/lbs (before by-products) during the same period.

In 2018, management forecasts costs before by-products (the revenues generated by the copper byproducts can be subtracted to generate the net cost

figure) to be \$1.65/lbs on average. This includes the costs incurred in mining and processing, and historically actual average cost has been roughly on track with the company's guidance. We believe that as the Company ramps up its production with its new projects, real average costs will eventually return to the steady state of the long-run average. In nominal terms, we expect production cost to rise from \$1.65/lbs to \$2.10/lbs by 2025. This is a reasonable assumption; as cumulative production increase at a given location, production cost should increase concurrently.

## Exhibit 6: COGS

In \$ MM	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
COGS	2,465	2,860	2,869	2,349	2,087	2,356	2,384	2,587	2,799	3,019	3,553	3,748	3,948	4,154
%COGS/Revenue	37%	48%	56%	73%	58%	50%	41%	46%	49%	58%	64%	55%	56%	56%

Source: Bloomberg, Analysts' projections

## Other Income & Expenses

**Other operating income, and Selling, General & Administrative Costs** have been roughly stable as a share of total revenue, at 0.5% and 10%, respectively. We believe that these shares will remain roughly at the same level in future periods.

**Other operating expenses** has been around 5.2% of total revenue historically, except 2016. In 2016, other operating expense jumped from \$184mm to \$609mm, and it came down to \$164mm in 2017. This one-time increase was due to a \$456.6mm provision against carrying value of assets (i.e. impairments). We believe that on average, other operating expense will remain around 5.2% of total revenue in the future. However, asset impairments are almost unavoidable, and we believe that ANTO will write-off its assets at least once in our forecast period, likely around 2022, which, in our commodity forecast, is the nadir of copper prices.

**Depreciation and Amortization** has been fluctuating around 12.3% of revenue in the past few years. We project that D&A will have a similar share of revenue and in our forecasted period.

**Other Non-Operating Loss (Gain)** has been historically around 1% of total revenue, which we believe will remain at similar levels in the next few years.

**Extraordinary Loss (Gain).** The company recognized small gains around 0.6% of revenue for the past few years. In 2015, Antofagasta recognized a gain of \$613mm. Most of that was due to gains on divestitures recognized when it disposed its Michilla assets, its water division, and its transportation operation in Bolivia. We project extraordinary gain at 0.6% of revenue going forward.

## Exhibit 7: Various Income Statement Items

In \$ MM	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
SG&A	596	563	457	438	479	414	575	559	570	519	553	681	708	737
%Revenue	9%	9%	9%	14%	13%	9%	10%	10%	10%	10%	10%	10%	10%	10%
Other Operating Income	14	19	21	34	20	26	29	28	29	26	28	34	35	37
%Revenue	0%	0%	0%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%
Other Operating Expense	820	396	256	184	609	164	299	291	297	270	774	354	368	383
%Revenue	12%	7%	5%	6%	17%	3%	5%	5%	5%	5%	14%	5%	5%	5%
Depreciation and Amortization	494	518	606	576	578	581	690	671	685	623	663	817	850	884
%Revenue	7%	9%	12%	18%	16%	12%	12%	12%	12%	13%	13%	13%	13%	12%
Other Non-Operating Loss (Gain)	46	36	38	29	117	(72)	58	56	57	52	55	68	71	74
%Revenue	1%	1%	1%	1%	3%	-2%	1%	1%	1%	1%	1%	1%	1%	1%
Extraordinary Loss (Gain)	-	-	(37)	(613)	(38)	(1)	35	34	34	31	33	41	42	44
%Revenue	0%	0%	-1%	-19%	-1%	0%	1%	1%	1%	1%	1%	1%	1%	1%

Source: Bloomberg, Analysts' projections

**Non-Controlling Interest.** Non-controlling interest adjustment reflects net income attributable to minority shareholders in ANTO subsidiaries. ANTO owns 60% of Los Pelambres, 70% of Centinela, 70% of Antucoya, and 50% of Zaldivar. We projected non-controlling as a percentage of consolidated net income. We used share of revenue from each location as a proxy for that location's net income multiplied by ANTO's ownership to get implied non-controlling interest (% of net income). Although our implied figures differ widely with actual figures on a year-to-year basis, the average difference for 2012-2017 is only -1%. Thus, we believe this is an accurate way to project non-controlling interest.

