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RESEARCH

Argo Blockchain

8th August 2019

Efficient, highly profitable and undervalued crypto miner offering a material value dislocation opportunity in the crypto space

Argo Blockchain plc is a global data centre business that provides a purpose-built and flexible platform for the mining of leading cryptocurrencies in the enterprise-scale and institutional sectors worldwide from operational centres in Quebec, Canada. Following a change of strategy earlier this year the company is now focused on mining cryptocurrency for its own book and providing an enterprise level Mining as a Service (MaaS) product.

Strategic shift vindicated by recovery in crypto prices

In February 2019, following a fall in crypto prices, Argo made the decision to cease its previous consumer Mining as a Service (MaaS) offering and mine cryptocurrencies for its own account. Following a strong rise in the Bitcoin price since April this year, performance has beaten expectations, with £1.36 million of cryptoassets generated in July following a strong Q2.

Investment in hardware set to more than double capacity by year-end

In July, Argo announced a major expansion of capacity to support its Bitcoin mining operations, ordering 5,000 additional, new generation Antminer S17 mining machines. Argo expects to have a BTC mining capacity of 220Ph by the end of Q3 when it receives a previously announced order of 2,500 machines. **Following their installation, expected in Q4, Argo's total Bitcoin mining capacity will increase by c.129% from Q3 to 505Ph making it one of the biggest and most efficient mining platforms worldwide.**

Investors await news on partnership with HIVE Blockchain

In May 2019 Argo announced a conditional heads of terms agreement with TSX-V listed crypto miner HIVE Blockchain Technologies Ltd, to create the world's largest purpose-built business-to-business mining service provider aimed at large-scale enterprise and institutional customers. Discussions over this, and a proposed share swap agreement, are continuing.

Yield based valuation suggests 107% upside

Our forecasts see Argo making a net profit of £4.86 million in 2019, rising to £8.59 million in 2020. We set our first target price for the shares at 14.62p, based on a 2020 dividend payout ratio of 30% and 6% yield. **Additional earnings and efficacy based valuations suggest further blue-sky potential. Conviction Buy.**

This investment may not be suitable for your personal circumstances. If you are in any doubt as to its suitability you should seek professional advice. This note does not constitute advice and your capital is at risk. This is a marketing communication and cannot be considered independent research.

CONVICTION BUY – First Target 14.62p



Key data

EPIC	ARB
Share price	7.05p
52 week high/low	13.5p/2.875p
Listing	Main Market
Shares in issue	293,750,000
Market Cap	£20.7m
Sector	Crypto Mining

12 month share price chart



Analyst details

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Background & Operations

Argo Blockchain plc (ARB) listed on the Standard segment of the Official List of the London Stock Exchange on 3rd August 2018, becoming the first crypto-mining business to float in London. This was in conjunction with a £25 million (£22.78 million net) placing at a price of 16p per share. The proceeds were initially earmarked for investing in expanding the company's Mining as a Service (MaaS) business - MaaS offers consumers the chance to mine for cryptocurrencies without having to spend the time and money required to set up and maintain crypto mining infrastructure themselves.

Strategic shift

The MaaS consumer business initially performed well, with Argo selling more than 10,000 monthly packages by the end of 2018, exceeding internal growth targets. However, in response to challenging market conditions, namely the falling price of cryptocurrencies, in February 2019 Argo made the decision to cease offering its consumer mining service, terminate all existing contracts and transition its infrastructure and capital to mining cryptocurrencies for its own account. **This move also significantly reduced costs associated with marketing the MaaS service, meaning that the operations were positioned to move into profitability more quickly.**

While resulting in a perhaps unexpected and swift change in the business model, the fall in crypto prices presented opportunities for Argo. In particular, the company saw the opportunity to step-up investment in new mining infrastructure hardware and capacity as the lower crypto asset prices led to lower demand for hardware and in turn lower hardware prices. With sizeable funds still remaining from the IPO fundraise, Argo was in a strong position to take advantage of these lower prices.

Building infrastructure

Since its LSE listing, Argo has invested around \$24.2 million in crypto mining hardware, mainly the Bitmain Antminer Z11 and Antminer S17 units. These are new generation "application specific integrated circuits" (ASICs), powerful technologies in terms of speed and efficiency compared to general computing hardware which are used to mine cryptocurrencies, primarily Bitcoin and ZCash. At the start of June, 1,000 Z11 and 1,809 S17 Bitmain servers were mining cryptocurrencies at Argo's facilities in Quebec, along with older equipment. **Several significant orders of new equipment (including one for 5,000 S17s) are expected to take total Bitcoin mining capacity to 505 petahash (a measure of mining power) by the end of the current year.**

