Buying: Xaar PLC (XAR)

__Buying and Selling:__ Managing a portfolio is a lot like managing a garden. Left unattended, both will become full of overgrown plants (successful stocks whose position size is now too large) and weeds (companies whose growth and quality characteristics are no longer good enough). The answer is a regular program of trimming back growers, pulling up weeds and planting new seeds.

Price (01/06/2018)	Index	Sector
305p	FTSE Small-Cap	Electronic & Electrical Equipment
Market Cap	**Revenue**	**5-Year Avg. Post-Tax Profit**
£239 million	£100 million	£20 million

"We are a world leader in the development of digital inkjet technology. Our technology drives the conversion of analogue printing and manufacturing methods to digital inkjet which is more efficient, more economical and more productive than traditional methods […]" (www.xaar.com)

Overview

Xaar was founded in Cambridge at the start of the 1990s to commercialise some potentially disruptive digital inkjet printing technology developed by Cambridge Consultants (a "world leader in disruptive innovation").

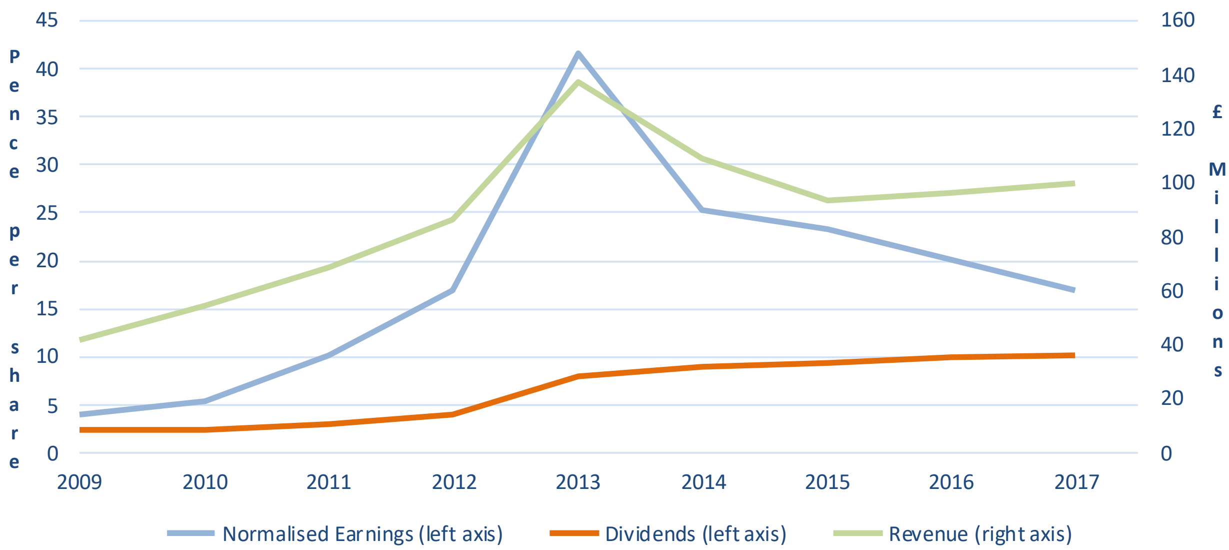
Its initial focus was on licensing patented know-how to office printer manufacturers for a fee. Xaar then acquired its own manufacturing facilities which allowed it to manufacture printheads and inks for commercial and industrial printer OEMs (Original Equipment Manufacturers). This combination of licensing and manufacturing continues today, with manufacturing now generating the majority of the company's revenues.

Because Xaar's technology is potentially disruptive to many existing commercial and industrial printing processes, there is some potential for explosive growth. This happened between 2009 and 2013, when ceramic tile manufacturers in China switched from analogue to digital injket printing almost overnight. Xaar's revenues doubled and profits skyrocketed, but both subsequently collapsed once the switch had taken place.

Xaar is now priced as a medium growth company rather than as a potentially disruptive high growth company.