## Exhibit 8: Non-controlling Interest

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
% Revenue														
Los Pelambres	60%	59%	59%	60%	50%	49%	48%	49%	49%	49%	44%	44%	44%	44%
Centinela	40%	41%	41%	37%	33%	32%	33%	33%	33%	33%	40%	40%	40%	40%
Antucoya	0%	0%	0%	2%	9%	11%	11%	10%	10%	10%	9%	9%	9%	9%
Zaldivar	0%	0%	0%	1%	7%	7%	8%	8%	8%	7%	7%	7%	7%	7%
ANTO Ownership														
Los Pelambres	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
Centinela	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
Antucoya	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%	70%
Zaldivar	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
<b>Implied Non-controlling Interest (%NI)</b>	<b>36%</b>	<b>36%</b>	<b>36%</b>	<b>36%</b>	<b>30%</b>	<b>29%</b>	<b>29%</b>	<b>29%</b>	<b>29%</b>	<b>30%</b>	<b>27%</b>	<b>27%</b>	<b>27%</b>	<b>27%</b>
Actual Non-controlling (%NI)	40%	47%	46%	13%	26%	37%								
Differences	-4%	-11%	-10%	23%	4%	-8%								

Source: Bloomberg, Analysts' projections

## CapEx and PP&E

**CapEx.** As aforementioned, Antofagasta plans to spend around \$1.0bn of CapEx in 2018. However, management's guidance has been about 7% over the actual CapEx spent. We therefore project \$927.4mm capital spending for 2018. Going forward, we project total capital as the sum of growth and

maintenance CapEx. Growth capital includes Los Pelambres Phase 1 and Phase 2 from 2019 and 2025. Growth capital for Centinela Expansion should be the weighted average of the probability of building a new concentration and the alternative. Overall, growth capital is projected using similar method as our copper production projection.

Management's guidance for maintenance CapEx is \$740MM for 2018. This will be used for mine equipment replacement. Management expressed during earnings call that it should normalize to the historical average in the next five years. We believe that it should fall gradually to \$850/ton (real term) over the next five years, which would be close to its 2017 value.

In nominal terms, we project capital expenditure to be over \$1.4bn between 2019 and 2021 before it falls to around \$1.0bn and \$1.1bn for the remaining years until 2025.

## Exhibit 9: CapEx

In \$ MM	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Los Pelambres Expansion	NA	NA	NA	NA	NA	NA	NA	433	433	433	125	125	125	125
Centinela Expansion	NA	NA	NA	NA	NA	NA	NA	211	211	211	211	-	-	-
Maintenance CapEx	NA	NA	NA	NA	NA	NA	740	760	779	797	891	893	929	967
Maintenance CapEx (\$/ton)	NA	NA	NA	NA	NA	NA	1,024	1,007	990	973	956	938	957	976
<b>Total CapEx</b>	<b>868</b>	<b>1,334</b>	<b>1,645</b>	<b>1,047</b>	<b>795</b>	<b>892</b>	<b>927</b>	<b>1,404</b>	<b>1,423</b>	<b>1,441</b>	<b>1,227</b>	<b>1,018</b>	<b>1,054</b>	<b>1,092</b>

Source: Bloomberg, Analysts' projections, expansion CapEx for 2018 is \$187MM but management did not provide a break-down by location.

**Net PP&E.** Antofagasta intends to focus on its core mining assets. As a result, it is in the process of monetizing its transmission line infrastructure and a few power assets. As of YE 2017, net assets of disposable properties are \$37.4mm. We therefore project that amount of divestiture for 2018. As the company will be focused on its remaining core assets, we do not project future divestitures after 2018.

ANTO has also made a few acquisitions historically. The most significant was its purchase of Zaldivar for almost \$1bn. We believe that such acquisitions are likely in the future. However, we did not include M&A in our projection due to the speculative nature of estimating M&A activities.