Following a surge in crypto prices seen over Q2 of this year, payback periods for the S17s were running at around four and a half months in June, down from nine months at the beginning of the year. June alone saw Argo generate £1.38 million of cryptoassets, more than double that seen in May, with a further £1.36 million generated in July. **Combined with low energy prices under a fixed term contract with Canadian data centre hosting company GPU.One, the company is currently seeing high "mining margins" (mining revenues less power and hosting costs) of over 80%, well ahead of listed crypto mining peers.**

With significant infrastructure now in place, and expected to more than double within the coming months, Argo now looks well positioned to take advantage of the sustained crypto rally. **In our view this is not something which has been remotely reflected in the share price.** Providing additional opportunities, Argo has recently signed a conditional heads of terms agreement with TSX-V listed crypto miner HIVE Blockchain Technologies Ltd, to create an enterprise level MaaS service. Should the valuation remain as low as it is, we see the opportunity for Argo to become a potential acquisition target for HIVE or indeed other more highly valued listed crypto miners as our Valuations section illustrates given the glaring disjoint between Argo's valuation and its peers, particularly considering Argo's superior efficiency.

Key Recent Developments

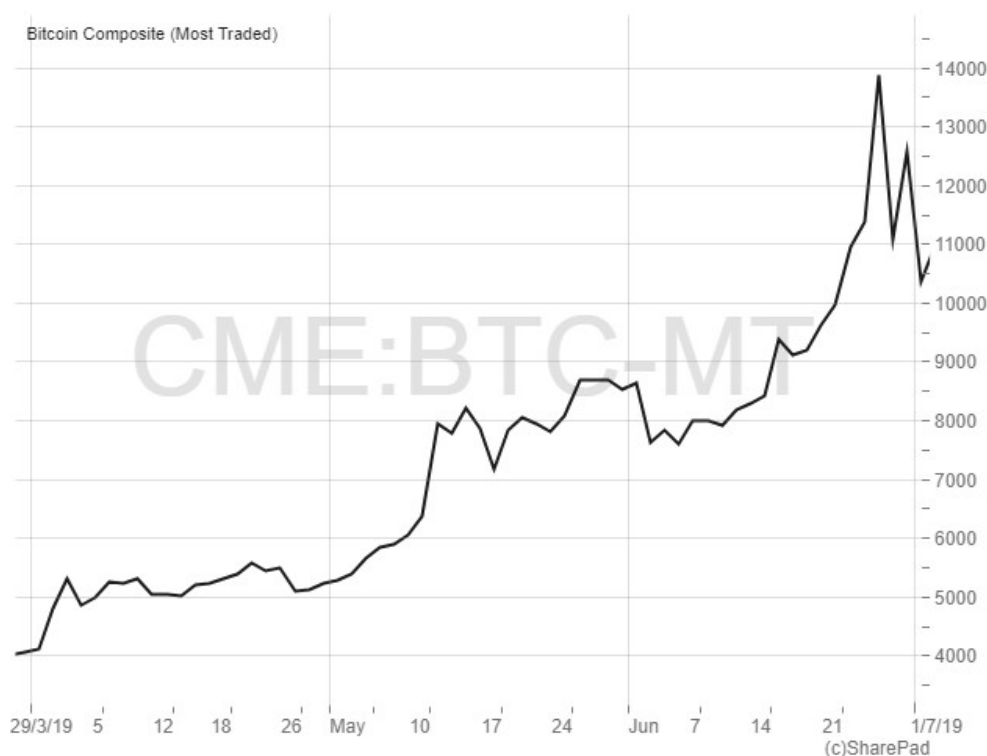
Strategic shift pays off as crypto prices rally

Argo's Q2 mining performance was particularly strong, beating previous expectations following a strong rise in the Bitcoin price over the three months. As the chart below shows, the Bitcoin price rallied from just under \$4,000 at the start of April, almost touching \$14,000 at the end of June before settling back to around \$11,000. As a result, mining yields from the existing mining gear improved significantly,

For the month of June Argo expects to have generated 161 BTC, or £1.38 million of cryptoassets based on a BTC price of \$10,817.16 as of 30th June (given prevailing exchange rates). This is just over double the £685,000 of crypto assets generated in May based on a Bitcoin price of \$8,575 as at 31st May. **The June result represents a mining margin (revenues less power and hosting costs) of roughly 81% and demonstrates succinctly that the Argo is one of the most efficient miners in the market (see more in valuation section).**

At the end of the quarter, and based on the end-June BTC price, Argo held the equivalent of approximately £3.07 million in cryptoassets on the balance sheet, 7.7% higher than previous guidance due to the rise in crypto price, along with higher than expected production levels by the mining equipment. At the time of the announcement, Argo expected, based on prevailing market prices and mining difficulty rates, to achieve a less than 4 month return on investment (ROI) on its current Antminer Z11 miners and a below 4.5 month ROI on its existing Antminer S17 hardware.