Dividend Yield	PE10	Growth Rate	Growth Quality	Profitability
3.3%	16.8 (max = 30)	18.3% (min 2%)	71% (min 50%)	12.0% (min 7%)
Debt Ratio	**Debt + Pension Ratio**	**Capex/Profit Ratio**	**Acquisition Ratio**	**Rank**
0.0 (max 4)	0.0 (max 10)	95% (medium)	14% (max 100%)	27

__Green__ = Better than FTSE 100; __Pink__ = Worse than FTSE 100; __Red__ = Outside the "rule of thumb" minimum or maximum values



Investment checklist

Successful investing requires the methodical application of a systematic approach in order to achieve specific objectives, and a checklist is a great aid towards that end. This checklist helps to ensure that the company under investigation is high quality and that its shares are likely to improve the portfolio in the long-run.

Maintaining and increasing portfolio diversification

1. Will this purchase leave the portfolio's UK revenues at less than 50%?

NO Currently 53% of the portfolio's total revenues are generated from UK sales, which is above the preferred maximum of 50%. Xaar generates only 15% of its revenues from the UK and this was one of the main reasons why I chose it over other more UK-dependent companies that were higher up on the stock screen. Adding Xaar to the portfolio should reduce the portfolio's UK exposure to about 51%. That's still above the 50% level, but only just.

2. Will this purchase leave the portfolio's cyclical sector holdings at less than 66%?

NO The portfolio is currently tilted 71% towards cyclical sector companies, which is above the preferred maximum of 66%. Xaar is also a cyclical sector company so it will only increase that percentage. I will try to address this overexposure to cyclical sector companies with future sales and purchases, but not at the expense of attractive valuations.

3. Will this purchase leave the number of holdings from this sector at three or less?

YES Xaar will join XP Power as the second company from the Electronic & Electrical Equipment sector, which still leaves room for one more.

Avoiding value traps

Good management

1. Does the company have an obvious and dominant core business?

YES Xaar's core business is the development and commercialisation of digital inkjet printing and related technologies.

2. Does the company have a clear and consistent goal and strategy?

YES Xaar's long-term goal is to drive the adoption of digital print technologies across a wide range of industries. Here's a quote from the company's 2014 annual results:

"Our tactics are to become the primary enabler of change in our target markets, leading the initial wave of conversion, and then to protect our position through replacement product sales enabled by continuous product development."

For this strategy to work, Xaar must be at the cutting edge of relevant technical advancements, and this has been the case since day one. To stay at the cutting edge Xaar invests heavily in R&D (research and development), with 18% of 2017 revenues going into new product development. Here's another quote, this time from 2013:

"Given that the industry is still at an early stage of the transition from analogue to digital printing, and the size of the potential opportunity, we are committed to continuing to make substantial R&D investment for many years to ensure that Xaar maximises its future potential."

Having just been through a huge boom and bust cycle in ceramics printing, Xaar has begun to diversify its offering with a wider range of products sold into a wider range of countries. This will involve the company moving outside its traditional printhead products through a mixture of internal development (such as its recent development of 3D printing technology for high volume manufacturing), partnerships (including a recent major partnership with Xerox) and acquisitions (starting with a US company by the name of Engineered Printing Solutions).

Low costs

3. Scale: Is the company in the leading group in terms of market share?

YES Xaar is the world's leading independent manufacturer of piezo-based drop-on-demand inkjet technologies. There are other much larger but less focused companies developing similar technologies, including Xerox and Fujitsu.

4. Experience: Has the company had the same core business for many years?

YES Xaar has had the same core business since it was founded in 1990.

Caution with big projects

5. Is the company free of major projects which could push it into a crisis?

YES Although there are no obvious high risk projects underway, it is possible that Xaar could suffer a crisis caused by too much success. This is exactly what happened between 2009 and 2015 when demand for its ceramics printing products exploded and then collapsed just a few of years later.

This sort of short-lived demand spike doesn't have to cause a crisis, especially if management can stay calm and not overextend the company in an attempt to match demand with supply in order to maximise short-term profits.

If they do go down that route (as I think Xaar did) the end result is a massive investment in supply capacity (factories, machinery, etc.) which is then left underutilised once demand collapses, with the risk that it becomes an expensive white elephant. On a positive note, at least Xaar didn't fund its short-lived expansion with borrowed money, which would have made the situation much more dangerous.

Another risk of short-lived success is large swings in the number of employees, as people are hired during the boom and fired during the bust. This leaves a bad taste in the mouth, which could be a problem when Xaar needs to expand its workforce again.

