BronteCapital
Amalthea Fund

15 October 2014

Investors' Letter for September 2014

This month was acceptable. We beat global indices but we did not beat the S&P 500 (when measured in AUD). Of course the decline in the Australian dollar was a helpful tailwind as well and meant that this Australian dollar denominated Amalthea fund performed well ahead of its US dollar denominated Bronte fund stable mates.

Over the whole year our longs remain lacklustre. Last year our shorts failed us all year (the market was up nearly 30 percent so that should not be a surprise) but we had three longs that did brilliantly and several that participated. Overall we did well.

The three longs that did well last year were Herbalife, Senomyx and Softbank (which is described below).

This year we have not landed a single big winner in in our long stock picks. Part of the issue is our conservatism (most of our longs are not momentum names). The current market appears to be favouring this positioning – but that is a new phenomenon.

But we also need to take seriously the idea that we are wrong.

As befits our performance (or lack thereof) we have spent a couple of weeks agonizing about what has not worked - and we started with the biggest position in the portfolio - wireless carriers.

So this month we will look at our biggest position - a position on which we have made some money (but not enough). It is mostly so you know how we think - but there is some process stuff in here written for our benefit - and we are just showing it to you.

Our wireless carrier thesis - what was right - what was wrong

For almost two years now the biggest long position in the portfolio has been a collection of wireless carriers led by Verizon (but formerly led by AT&T).

Verizon was until recently the biggest single position in the portfolio (a status it lost only because another position has outperformed it).

The simple version of the thesis was that (a) wireless traffic was growing at a vast rate and that - due to the endless inventiveness of app and content makers not likely to slow and (b) spectrum was a fundamentally limited resource.

Our thinking was heavily influenced by a presentation that Randall Stephenson (the CEO of AT&T) made at the Milken institute. You can find the presentation here and the key section starts at 18 minutes. In it Randall Stephenson tells the story about the development of AT&Ts network. The story comes that they had an iPhone monopoly for a few years from the inception of modern smart phones. This meant that the affluent users with big download demands and a high willingness to pay wound up disproportionately on AT&Ts network. Eventually the network broke under the strain. In high use- high density places (New York, Silicon Valley, Boston) the network dropped unacceptable numbers of calls and slowed to a crawl on data. Text messages could take hours to be sent.

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The AT&T network breakdown was parodied by Jon Stewart and John Oliver on the Daily Show. [You can find the parody here.] In the parody Jon Stewart sends a text on a iPhone to his mum by calling a runner and handing him the iPhone. The iPhone was a cool phone provided you accepted that it could not function as a phone.

Randall Stephenson [in the Milken presentation] said that the breakdown in the network was because they got behind in their build-out. Over the past five years AT&T capital expenditures have totalled roughly $100 billion and now their network is competitive.

However Randall Stephenson went on to say that with the amount of demand that they see coming they thought that there was no conceivable and capital efficient way that they could build for that demand and that there was no technical solution on the horizon. Networks, said Stephenson, would get congested and unless the US government released vast amounts of (seemingly contested) spectrum there was no obvious solution. Stephenson went on to put his company's money in this by buying for top-dollar any company with conceivably useful spectrum. The biggest acquisition was Leap Wireless and they characterized that purely as a spectrum deal. These spectrum deals valued spectrum at way above historic values.

Moreover this was global. The price of spectrum in negotiated transactions had risen everywhere in the world continuously since the release of the first smartphone (late 2007). This was not interrupted by the financial crisis - and now spectrum prices were more than double the prices paid at the top of the dot-com bubble. This we reasoned did not feel like a bubble. These high prices we reasoned indicated shortage and shortage indicated that the carriers would get pricing power. Maybe prices would fall for carrier-contracts we thought - but they would fall less fast than the costs of the carriers and the profits of the carriers would rise for the foreseeable future.

The carriers (at least Verizon and AT&T) were priced like dividend paying "grandma stocks" and we thought they were growth stocks. [We still think they are growth stocks but our views have somewhat moderated.]