Argo's most recent trading update, released on 6th August 2019, revealed that it generated 163 Bitcoins, or £1.36 million of cryptoassets, in July based on an end month BTC price of \$10,122. These continued to be mined at margins of roughly 80%. There were with 1,000 Antminer Z11 and 1,809 S17 Bitmain servers in production at Argo's Quebec facilities at the end of the month.



Bitcoin Q2 2019 performance. Source: Sharepad

Mining capacity significantly expanded

In early July, Argo announced a major expansion of capacity to support its Bitcoin mining operations. The company has ordered 5,000 additional Antminer S17s for a total cost of \$13.09 million, funded from both cash and cryptocurrency. Half of the amount was paid immediately with the remainder due five days before shipment which is expected at the beginning of November.

The Antminer S17s are state-of-the-art, highly efficient, new generation mining machines which offer over double the computing power for the same electrical consumption compared to previous models. They focus on the SHA-256 algorithm upon which Bitcoin is based. Assuming the standard specifications of a hashrate of 53Th/s and power consumption of 2,094W, each MW of power can translate into just over 25Ph/MW (25,000 trillion hashes per second) of mining power.

Assuming current Bitcoin difficulty levels and a price of \$11,000, our model suggests c.0.54 BTC can be earned per annum per unit. At a value of \$5,936 that equates to a payback period of 160 days, or just over 5 months, based on the implied new machine cost of \$2,618 each. **With low power costs of \$0.03/kWh secured by Argo (see below) we estimate annual electricity costs of \$550.30 per unit, equating to a mining margin (without hosting costs) of almost 90% at BTC \$10,000.**

Argo expects to have a BTC mining capacity of 220Ph by the end of Q3 when it receives a previously announced order of 2,500 machines. **However, following installation of the newly ordered S17 units, Argo's total Bitcoin mining capacity will increase by roughly 129% from Q3 to 505Ph, making it one of the biggest and most efficient mining platforms worldwide.**

Long-term access to clean, cheap power secured

One of the main costs and risks associated with the mining of crypto assets is power supply for the mining machines. Successful cryptocurrency mining is highly dependent on having access to a stable and reliable supply of electricity at a price which makes the activity economic.

To this end, shortly after listing in August 2018 Argo announced the signing of an initial three year agreement with GPU.One, a Canadian data centre hosting company specialising in GPU-based server technology. Under this deal Argo agreed to lease the two data centres in Quebec, Canada, from which its operations are located, with the contract including the supply of 9.5 MW of hydroelectricity at a price of CAD \$0.038 (US\$0.03) per kilo-watt hour (kWh).

At the end of June this year the contract was varied and extended, increasing Argo's access to clean power at significantly reduced prices. Beginning from 25th June 2019 the revised deal is for an initial three year period with the option to extend for a further two. **It enables Argo to expand mining capacity by 47% to 14MW at its two existing data centres in Quebec and reduces the mining costs payable by 39% compared to the initial agreement.**

The increased 14MW capacity is expected to be filled by September 2019 with the previously announced purchases of mining hardware. Following the recent orders we estimate that an additional c.12.5MW of power will be required (2.094Kw x 6,000) and expect an update from the company on this in due course.

The new contract also reduces the contingent liability of the company under the agreement and grants it the right to terminate at any time, without cause, on four months' notice. **As part of the new agreement, Argo has agreed to convert a previously paid deposit of £1,436,700 into a strategic investment in GPU.One.**

Strategic Partnership with HIVE Blockchain for Enterprise level MaaS

In May 2019 Argo announced that following several months of discussions it had entered into a conditional heads of terms agreement with HIVE Blockchain Technologies Ltd, the TSX-V listed crypto miner, to create the world's largest purpose-built business-to-business mining service provider aimed at large-scale enterprise and institutional customers.

HIVE is a major player in the crypto mining market, having state-of-the-art GPU-based digital currency mining resources in Iceland and Sweden. It is currently valued at C\$104 million on the TSX Venture Exchange and for the four quarters to end-December 2018 made US\$41.8 million of revenues from digital currency mining and a gross mining margin of 37%.

Under the proposed HIVE/Argo partnership, enterprise clients will be able to benefit from the combination of the two groups' existing mining capacity, including part of HIVE's 45MW and part of Argo's (at the time of the announcement) 10.5MW capacity. The agreement does not involve any cash payment but has seen HIVE and Argo conditionally agree to a share swap arrangement. Under this Argo will receive 16,321,281 HIVE common shares (5% of the company) in exchange for 44,062,500 ordinary shares in Argo, 15% of its existing issued share capital.