Net PP&E is therefore the previous year's net PP&E plus CapEx, minus depreciation (D&A adjusted by the change in intangibles). Divestitures are not accounted here, because the 2018 divestitures are already in the balance sheet category of disposable assets. However, the 2022 impairment is accounted for in the net PP&E calculation.



## Exhibit 10: PP&E

In \$ MM	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Beginning Net PP&E	N/A	6,513	7,425	8,214	8,601	8,738	9,064	9,332	10,060	10,803	11,605	11,782	12,132	12,407
+ Capex	868	1,334	1,645	1,047	795	892	927	1,404	1,423	1,441	1,227	1,018	1,054	1,092
- Depreciation (excl. intangibles)	N/A	(423)	(856)	(660)	(658)	(565)	(660)	(676)	(681)	(639)	(608)	(668)	(779)	(845)
<b>Net PP&amp;E</b>	<b>6,513</b>	<b>7,425</b>	<b>8,214</b>	<b>8,601</b>	<b>8,738</b>	<b>9,064</b>	<b>9,332</b>	<b>10,060</b>	<b>10,803</b>	<b>11,605</b>	<b>11,782</b>	<b>12,132</b>	<b>12,407</b>	<b>12,654</b>

Source: Bloomberg, Analysts' projections

## Working Capital

**Related Balance Sheet Items.** Items such as Account Receivable, Inventories, Payables and Accruals are related to total revenue. Account receivables have been fluctuating in the mid-teens during recent years. Inventories have been fluctuating around 9% historically, and account payables near 16%. We believe that they will continue to fluctuate near their historical range in the foreseeable future, with the exception of inventories, which we believe would rise as a percentage of revenue (near 13%) due to higher copper production and also a potential for global demand headwind as per our discussion in the Industry Report.

**Change in Working Capital** is simply the change in account receivables, inventories, and account payables. They fluctuate to around 1% of revenue, which reasonable in light of recent financial data.

## Other Items

**Various Balance Sheet Items.** Several items on the balance sheet, including the miscellaneous short-term assets, other assets, intangibles, and other liabilities are simply a projection of their historical averages as a percentage of revenue going forward. We do not have any other reason to expect anything deviating significantly from their historical figures. They are also tied to several line items on the cash flow statement.

**Dividends.** Antofagasta is unusual in that its dividend payment has a great deal of variation across periods. It pays dividend semiannually, and the Board's only dividend policy is that it must pay out at least 35% of the underlying earnings. During the recent earnings call, management said that all excess cash after development projects will be returned to the shareholders. We therefore project at least 35% of earnings as cash dividend plus any excess cash to maintain a reasonable amount of cash on the balance sheet.

## Taxes

From 2012 to 2016, effective tax rates have been fluctuating from 35% (in

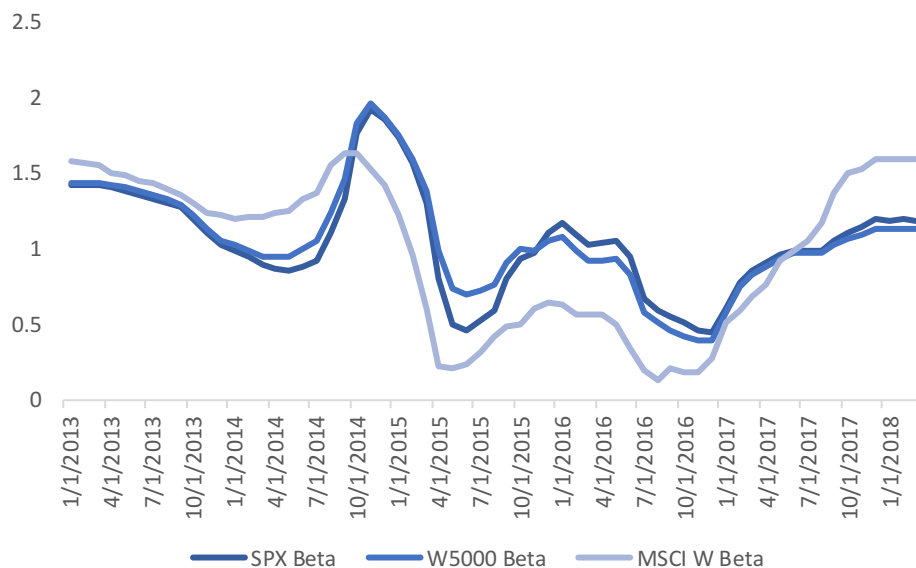
2017) to 64%, but it was mostly around 40%. The company operates and is headquarter in Chile. Its shares are traded in London. We therefore do not expect the U.S. tax reform to change ANTO's tax situation. In the 4Q17 earnings call, management reiterated a 35% effective tax rate in the future. Management sees no "extraordinary or special event or factor affecting the tax situation of the company."