We put big positions on AT&T and Verizon and smaller positions on the spectrum-rich but nearly bankrupt players like Clearwire and Sprint, and Softbank in Japan as well. [This was why we originally invested in Softbank - and our original valuation of Alibaba was $20-$30 billion.]

Clearwire and Sprint were priced for bankruptcy. Clearwire's debt yielded 15 percent - a rate that implied that the debt market considered bankruptcy nearly certain. All of these stocks were winners - and Softbank was a giant winner in part driven by Alibaba (for which we were somewhat lucky).

However, and strangely we think, we were wrong on all these companies on which we made good money. The economics of marginal phone companies have barely improved. Both Sprint and T-Mobile are cash consumptive after what looks to be compulsory capital spending and whilst T-Mobile is guiding for cash generation we will believe it when we see it. Sprint were guiding for cash generation too - it just never happened and it cost the CEO his job.[1]

[1] We made some of our best money in 2013 being wrong. This happens to all fund managers - it's just that few are inclined to admit it. [We have also lost money being right. In John's old career for instance he thought that Charter One Financial was a garbage bank and was short it when Royal Bank of Scotland (stupidly) bid for it. John was right about the bank - wrong about the stock - and lost money.

We also did not expect a price war in US telecom. There is one. It is very minor (there are more cosmetic price cuts than real ones) but still Verizon reacted by offering substantially more data on their family plan. Some discounts for instance are for high use users *who do not tether their phone*. This is a non-price cut.

Despite this the phone price war has gone further than we expected. We did not expect that Verizon would need to compete so aggressively. [It has only started competing in the past month - until then its price cuts were cosmetic.] This part of the thesis is looking pretty frayed.

However on the key proof of thesis there has been nothing that has indicated we are long-term wrong. The price of usable spectrum has risen pretty well everywhere globally and continues to rise. We have - as our technical understanding improved - become very much more nuanced about what constitutes usable spectrum.

As we have become more nuanced we have become more selective about what phone companies to own - and to a surprising extent we have focussed on Verizon as the right stock to own.

Verizon versus AT&T

The first big change in our stock choice was that we originally favoured AT&T (AT&T were more directly raising prices and we thought that Randall Stephenson was a pretty good guy). However this changed after we compiled a large spreadsheet with the spectrum holdings of various phone companies by county in the US matched to census data by county in the US. We have shared this spreadsheet here [with only the Verizon and AT&T data].

The key discovery was that if we put any reasonable value of spectrum (measured in dollars per MHz per head of population) in the spreadsheet we discovered that Verizon had roughly one and half times as much spectrum as AT&T. As the market valuations (including debt) were roughly similar we sold AT&T to buy Verizon. [As a relative value trade that worked well.]

If we were pairs traders (we are not) we would be short AT&T against Verizon mainly on relative spectrum positioning.

Please understand how big a change in thinking this was. At one stage AT&T was the biggest stock in the portfolio. It has been entirely removed in favour of something we think is better.

The second challenge to our thesis - the Superbowl

There was a second big change in our thinking driven by of all things the Superbowl. Being Australians we neither know nor care who won but we know it was (a) played in a stadium in New Jersey and (b) sponsored by Verizon. The latter meant that no expense was spared trying to get the phones to work during the game and especially during the half-time show. The half-time show was probably the highest density of data sent anywhere on the planet and it worked. This was a deep threat to a spectrum shortage thesis: if you could make it work at the Superbowl on huge volumes of data it was going to be a long time until you could not make it work on the street. We did however have some idea of the (huge) capital expense required to make it work at the Superbowl. The February 2014 Superbowl involved 1100 towers and many more microsites in the stadium and required 18 months' work to wire the stadium. The engineers told us (and we believed them) that you could make it work but you could not make it work cost

efficiently. The idea held that the phone companies would have a lot of pricing power before they needed to build anything that intense over whole continents.