The transaction was initially expected to close on 30th June 2019 conditional on the completion of satisfactory due diligence by both parties, as well as Argo receiving an independent valuation in relation to the transaction. With the expected close date now passed, we understand that discussions between the two parties are continuing.

Growth in enterprise MaaS

Enterprise level MaaS is an interesting and growing area of the market for Argo to get involved in. As crypto assets such as Bitcoin continue to grow in prevalence and become more ingrained into the financial system, institutional investors and large corporations are becoming increasingly interested in the sector. **However, given the need to meet strict regulations, particularly in the areas of money laundering and terrorist financing, cryptocurrencies can provide problems due to their high potential for being used in criminal activity.**

By their design, Bitcoin transactions are not linked to an individual, with this anonymity being attractive to those looking to launder illicit funds. According to blockchain forensics business CipherTrace, over 75% of all transactions taking place on the black market are facilitated using Bitcoin. However, with each Bitcoin carrying a cryptographically provable record of ownership and transaction data, if a particular coin is found to have been associated with a criminal owner or has been used to process an illegal transaction it could be deemed as proceeds of crime and seized. Additionally, coins could be mined in sanctioned jurisdictions or those with weak money laundering legislation, creating further potential problems for institutional holders.

This has created a rise in demand for so called "virgin" coins, those that have just been mined and have never been used in a transaction. Such coins can in fact command a premium price as the enterprise customers that require accountability and transparency are willing to pay more to ensure that the coins have come from a legitimate source. Therefore, this provides an excellent opportunity for companies such as HIVE and Argo which, as well as offering the security of being publicly listed, operate from countries with well-established money laundering rules.

On 15th May 2019 it was announced that Argo's largest shareholder, First Investments Holding Limited, controlled by entrepreneur Frank Timis, had signed a commercial letter of intent to become Argo's first and potentially largest enterprise-level mining-as-a-service customer for up to US\$1 million per month. As we write, investors await further news on the confirmation of this deal.

Financials

Argo has released one set of results as a public company covering trading in the 12 months to 31st December 2018. These reflected the prior MaaS focused strategy, with revenues of £0.76 million earned for the year as initial subscriptions were sold. Despite a marked fall in crypto prices over the year (with Bitcoin down from \$13,791 to \$3,768), more than 10,000 monthly packages had been sold by the year end, exceeding internal growth targets. Of the revenues, a modest £88,964 was earned from crypto mining.

Reflecting initial set up costs and the August IPO the pre-tax loss was £4.12 million. Major expenses included start-up costs, professional and related costs of the London listing, roll out of the infrastructure to support the MaaS subscribers and director & employee costs.

Argo closed the year with net cash of £16.4 million, which had fallen to £15 million as of 31st March 2019. Net assets were £21.43 million at the period end, with the retained loss equal to the £4.12 million loss for the period. Following the strategic change after the period end, staff numbers had been cut by 40%, with marketing and customer support functions significantly reduced and reassigned. Argo also renegotiated its major input costs, contributing to an overall saving in ongoing mining operational costs by 35%.

Major Shareholders

Name	No. of shares	%
First Investments Holding Ltd	40,500,000	13.79%
Durban Holdings Ltd.*	38,700,000	13.17%
Miton Asset Management	25,000,000	8.51%
Hadron Capital LLP	22,173,000	7.55%
Second Wave Capital LP	11,716,604	3.99%
Janus Henderson Investors	11,000,000	3.74%
First Equity	10,000,000	3.40%
Ironport Blockchain Financial Inc.	9,000,000	3.06%
Jupiter Asset Management	9,000,000	3.06%
Gil Penchina	1,000,000	0.34%
Timothy Le Druillenec	437,500	0.15%

**Durban Holdings Ltd., is a company under the joint ownership and control of Mike Edwards, director of the Company and former director Jonathan Bixby.*

Management

Mike Edwards - Chairman

Mike Edwards has started and invested in technology companies for over 20 years. He has invested in more than 40 technology startups including Punch'd, which was sold to Google, Summify, acquired by Twitter, Wander, which was acquired by Yahoo, AreaConnect, sold to Marchex, Wylie Interactive, which was acquired by Zynga, and PasswordBox, acquired by Intel. Mike is actively involved in growing and supporting the crypto currency startup community and connecting local entrepreneurs with the right investors, mentors and influencers in Silicon Valley, New York, Europe and Asia. He co-founded Growlab, a seed stage accelerator focussing on consumer facing digital product, which later merged with Extreme Startups to create Canada's Highline accelerator, and co-founded and is a board member of Creative Labs, a venture capital backed startup foundry that builds consumer technology companies by leveraging the Creative Artist Agency's access to talent and audience.