## Cost of Capital

**We use cost of equity of 8.66%.** 5-year rolling betas fluctuated between a low of 0.14 and a high of 1.96, and appears to be somewhat correlated with copper price cycle. We, thus, use an average of betas in our cost of equity calculation. The regressions with S&P500, Wilshire 5000 and MSCI World result in similar betas of 1.05, 1.06, 0.99 respectively. Our beta is the average of the three regressions of 1.03.

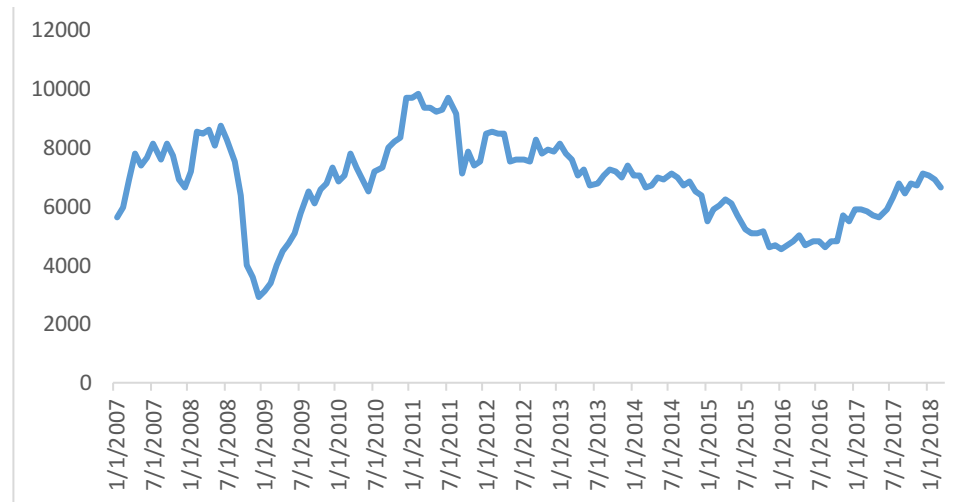
In our calculation, we use 10-year treasury yield of 2.79% as  $R_f$  and a historical global equity market risk premium of 5.7%. This results in cost of equity at 8.66%.