This was however a thesis change. The thesis change was that we once believed Randall Stevenson when he said (as at that Milken conference) that it was going to be impossible to roll out enough towers to meet demand and that spectrum shortage was overwhelming. It was now just not possible to use *capital effectively* to solve the problem. It was still a good thesis - just not as good for Verizon as an overwhelming constraint.

Moreover very promotional stocks (the example of this month is Globalstar) claimed to have spectrum and be worth huge valuations. And AT&T who never seemed to be shy of paying up for spectrum ignored them. Something was amiss.

This required a really deep think about spectrum, how it works and why it is valuable. John put most of this in a blog post - but we will repeat the argument here for completeness.

Spectrum and how it works

Imagine we are sitting in the room and I have a purple flashlight. I can transmit information to you using that flashlight - by flashing it.

In the old days I might have used morse-code to do it - and I could probably get this to work at something under typing pace.

As computers have improved - and the light flashes faster and faster - I have been able to get more and more information into my signal. With telephone signals you get about a 10X improvement by going from analog to (2G) digital and get another large lick between 2G and 3G and then 4G. By the time we get to LTE for everything (including voice) this will largely have played itself out.[2]

The purple light is flashing nearly as fast and efficiently as it can now.

Now suppose I have a room full of people and I wanted to flash my purple light to send everyone some information.

One way is that I could "share the channel" by sending a bit of my signal to everyone in the room usually with some kind of program whereby they can pick out their bit of the signal and everything else gets discarded. One example of this was "code division" as in "Code Division Multiple Access" or CDMA.

The problem is that as I share the channel everyone's gets their information a bit slower. I need to wait whilst information is sent to everyone else.

And if I try to do it too much I just cram up the signal.

I could try a different approach - which is to use multiple purple flashlights and flash signal at full pace to everyone separately but I will have another problem.

[2] This is a view we hold fairly strongly - and if clients are interested we will explain why we hold it. However if someone has a strong opinion that we are wrong we would very much like to hear it.

The room will be flooded with purple light.

And that purple light will degrade everyone else's signal.

That degradation has a name: "interference". Too much interference and the speed at which I can get information slows down - often dramatically.

There are a few solutions to the interference problem.

One solution is that instead of having a big tower flashing purple light to everyone I have lots of tiny little towers that flash a low powered purple lights that has an effective transmission distance of a few metres. In an ideal world everyone has their localised purple light which gives them information and does not interfere with their neighbours.

Alas that idealised solution requires lots of capital expenditure (you have to build a tower every few metres). This is effectively what was done in the Superbowl stadium - at least with respect to WiFi.

Another solution is to make the purple light into a beam and beam it at every individual person - so they all get their own signal. This has a name - "beam forming" and it the basis of many proposed 5G phone systems.

Another solution is to use the mathematics of interference to my advantage - design my system so that only my signal survives - and everyone else's is cancelled as white noise. There are variants on that - but the most famous is MIMO and it winds up being very computer intensive. However you can reasonably get another half order of magnitude of wireless efficiency via this method. It is also the basis of Steve Perlman's wireless technology. We are sceptical of Steve Perlman's project - but there are people out there more knowledgeable than us [and we would be very grateful for any reader who could put us in contact].

Another solution is to encase my purple light in glass and send it individually to each person. You can get a vast amount of information this way (fibre-optics) but you lose mobility.

By far the cheapest solution though is to just use another colour.

So I flash in red, violet, indigo, yellow and a bunch of colours you can't see (but are still really colours).

Flashing my signal in multiple colours is an alternative to building more towers. This is a pretty direct trade-off. If I am allowed to use many colours I can get much more information out of a single tower.

When somebody buys "spectrum" what they are really buying is the right to flash light in a different colour. These colours are radio frequencies (say 700 MHZ) rather than visible light (say 700 THZ for the colour purple).

The right to flash information in a different frequency (that is a different colour) is an alternative to the practical obligation to build more towers.