Timothy Le Druillenec - Executive Director and CFO

Timothy Le Druillenec is a Fellow of the Chartered Institute of Management Accountants and has provided management consultancy and accounting services to a number of public and private companies, in some cases fulfilling the role of director and/or company secretary. He has acted in this capacity for several AIM companies and also companies listed on the Main Market and he is currently a director of Dukemount Capital Plc. Most recently Timothy was the finance director and company secretary of Hemogeynx Pharmaceuticals PLC. From 2005 to 2012, he was CEO of Richards Walford & Company Ltd, a fine wine importer, until it was sold to Berry Bros. & Rudd. Prior to that, from 1995 to 2004, he was the group finance director and company secretary of Pacific Media Plc, a Main Market company, and during that time occupied the same roles at AIM listed Bella Media Plc.

Gil Penchina - Non-Executive Director

Gil is an experienced investor who has invested in LinkedIn, PayPal, Cruise Automotive, Dollar Shave Club, Hooked, Wealthfront, AngelList, Indiegogo, Fastly and others. Gil is currently a partner at Ridge Ventures, formerly IDG Ventures USA. Prior to this, Gil was a board member at Fastly, the CEO of Wikia.com, a wiki hosting service which derived its revenue from advertising and sold content and became a top 50 web property and previously worked for eBay where he held a number of roles progressing from Manager in Business Development to VP and General Manager, International with responsibility for France, Italy, Spain, Poland and Eastern Europe and Expansion in Europe.

Matthew Shaw - Independent Non-Executive Director

Matthew Shaw brings over 25 years' experience as an international banker, corporate adviser and serial entrepreneur specialising in the technology and the cryptocurrency sectors. His current portfolio of leadership roles include Protos Asset Management, a Swiss company he founded that manages a cryptocurrency fund, which invests in early stage cryptocurrency and blockchain businesses and actively risk manages liquid tokens using advanced quantitative strategies. He is also president of a proprietary family investment company investing in digital assets, fintech and other technology sectors. Between 2006 and 2013, he served as executive director of Carbon Trade & Finance SICAR, a joint venture between Gazprombank and Commerzbank, investing in primary carbon projects. He began his career as a London-based investment banker at ANZ and Moscow Narodny Bank. He worked at UBS Ltd from 1995 to 1998, followed by an almost four-year stint as founder/ managing director of DEPFA Investment Bank/ DEPFA UK Ltd, a specialist emerging market bank specialising in public sector fixed income trading and origination.

Key Risks

Cryptocurrency price volatility

As Argo Blockchain's business model is now focused on cryptocurrency mining for its own book, revenues and profits will be directly affected by changes in the prices of cryptocurrencies, especially Bitcoin, with prices being notoriously volatile. After peaking at just under \$20,000 on 17th December 2017 the Bitcoin price then proceeded to fall by c.69% by 6th February 2018. If the award of coins for mining activities are not sufficiently high, Argo may find that it is uneconomical to continue mining. Argo mitigates this by having highly efficient mining equipment and low fixed price energy costs.

Regulatory risks

The rise in popularity of cryptocurrencies has caught the attention of various financial regulators around the world who are concerned about their potential impact on investors and potential for the facilitation of financial crime. In the UK, the Financial Conduct Authority (FCA) warned consumers in September 2017 about risks associated with Initial Coin Offerings (ICO), highlighting the lack of regulatory protections and potential for fraud and capital losses. Any changes in the regulatory environment across the countries in which the company operates could have a material adverse effect on its operations.

Hardware supply risks

Core to the company's operations are the hardware units through which crypto mining is done. Therefore the company's growth plans are reliant upon being able to acquire such hardware, some of which are in limited supply. Argo seeks to mitigate against this risk by ensuring it has access to multiple vendors, and that its software development permits the use of hardware from different vendors.

Electricity supply and cost risks

Cryptocurrency mining is highly dependent on having access to a stable and reliable supply of electricity at a price which makes the activity economic. Mitigating this risk is Argo's agreement with GPU.One which has secured long-term electricity and hosting prices and very low rates. The company will however require additional capacity (estimated 12.5 MW) to host and run its newly ordered units.

Forecasts

Mining revenues earned by Argo are a function of several primary factors. The ones over which the company has no control are as follows:

- **Mining difficulty rates**, which are set by the networks. These generally rise over time and reduce the rewards earned for a given level of hashing power.
- The **size of rewards** earned for successfully mining. Rewards for mining a Bitcoin block are currently fixed at 12.5 BTC but as discussed below, halve every four years or so, with the next reduction due in 2020.
- The **price** of the cryptocurrency, to which Argo’s revenues are highly geared given the fixed nature of its costs.

However, Argo does have control over the **computing power** applied to its mining operations, a factor which, as discussed, is set to increase markedly by the end of the current financial year.