**Exhibit 11: 5-year rolling betas with respect to S&P500, Wilshire 5000, and MSCI World**



Source: Bloomberg

**Exhibit 12: 5-year rolling betas with respect to S&P500, Wilshire 5000, and MSCI World**

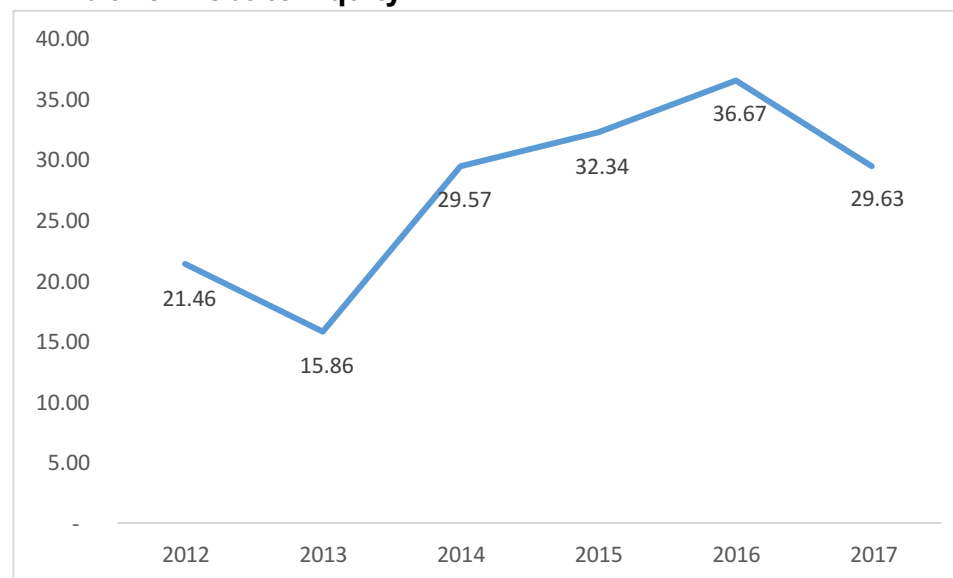


Source: Bloomberg

**Cost of debt of 3.14%.** Interest expense to average debt stands at 3.14% in FY2017. We believe this is a reasonable estimate given that ANTO has a similar rating with SCCO. While we used 4.67% for SCCO cost of debt, this is because the company's average maturity is 19.5 years vs. ANTO's 3 years. SCCO 3-year bond is traded at 3.12% - a similar level to our ANTO's cost of debt.

**Debt to equity ratio.** D/E ratio has been stable around 30% after a large CapEx in 2014 to start the operations in Antucoya and Zaldivar mines. Its leverage is healthy and it has the capacity to take on new debt. As the company does not tap the public debt market, it can fund its capital needs regularly with its bank loans. We model about 30% of new CapEx to be funded by debt, with ongoing debt payment to maintain a roughly 30% debt to equity ratio, within a 2% band. Antofagasta has no need for equity issuance, and it has never done so in recent history.

### Exhibit 13: Debt-to-Equity



Source: Bloomberg

**WACC of 7.16%.** We assumed a steady leverage and decided to use WACC as our cost of fund. Given that market capitalization is 77.4% of capital, our calculated WACC is 7.16%.

## Valuation

**Free Cash Flow.** We calculated free cash flow to the firm from our projection. We forecast growth of FCFF from \$1.04B in 2018 to \$830M in 2025. Free cash flow is heavily weighed down by high CapEx – a typical circumstance for the industry.

**10.8% downside.** We calculate expected enterprise value to be \$12.3B, adjusting for \$2.7B debt and \$2.3B cash on hand, implied market capitalization should be \$11.8B, which is 10.8% downside from the \$13.2B as of March 29, 2018. Price target is GBP 840 per share (using GBPUSD of 1.42) compared to GBP 942 per share currently. Our target price is in line with Wall Street consensus.

**Sensitivity to copper price.** Our valuation is sensitive to copper price projection. Our average real copper price for the projected period is \$5,986 comparing with \$4,979 in the last 25 years (all adjusted for inflation into today's \$). Nevertheless, China's demand has driven the average copper price in the last 5 years to historical high of \$7,059 in real term. Current market valuation implies real copper price of \$6,141 on average.

We also modeled the case of China's financial crisis where copper price reacts in a similar fashion to 2008 global financial crisis. In this case, the downside is

at 21%. The valuation is highly sensitive to a price decrease in the next 5 years, which we believe is a real possibility.

**We recommend SELL.** Although we are positive on copper price (long-term projected price higher than long-term historical average), ANTO cash flow is weighed down by high CapEx requirement. We believe there is more downside risk to copper price due to China's slow down. ANTO's current stock price is at best fairly valued, providing no upside for a long thesis. Thus, we recommend a SELL on this company.