As towers have an identifiable capital and running cost (a cost structure well known to phone companies) spectrum has a definable value - defined by avoided cost. **The more spectrum you have the more costs you can avoid.**

The point here is that if you know the cost of the phone company and the amount of capital expenditure avoided you can work out the value of the spectrum to a phone company. The phone company can either buy more spectrum or build more towers. [To work this out accurately you would need a map of the US, demographic and phone usage data by small region and try to work out how you would serve them. John started this - with another fund manager who is an MIT engineering graduate - and the spreadsheet we linked above of spectrum ownership by county is clearly part of this - but we have not got very far with this project.]

If you have a lot of information to transmit you can save a lot of money buying spectrum rather than building towers - and hence your spectrum is worth a lot of money. It is worth more if (a) the people are difficult to serve or (b) there is a lot of people willing to pay for speed or reliability.

This is where the value of spectrum in billions of dollars comes from. It comes from avoided cost.

If you have more spectrum you can avoid more costs. **As the demand for data continues to grow you can avoid more costs (relative to your competitors) and that will give you superior economics. As Verizon has more spectrum relative to the competitors (with a caveat below) Verizon will have superior economics whenever the market grows.**

We think the market grows for a decade or more.

Superior economics for a decade or more makes for a very attractive business. Hence the focus on Verizon. The starting yield is in the 4s and the PE is in the low teens. That is cheap for a growth stock with superior economics.

By contrast with Verizon, a company with a bad spectrum position will have a cost structure that - well frankly - sucks. It will be competed away. That is why the economics of Sprint (or for that matter T-Mobile) simply sucks. They are not getting any better and they probably don't get any better.

We made a very good money owning Sprint and Clearwire - but we were probably actually wrong about the business. There are plenty of people who are very happy with T-Mobile stock (which has appreciated fairly sharply). They are probably wrong too but the stock price has done the analysis - and they are uniformly fairly comfortable with their position.

There is a caveat to all this - which is high value versus low value spectrum. For that you will need to read the blog post. Sprint (particularly from Clearwire) has an enormous amount of low-value spectrum which will one day be used to provide infill in urban areas. That will create value - but probably combined with some very high value low-frequency spectrum. There is one last auction in the US of low-frequency spectrum. As the blog post makes clear it is probably the last such auction in our lifetime - and 30 MHZ is

reserved for carriers who are not AT&T or Verizon. If Sprint buys that spectrum it will become a valid (and potentially nasty) competitor.

You will notice however that the thesis has changed somewhat and we have a no-broken thesis rule that we enforce. The broken-thesis rule dictates that if we bought something because of (a) and (a) turns out not be true we should throw it. If we want to buy it again we should do so on a new stated thesis.

As described above we have exited AT&T and Sprint and our Clearwire position was a forced, but attractive, exit as well. We have debated that rule with respect to the Verizon position. However if we threw it out we would buy it all back on the basis that its spectrum position gives it superior economics that will last a decade or more. We have two tests of whether this thesis is broken. The tests are

a. Does Verizon wireless economics improve 3-5 percent or more per annum for a very long time? (which is what we think will happen) and

b. Does the price of usable spectrum in negotiated transactions continue to rise over the world?

To understand more fully what we mean by "usable" spectrum read the blog post.

If both these remain true our Verizon position should be very good indeed. There are things like new technologies (such as Steve Pearlman's project) or the 2015 auction that could disrupt us - but so far we don't see disruption.

Thanks again

John and Simon

Performance

Current financial year return	0.1%
Last 12 months return	11.2%
Return since inception (annualized)	15.6%
Cumulative Return since inception	23.2%

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
FY13											5.4%	1.3%
FY14	6.0%	-2.5%	0.4%	3.6%	5.7%	4.3%	-3.7%	0.2%	-2.6%	0.9%	3.4%	-0.8%
FY15	-0.9%	-1.6%	2.7%									