Model

In order to forecast mining income for the second half of 2019 and FY2020 we have put together a model which takes into account the above variables, including the formulas which determine how many coins can be mined successfully over time. For computing power, we consider the expected monthly installed capacity of mining units as a key factor, which each specific machine assumed to mine only Bitcoin or ZCash. Standard specifications of each unit are assumed in terms of hash power and power usage, although there is modest upside potential here as Argo works to optimise the efficiency of each unit.

In terms of price, for our base case scenario we assume a Bitcoin price of \$11,000 beginning in August 2019, a level which we believe is appropriate given the current level, as we write, of \$11,765. Difficulty rates are assumed to begin as per current levels in August and are forecast to rise by 6% a month. Examining historic Bitcoin difficulty to price ratios, we also assume a 4% monthly increase in the Bitcoin price to keep the BTC difficulty/price ratio in line with historic growth trends (as per the chart below). ZCash, which only accounts for a modest amount of forecast income, is assumed at a current price of \$66.5 which remains flat through to the end of 2020. Our exchange rate assumption is £1:\$1.21 for the total forecast period.



Bitcoin difficulty to price ratio. Data sources: data.bitcoinity.org and Align Research

Another key factor in our top line forecasts is the expected halving of Bitcoin block rewards, from 12.5 to 6.25 per block, which is expected to come into force sometime in mid-2020. We factor in the decrease from June 2020. As per previous halvings, we do not expect this to have any immediate effect on the BTC price or difficulty rate as the move is widely known about and is expected within the mining community. **It is worth noting however that prices have historically gone on to rise in the months following a block rewards halving.** Similarly, we assume a halving of the ZCash block rewards in November 2020 as per current market expectations.

2019 Mining Income forecasts

Our H2 2019 top line forecasts sees mining income increase rapidly towards the end of the year as the additional orders are received and capacity rises. By December we are expecting Argo to be generating £3.62 million of mining income. **Added to the expected H1 performance we are forecasting total mining income for the year of £14.22 million.**

2019	£	Jul	Aug	Sep	Oct	Nov	Dec
No of Machines							
S17		2,269	2,269	2,269	2,769	2,769	7,769
S9		59	59	59	59	59	59
T17		0	0	1,000	1,500	1,500	1,500
Z11		1,000	1,000	1,000	1,000	1,000	1,000
Z9		1,010	1,010	1,010	1,010	1,010	1,010
Z9MINI		600	600	600	600	600	600
TOTAL		4,938	4,938	5,938	6,938	6,938	11,938
Income per machine type							
S17		822,404	891,929	846,871	1,047,788	994,857	2,829,897
S9		5,447	5,908	5,609	5,687	5,399	5,474
T17		0	0	281,687	428,377	406,736	412,364
Z11		405,294	342,207	312,422	304,563	278,055	271,060
Z9		127,352	107,529	98,170	95,700	87,371	85,173
Z9MINI		18,013	15,209	13,885	13,536	12,358	12,047
TOTAL MINING INCOME		1,378,511	1,362,781	1,558,645	1,895,651	1,784,776	3,616,015
BTC price (\$)							
		10,122	11,000	11,440	11,898	12,374	12,868
Exchange rate							
		1.28	1.21	1.21	1.21	1.21	1.21
BTC price (£)							
		7,908	9,091	9,455	9,833	10,226	10,635
Zcash price (£)							
		61.41	54.96	54.96	54.96	54.96	54.96

2020 Mining Income forecasts

For 2020 we assume that Argo begins the year with all of the previously ordered machines in operation. **No further hardware purchases are assumed during the year, although this is clearly something that management has the opportunity to do and provides upside potential to our mining income forecasts if the estate is expanded.** For the first five months of the year we expect mining income to be relatively stable but then fall from June onwards following the expected halving of the Bitcoin block reward. The total for the year is forecast at £27.23 million.