## Appendix: Financial Projections

	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018E	FY2019E	FY2020E	FY2021E	FY2022E	FY2023E	FY2024E	FY2025E
<b>Revenue Assumptions</b>														
Global Cu Production and Forecast (r	17	18	19	19	20	19	21	23	26	27	26	27	27	28
Real Copper Price (\$/t)							7,500	6,800	6,500	5,500	5,000	6,000	6,000	6,000
Nominal Copper Price (\$/t)	7,959	7,332	6,863	5,511	4,868	5,827	7,500	6,936	6,763	5,837	5,412	6,624	6,757	6,892
Gold Price (\$/oz)	1,675	1,357	1,266	1,160	1,256	1,280	1,338	1,362	1,379	1,406	1,434	1,463	1,492	1,522
Molybdenum Price (\$/t)	12	10	11	7	7	8	8	8	8	8	9	9	9	9
Silver Price (\$/oz)	31	23	19	16	18	17	18	18	19	20	20	20	21	21
Copper Market Share	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Los Pelambres Copper (kt)	404	405	391	363	355	344	350	368	387	405	414	423	431	440
Centinela Copper (kt)	268	278	267	221	236	228	238	249	260	271	373	380	388	395
Antucoya Copper (kt)	-	-	-	12	66	81	78	79	81	82	84	86	87	89
Zaldivar Copper (kt)	-	-	-	4	52	52	58	59	60	61	62	63	65	66
Michilla (kt)	38	38	47	29	-	-	-	-	-	-	-	-	-	-
ANTO Copper Production (kt)	710	721	705	630	710	704	723	755	787	820	932	952	971	990
Gold Production (koz)	300	294	271	214	271	212	200	210	220	230	268	273	279	284
Molybdenum Production (kt)	12	9	8	10	7	11	12	13	13	14	14	14	15	15
Silver Production (koz)	3,343	3,644	4,358	3,480	3,899	3,583	3,679	3,864	4,050	4,235	4,924	5,025	5,127	5,231
Implied Copper Revenue	5,648	5,287	4,837	3,473	3,454	4,104	5,419	5,235	5,323	4,783	5,046	6,303	6,560	6,826
Implied Other Revenue	606	482	424	302	408	332	335	357	382	407	483	502	523	544
Implied Total Revenue	6,254	5,768	5,262	3,775	3,862	4,436	5,753	5,593	5,705	5,190	5,529	6,806	7,083	7,370
Copper Share of Total Revenue							94.2%	93.6%	93.3%	92.2%	91.3%	92.6%	92.6%	92.6%
Percentage of Actual	93%	97%	102%	117%	107%	93%								
Effective Income Tax Rate	37%	40%	46%	64%	38%	35%								
	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018E	FY2019E	FY2020E	FY2021E	FY2022E	FY2023E	FY2024E	FY2025E
<b>Total Revenue</b>	<b>6,740</b>	<b>5,972</b>	<b>5,146</b>	<b>3,226</b>	<b>3,622</b>	<b>4,749</b>	<b>5,753</b>	<b>5,593</b>	<b>5,705</b>	<b>5,190</b>	<b>5,529</b>	<b>6,806</b>	<b>7,083</b>	<b>7,370</b>
COGS	2,465	2,860	2,869	2,349	2,087	2,356	2,384	2,587	2,799	3,019	3,553	3,748	3,948	4,154
<b>Gross Profit</b>	<b>4,276</b>	<b>3,112</b>	<b>2,276</b>	<b>877</b>	<b>1,535</b>	<b>2,393</b>	<b>3,369</b>	<b>3,005</b>	<b>2,906</b>	<b>2,172</b>	<b>1,975</b>	<b>3,058</b>	<b>3,135</b>	<b>3,216</b>
Other Operating Income	14	19	21	34	20	26	29	28	29	26	28	34	35	37
SG&A	596	563	457	438	479	414	575.34	559	570	519	553	681	708	737
Other Operating Expense	820	396	256	184	609	164	299	291	297	270	774	354	368	383
<b>Operating Income</b>	<b>2,874</b>	<b>2,172</b>	<b>1,584</b>	<b>289</b>	<b>467</b>	<b>1,841</b>	<b>2,523</b>	<b>2,183</b>	<b>2,067</b>	<b>1,409</b>	<b>676</b>	<b>2,057</b>	<b>2,094</b>	<b>2,132</b>
<b>EBITDA</b>	<b>3,368</b>	<b>2,690</b>	<b>2,190</b>	<b>865</b>	<b>1,045</b>	<b>2,422</b>	<b>3,214</b>	<b>2,854</b>	<b>2,752</b>	<b>2,032</b>	<b>1,340</b>	<b>2,874</b>	<b>2,943</b>	<b>3,017</b>
Net Interest Expense	66	53	30	17	66	82	60	68	73	71	67	73	79	78
Other Non-Operating Loss (Gain)	46	36	38	29	117	(72)	58	56	57	51.90	55	68	71	74
<b>Earnings Before Taxes</b>	<b>2,762</b>	<b>2,084</b>	<b>1,516</b>	<b>243</b>	<b>285</b>	<b>1,831</b>	<b>2,406</b>	<b>2,059</b>	<b>1,938</b>	<b>1,285</b>	<b>554</b>	<b>1,916</b>	<b>1,944</b>	<b>1,981</b>
Income Tax Expenses	1,022	844	702	154	109	634	842	721	678	450	194	671	680	693
Extraordinary Loss (Gain)	-	-	(37)	(613)	(38)	(1)	35	34	34	31	33	41	42	44
<b>Net Income</b>	<b>1,740</b>	<b>1,240</b>	<b>851</b>	<b>702</b>	<b>214</b>	<b>1,198</b>	<b>1,529</b>	<b>1,305</b>	<b>1,225</b>	<b>804</b>	<b>327</b>	<b>1,205</b>	<b>1,221</b>	<b>1,243</b>
Non-Controlling Interest	702	580	391	94	56	447	445	382	361	239	87	321	325	331
<b>Net Income, GAAP</b>	<b>1,037</b>	<b>660</b>	<b>460</b>	<b>608</b>	<b>158</b>	<b>751</b>	<b>1,085</b>	<b>923</b>	<b>864</b>	<b>566</b>	<b>240</b>	<b>884</b>	<b>895</b>	<b>912</b>