6. Has the company avoided dangerously large capital expenditures (capex)?

YES During the ceramic printing boom, Xaar invested very heavily in capital assets such as research and manufacturing facilities. For several years in a row its capex to profit ratio was above 200%, more than double my definition of "high capital intensity" of 100%. However, in more recent years capex has declined and the average over the last decade is 95%, which makes Xaar a medium capital-intensity company.

7. Are revenues generated by the sale of a large number of small-ticket items rather than large-ticket items or major one-off contracts?

YES Xaar's products are mass market small ticket items, but it does not sell them one-by-one to end users (i.e. the companies actually doing the printing). Instead it either licences its technology or sells its printheads and other components to printer manufacturers (OEMs), and those manufacturers then sell complete printers to end users.

A key part of this process is the integration of Xaar's printheads into the OEM's printers. This involves varying degrees of collaboration between both companies and their engineers. After integration, an OEM's printer might only work with Xaar's printheads, so I assume there must be a contract between Xaar and each OEM, where the OEM is committed to using Xaar's printheads in a given printer, and Xaar is committed to supplying those printheads.

However, little or no mention is made of these customer contracts in the annual results, so my assumption is that no single contract is significant and therefore neither is this risk.

Caution with acquisitions and mergers

8. Has the company avoided mergers or large acquisitions in the last few years?

YES There have been no large acquisitions (cash outlay greater than post-tax profit) in the last ten years. Xaar has recently announced a strategy of growth by partnership and acquisition, so it's possible that large acquisitions are on the horizon.

9. Has the company avoided large acquisitions that have little to do with its core business?

YES The only acquisition in the last decade was of Engineered Printing Solutions (EPS). This wasn't a large acquisition and EPS is closely related to Xaar's core business.

Ability to adapt to changing market demand

10. Does the company operate primarily in defensive markets?

NO Xaar's products are used primarily in commercial and industrial printers. It is very easy for a company to not upgrade or replace its printers during a recession, so Xaar's markets are potentially highly cyclical. The company is attempting to offset this risk to some extent by diversifying into more products sold into more markets in more countries around the world.

11. Does the company operate in markets where the pattern of demand (whether cyclical or defensive) is unlikely to be disrupted in the short or medium-term?

YES This is an interesting question because Xaar's strategy is to disrupt existing analogue printer markets, so in this case imminent disruption is a good thing rather than a potential risk. So the question is really whether something else will disrupt the market after Xaar has finished disrupting it. Given that Xaar is at the cutting edge of technology and that the print industry is typically quite slow to adopt new technology, I don't see any obvious second wave of disruption following closely behind Xaar.

12. Does the company operate in markets where demand is expected to grow?

YES There are lots of different markets for commercial and industrial printheads, including ceramics, packaging, semiconductors and many more. In aggregate I would expect these markets to grow more or less in line with the global economy. However, the real growth that matters to Xaar is the growth of digital injket technologies at the expense of older analogue technologies. And from that point of view, Xaar expects the growth of digital inkjet technologies to be rapid (in fits and spurts) until they become mainstream.

Competitive product, service and price

13. Has the company avoided generating a significant portion of its profits from a single product line or contract that needs to be replaced within the next ten years?

NO Xaar's business is built upon the idea of using disruptive technological innovation to grab market share, followed by ongoing innovation to maintain market share. The annual reports are full of stories about new product developments, so it seems unlikely that the majority of its products will last even as long as ten years before needing to be redesigned or replaced entirely. Here's a quote from the 2016 annual results, referring to the ceramics market:

"As anticipated, we have seen increased competition from other printhead suppliers in this application segment. We responded with two important product launches in 2016. The Xaar 1003, launched in March 2016, provided an improvement in the all-round performance of the well-established and market-leading Xaar 1002, and achieved the longest maintenance-free production runs in the industry. In September 2016, we launched the Xaar 2001+ family of printheads, a high performing and extremely versatile product range, which enables tile manufacturers to easily implement new designs to respond to changing fashions and

tastes, efficiently manage production changes from one day to the next and benefit from low maintenance production runs."

14. Does the company sell differentiated products that do not compete primarily on price?

YES Price is obviously important to Xaar's customers, but its objective is not to be a low cost manufacturer. Instead, most of Xaar's products are above average in terms of performance and technology and that, rather than price, is intended to give the company an edge over its competitors.