2020	£	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
No of Machines													
S17		7,769	7,769	7,769	7,769	7,769	7,769	7,769	7,769	7,769	7,769	7,769	7,769
S9		59	59	59	59	59	59	59	59	59	59	59	59
T17		1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Z11		1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Z9		1,010	1,010	1,010	1,010	1,010	1,010	1,010	1,010	1,010	1,010	1,010	1,010
Z9MINI		600	600	600	600	600	600	600	600	600	600	600	600
TOTAL		11,938	11,938	11,938	11,938	11,938	11,938	11,938	11,938	11,938	11,938	11,938	11,938
Income/machine type													
S17		2,776,503	2,460,492	2,672,718	2,537,699	2,572,812	1,221,420	1,238,320	1,214,956	1,153,579	1,169,541	1,110,459	1,125,824
S9		5,371	4,760	5,170	4,909	4,977	2,363	2,395	2,350	2,231	2,262	2,148	2,178
T17		404,584	358,536	389,460	369,786	374,902	177,982	180,444	177,040	168,096	170,422	161,813	164,052
Z11		255,717	217,896	227,587	207,779	202,552	184,922	180,270	170,066	155,264	151,358	69,092	67,354
Z9		80,352	68,468	71,513	65,289	63,646	58,107	56,645	53,439	48,787	47,560	21,710	21,164
Z9MINI		11,365	9,684	10,115	9,235	9,002	8,219	8,012	7,558	6,901	6,727	3,071	2,994
TOTAL MINING INCOME		3,533,891	3,119,835	3,376,563	3,194,696	3,227,891	1,653,012	1,666,087	1,625,409	1,534,859	1,547,871	1,368,293	1,383,565
BTC price (\$)													
		13,383	13,919	14,475	15,054	15,656	16,283	16,934	17,611	18,316	19,048	19,810	20,603
Exchange rate													
		1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21	1.21
BTC price (£)													
		11,060	11,503	11,963	12,442	12,939	13,457	13,995	14,555	15,137	15,743	16,372	17,027
Zcash price (£)													
		54.96	54.96	54.96	54.96	54.96	54.96	54.96	54.96	54.96	54.96	54.96	54.96

Profit and loss

At the gross level we assume an all-in power and hosting cost of \$0.055/kWh, taking into account the power needs of each machine. Our forecasts show that Argo will continue to generate mining margins around the 80% level in H2 2019, before falling to 67.5% for 2020 as a whole following the expected fall in BTC rewards per block. Corporate costs for 2019 are forecast at £2.3 million, rising by 10% in 2020. We also assume depreciation of mining equipment at 33% per annum in line with Argo's policy, along with the relevant UK corporation tax rates.

	H1 2019	H2 2019	2019	2020
Mining income	2,620,000	11,596,378	14,216,378	27,231,971
Power & Hosting	-920,000	-2,335,184	-3,255,184	-8,848,670
NET MINING PROFIT	1,700,000	9,261,194	10,961,194	18,383,302
Mining margin	64.9%	79.9%	77.1%	67.5%
Corporate expenses	-1,100,000	-1,200,000	-2,300,000	-2,530,000
EBITDA	600,001	8,061,195	8,661,195	15,853,302
Depreciation	-790,000	-1,830,000	-2,620,000	-5,411,250
PRE-TAX PROFIT	-189,999	6,231,195	6,041,195	10,442,052
Tax	0	-1,183,927	-1,183,927	-1,853,464
NET PROFIT	-189,999	5,047,268	4,857,268	8,588,588
EPS (p)	-0.06	1.72	1.65	2.92

Argo Blockchain H2 2019, FY2019 and FY2020 forecasts. Source: Align Research

Valuation

Closely following the Bitcoin price (see chart), especially so since the strategy change in February, shares in Argo Mining have rallied since mid-May this year, being boosted by the several positive monthly operational updates and the announcement of the potential partnership with HIVE. From near all-time lows of 3.125p at the end of March they reached a recent peak of 9.575p in early July before settling at the current 7.055p.

While Argo has fallen by 56% since its IPO on 3rd August 2018, Bitcoin has gained 61% over the same period. **In our opinion the share price underperformance relative to Bitcoin looks unjustified given that Argo's profits are operationally geared to the value of the cryptocurrency. Essentially, given the company's fixed operating costs, any \$1 increase in the BTC price all falls through to the pre-tax level. The market is clearly not discounting this.**



Valuation table

Using our base case forecasts delivers the following valuation metrics for Argo Blockchain.

	2019	2020
PE	4.26	2.41
Ex-liquid assets PE	2.40	-0.30
EV/EBITDA	1.35	-0.16
Discount to NAV	23.67%	45.54%
NAV per share	9.36	13.41

By all metrics Argo shares look incredibly cheap in our view. In fact, we struggle to think of any other company presently or in recent memory that offers what looks to be an ex liquid assets negative PE for 2020 should our assumptions prove to be correct. A key point is that profits will be building up on the balance sheet in the form of cash and cryptocurrencies. **We expect Argo to have £9.03 million of cash and cryptocurrency by the end of 2019, rising to £23.31 million at the end of 2020.** Stripping these values out of the market cap results in a 2019 ex-liquid assets PE multiple of 2.4 times, with the value turning negative for 2020 as the forecast cash plus crypto value exceeds the current market cap. Similarly the EV/EBITDA multiple for 2019 is a lowly 1.35 times, turning negative in 2020 for the same reason as above. Based on our year end forecasts, Argo shares also currently trade at a 23.67% discount to net assets for 2019, rising to 45.54% for 2020.