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	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018E	FY2019E	FY2020E	FY2021E	FY2022E	FY2023E	FY2024E	FY2025E
<b>Statement of Cash Flow</b>														
Net Income	1,037	660	460	608	158	751	1,085	923	864	566	240	884	895	912
Depreciation and Amortization	494	518	606	576	578	581	690	671	685	623	663	817	850	884
Non-Cash Items	1,370	585	505	123	526	798	261	(8)	5	(24)	503	61	13	14
Changes in Working Capital	(38)	(43)	344	(32)	(64)	65	(39)	(43)	(10)	(58)	(93)	(153)	38	42
Net Cash from Disc Ops	-	-	(58)	(859)	(35)	(1)	-	-	-	-	-	-	-	-
<b>Cash Flows From Operations</b>	<b>2,863</b>	<b>1,720</b>	<b>1,857</b>	<b>416</b>	<b>1,163</b>	<b>2,194</b>	<b>1,997</b>	<b>1,543</b>	<b>1,544</b>	<b>1,107</b>	<b>1,313</b>	<b>1,608</b>	<b>1,796</b>	<b>1,852</b>
Capital Expenditure	(868)	(1,334)	(1,645)	(1,047)	(795)	(892)	(927)	(1,404)	(1,423)	(1,441)	(1,227)	(1,018)	(1,054)	(1,092)
Net Change in LT Investment	(536)	407	536	605	(408)	164	9	(1)	0	(2)	1	4	1	1
Cash From Divestitures	84	-	-	943	30	3	37	-	-	-	-	-	-	-
Cash From Acquisitions	(44)	(128)	-	(973)	-	-	-	-	-	-	-	-	-	-
Other Investing Activities	-	-	(133)	(190)	(17)	(50)	(141)	42	(29)	134	(88)	(332)	(72)	(75)
<b>Cash Flows From Investing</b>	<b>(1,364)</b>	<b>(1,055)</b>	<b>(1,241)</b>	<b>(662)</b>	<b>(1,190)</b>	<b>(775)</b>	<b>(1,022)</b>	<b>(1,363)</b>	<b>(1,452)</b>	<b>(1,309)</b>	<b>(1,314)</b>	<b>(1,346)</b>	<b>(1,125)</b>	<b>(1,166)</b>
Cash Dividend	(439)	(975)	(964)	(127)	(31)	(252)	(380)	(323)	(302)	(198)	(84)	(309)	(313)	(319)
Net Issuance of Debt	(273)	(528)	1,000	438	214	(487)	278	421	227	(68)	(232)	305	316	(72)
Net Issuance of Equity	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other Financing Activities	(324)	(342)	(393)	(65)	(260)	(320)	319	(52)	36	(167)	110	415	90	93
<b>Cash Flows From Financing</b>	<b>(1,036)</b>	<b>(1,846)</b>	<b>(357)</b>	<b>245</b>	<b>(76)</b>	<b>(1,059)</b>	<b>217</b>	<b>46</b>	<b>(39)</b>	<b>(433)</b>	<b>(206)</b>	<b>411</b>	<b>93</b>	<b>(298)</b>
Effect of FX	14	(16)	(28)	(36)	12	9	-	-	-	-	-	-	-	-
Net Change in Cash	476	(1,198)	232	(38)	(91)	367	1,193	226	53	(635)	(206)	673	764	388
<b>Free Cash Flow</b>	<b>2,036</b>	<b>417</b>	<b>229</b>	<b>(625)</b>	<b>409</b>	<b>1,355</b>	<b>1,130</b>	<b>207</b>	<b>193</b>	<b>(263)</b>	<b>153</b>	<b>663</b>	<b>821</b>	<b>838</b>