Indifferent to commodity prices

15. Is the company relatively immune to commodity price movements?

YES Commodity prices are not (at least directly) a significant factor in Xaar's business.

Sound financial policy

16. Does the company have a target rate of return on investment of more than 10%?

NO I could see no "return on" profitability metrics mentioned in recent annual results.

17. Is the company's use of leverage conservative enough given the preceding answers?

YES Xaar is definitely a more uncertain business than many in the model portfolio, so I'm pleased to see that it has a strong balance sheet, with virtually no debt and no defined benefit pension scheme.

18. Are the chances of this company becoming a value trap acceptably low (and if so, why are the shares attractively priced)?

YES With a strategy based on disruptive and ongoing technological innovation and products where the purchase can be deferred for some time, Xaar certainly has many risk-enhancing characteristics that I do not like. For example, the adoption of its digital printheads could be slower than expected, or a recession may cause end users to hang onto their analogue printers rather than upgrade to digital.

These are obvious risks, but they don't necessarily make Xaar an obvious value trap.

The company has had these features since day one, and has in fact been far more concentrated in terms of products and customers in the past than it is today. And yet it has paid a progressive dividend since its first dividend payment in 2004, thanks to a strong balance sheet and a conservative dividend payout ratio.

Of course that's all in the past, but I also don't think there's any obvious reason why Xaar should go backwards dramatically from where it is today. If anything, the risks seem to be to the 'upside' rather than the 'downside', given its position at the forefront of a potential technological revolution.

But there are risks and that's why the shares are trading on very pedestrian valuation multiples. Xaar's dividend yield is 3.3%, exactly the same as the FTSE All-Share's, and its PE10 ratio is almost the same as the FTSE 100's. So the market thinks the potential upsides are largely negated by the potential downsides.

I have no idea what the future will bring, but Xaar's combination of technical leadership, deep and narrow focus, past performance, above average profitability and unblemished balance sheet, all suggest that the future for this company may be brighter than the consensus view.

Uncovering competitive advantages

1. Does the company have any intangible asset advantages (brand names, patents, regulatory barriers)?

YES Although Xaar's brand name has some standing in the industry, its primary intangible assets are its patents and the R&D facilities which create them. Currently Xaar has more than 300 patents and spends around 20% of revenues on R&D.

2. Does the company gain an advantage from "switching costs", i.e. the effort required for customers to switch to a competitor?

YES Given that some of its OEM customers need to adapt their printers to use Xaar's printheads, this is effectively a 'barrier to exit', i.e. a switching cost. To move from Xaar's printheads to a competitors, the OEM will likely need to re-design its printer yet again. I'm not sure what percentage of Xaar's customers this applies to, or the extent of re-design required, so although there may be some advantage from switching costs it could be relatively small.

3. Do the company's products or services have a "network effect", i.e. become better as more people use them (e.g. Facebook, eBay)?

NO Xaar's products do not become better just because more customers use them.

4. Does the company have any durable cost advantages (e.g. unique location, unique low cost source of raw materials, greater scale)?

NO Xaar is not and is not aiming to be a low cost manufacturer. However, I think this would be a good complimentary strategy that could be used once digital printing within an industry is the norm (i.e. manufacture cutting edge products in the UK or Europe and non-cutting edge products in low cost countries).

Making the trade - Are you happy to own these shares for at least 5 years?

YES I think Xaar is an interesting addition to the model portfolio. It's a relatively small, potentially fast-growing disruptive technology company, which is very different to many of the portfolio's more established mid- and large-cap holdings.

Different is good because it increases the portfolio's diversity both in terms of sector and geography, but also in terms of accessing a potentially high growth rather than high yield investment.

I'm happy to have Xaar in the portfolio for at least five years, and so I will be adding Xaar to the model portfolio and my personal portfolio a few days after this issue is published.

Higher ranked stocks that were not selected	Reason for not selecting
Stagecoach, Galliford Try, Micro Focus Int., WPP, BT	Too much debt
Connect Group	Already hold thee Support Services companies
Chesnara, S&U, Moneysupermarket.com, Whitbread	UK-focused and cyclical, and the portfolio is already overweight both of those factors
Playtech	Already hold three Travel & Leisure companies
Ted Baker	PE10 and PD10 ratios too high