Fair value

We take three approaches to setting a fair value price target for Argo Blockchain.

Earnings multiple plus liquid assets

Taking into account the risks involved, Argo's growth profile and efficient operations, we believe that a multiple of 8 times earnings would be a reasonable value to place on the shares. On our 2020 forecasts for 2.92p of earnings, that equates to a value of 23.39p per share. Adding in the value of forecast cash and cryptocurrency on the balance sheet adds another 7.94p per share for a total value of **31.33p per share.**

Yield based

Assuming our forecasts are met then Argo should have significant distributable reserves available in 2020. Reasonably assuming a 30% payout ratio then investors are looking at a potential dividend of 1.02p per share for the year, an event which should be a major catalyst for the shares. On a yield of 6% that would equate to a fair value price of **14.62p per share.**

As mentioned, the Bitcoin price is the primary driver of Argo's profits, given the fixed nature of the company's costs. To illustrate how a change in our base August 2019 BTC price assumption of \$11,000 affects these earnings and yield based targets we have compiled the table below.

BTC price	8 x multiple + cash + crypto valuation (p)	Yield valuation (p)
7,000	7.40	2.20
9,000	19.36	8.41
11,000	31.33	14.62
13,000	43.29	20.83
15,000	55.26	27.04

Efficiency based

As discussed, Argo's new S17 mining units are highly efficient, delivering just over 25Ph/MW (25,000 trillion hashes per second) of mining power. The Ph/MW ratio is a measure of efficiency which can be used to compare against industry peers. **Taking what we believe to be Argo's closest listed crypto mining peers, HIVE Blockchain, Bitfarms and Hut 8 Mining, we calculate efficiency ratios in the industry using data from the most recent regulatory filings.**

Company	Listing	Ticker	Market cap (£m)	Net cash + crypto (£m)	Enterprise value (£m)	PH	MW	PH/MW
HIVE Blockchain Technologies	TSX.V	HIVE	65.00	8.8	56.3	300	44	6.82
Bitfarms	TSX-V	BITF	53.51	-16	69.5	308	34	9.06
Hut 8 Mining Corp	TSX.V	HUT	146.88	8.75	138.1	784	95	8.25
Argo Blockchain	LSE	ARB	20.71	24.68	-4.0	505.94	23.06	21.94

Note - £1:C\$1.6

As the table shows Argo is much more efficient than its peers. Using expected capacity and total hashing power for the end of 2019 through 2020 equates to a Ph/MW ratio of 21.94 for Argo, some 2.73 times higher than the combined data of the three peers. Taking the average enterprise value of the three companies of £88 million and multiplying by 2.73 suggests an enterprise value for Argo of £239.9 million. Less expected net cash and cryptocurrency for the end of 2020 results in an implied equity value of £216.54 million, or **73.71p per share**. **This illustrates to us the complete mispricing of Argo Blockchain relative to its peers.**

Conclusion

We set the yield based fair value price of 14.62p per share as our first target for Argo, which implies upside of 107% from the current price of 7.05p. As time goes on and the company delivers on our forecasts we see the 31.33p per share earnings multiple plus liquid assets based valuation as being more appropriate – of course assuming that Bitcoin prices follow our model. Blue-sky upside potential comes should Argo's valuation rise in line with its efficiency ratio, with our calculation of 73.71p being some 10 times high than the current price. **Should the market not realise these values in the short-medium term we see the potential for Argo to be an acquisition target for a listed peer, especially given the higher efficiency of its operations.**

We thus re-initiate coverage of Argo Blockchain with a first target price of 14.62p per share and Conviction Buy stance.

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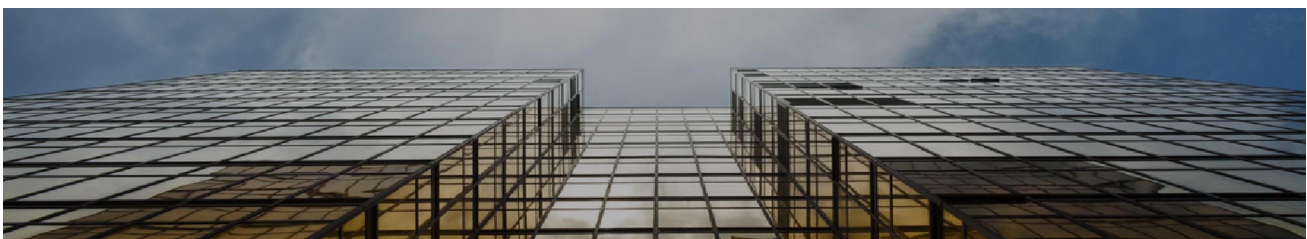
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