	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018E	FY2019E	FY2020E	FY2021E	FY2022E	FY2023E	FY2024E	FY2025E
<b>Balance Sheet</b>														
Cash, Cash Equivalents, ST Investment	4,292	2,685	2,375	1,732	2,049	2,252	3,445	3,671	3,724	3,089	2,882	3,556	4,319	4,707
Accounts Receivable	599	753	546	383	606	739	863	839	856	779	829	1,021	1,062	1,105
Inventories	495	477	383	297	393	484	518	559	570	623	719	885	850	811
Misc ST Assets	270	286	372	542	387	155	449	436	445	405	431	531	552	575
<b>Total Current Assets</b>	<b>5,656</b>	<b>4,201</b>	<b>3,674</b>	<b>2,953</b>	<b>3,435</b>	<b>3,630</b>	<b>5,275</b>	<b>5,506</b>	<b>5,595</b>	<b>4,895</b>	<b>4,862</b>	<b>5,992</b>	<b>6,784</b>	<b>7,198</b>
Net PP&E	6,513	7,425	8,214	8,601	8,738	9,064	9,332	10,060	10,803	11,605	11,693	11,934	12,147	12,364
LT Securities and Receivables	48	20	19	5	7	10	19	18	19	17	18	22	23	24
Intangibles and Goodwill	158	133	119	150	150	150	181	176	179	163	174	214	222	231
Other Assets	489	611	790	1,831	1,394	1,355	1,496	1,454	1,483	1,349	1,438	1,769	1,842	1,916
<b>Total Assets</b>	<b>12,864</b>	<b>12,390</b>	<b>12,815</b>	<b>13,540</b>	<b>13,724</b>	<b>14,210</b>	<b>16,302</b>	<b>17,214</b>	<b>18,079</b>	<b>18,029</b>	<b>18,184</b>	<b>19,932</b>	<b>21,018</b>	<b>21,734</b>
Payables and Accruals	842	786	871	678	715	801	921	895	913	830	885	1,089	1,133	1,179
Other ST Liabilities	6	3	8	2	2	7	5	5	5	5	5	6	6	7
Total Debt (ST, LT)	1,889	1,374	2,376	2,755	3,120	2,709	2,987	3,408	3,635	3,568	3,336	3,641	3,957	3,885
Other LT Liabilities	1,322	1,563	1,525	1,586	1,377	1,551	1,870	1,818	1,854	1,687	1,797	2,212	2,302	2,395
<b>Total Liabilities</b>	<b>4,059</b>	<b>3,726</b>	<b>4,780</b>	<b>5,020</b>	<b>5,214</b>	<b>5,068</b>	<b>5,782</b>	<b>6,126</b>	<b>6,407</b>	<b>6,090</b>	<b>6,022</b>	<b>6,948</b>	<b>7,399</b>	<b>7,466</b>
<b>Total Equity</b>	<b>8,805</b>	<b>8,664</b>	<b>8,035</b>	<b>8,519</b>	<b>8,510</b>	<b>9,142</b>	<b>10,520</b>	<b>11,088</b>	<b>11,672</b>	<b>11,940</b>	<b>12,161</b>	<b>12,984</b>	<b>13,619</b>	<b>14,268</b>

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