

Citron Research Comments on the Ridiculousness of Ambarella

Targets: 12 month price -\$60 / 18 month - \$40

It seems like yesterday that Wall Street was frothing at the mouth over 3D printing stocks. These high flyers were not valued based on their financials but rather as a beneficiary of being anointed as “the new new”. Citron Research was critical of the space and published pieces on 3 of these bubble-levitated 3D printing stocks. It is 18 months later and most of them languish 80% off their highs.

So Wall Street has gone searching for another “new new” in the technology sector and has found one in Ambarella (NASDAQ:AMBA), whose parabolic frenzy has now launched it into a realm that can’t possibly be supported by reality. To illustrate how crazy the valuation of Ambarella has become think about this.

Since their IPO, their revenue has **doubled** -- up 100% from \$121 million in 2012 to \$248 for the last twelve months. Meanwhile their market cap has gone up **6000%** as the stock has gone from \$6 to \$126.

How about this for Ridiculous?

Uber is now held up as the valuation wunderkind of the sharing economy. Its disruptive technology and business model is changing the face of transportation worldwide. It could be argued to be the best growth story of the 21st century. Yet despite the unprecedented rapid adoption and market dominance, Uber’s valuation in fact expanded **slower** than this little known chipmaker operating in a niche market over a similar period.

At the time when Ambarella went public in October 2012, the Company was forced to price shares at 40% discount to its marketed range. Upon completion of its IPO, Ambarella's enterprise value was \$60 million. In a mere 32 months since, its valuation has expanded to over \$3.7 billion, **a growth of over 60 times**.

Compare this to Uber. Uber raised money in December of 2011 at \$300 million valuation and August of 2013 at \$3.5 billion valuation. A simple bootstrapping gives Uber roughly \$1 billion valuation in October of 2012. The most recent funding round put Uber at \$40

billion valuation -- or **40-fold growth**, a substantially less impressive valuation expansion when compared to Ambarella's stratospheric rise over the same period.

You can just forget about Tesla and Netflix -- The Ambarella bubble has just left them in the dust.

Normally this type of price movement is reserved for companies that are either wildly disruptive or enjoy an open blue sky competitive landscape -- **Ambarella is neither.**

What is Ambarella?

Ambarella is a fabless developer of system-on-chip(SoC) products for high-definition video-capture market. Its products offer video/image processing on a single chip which addresses a few markets:

- Action cameras – best known due to the success of GoPro
- Security / surveillance
- Automotive market
- Broadcast / infrastructure
- Police cams
- Drone cams

The problem is aside from security, these are all niche plays. Even the company doesn't see police cams adding more than 10% to revenues. And drone cam sales were merely \$1m last quarter, a niche where it is unlikely to ever be a controlling player. (See Parrot)

Of course, Ambarella is best known to the average retail investor as the maker of the chipset in GoPro cameras. Yet, the recent stock rise in Ambarella has made it that it trades at **double the 2018 forward EBITDA multiple of even GoPro.**

All of this despite the fact its product offerings in the low end are facing increasing commoditization and pricing pressure, while innovation on the high end stalls and product adoption in the high end is slowing.

Specifically, AMBA has adroitly laddered new chip designs from 720p to 1080p to 4K video formats with increasing frame rates, smaller chip sizes and lower power consumption. This isn't any great technology breakthrough; it is simply Moore's law in effect. AMBA's market position affords it only a 6 to 9-month lead in the climb up the power curve.

But how many customers are actually going to dump 1080p for 4K devices has become a serious question. They have not in televisions, and there is every indication that 4K adds even less to the market niches listed above.

The influx of inexpensive Asian-made, low-cost cameras continues to put huge pressure on suppliers. While AMBA still has pricing power in the 4K platform, the 1080p market has become commoditized at every level.

4K video format at 60 frames per second is the “latest and greatest” format standard in the video recording industry. However, its widespread adoption in Ambarella’s biggest market (security / surveillance) is unlikely. The obvious truth is, in a security setting, 1080p solutions are more than sufficient. 4K adds nothing of value, and clogs the storage-heavy security application with higher bandwidth and larger storage cost burdens, with no offsetting benefit. A multitude of other issues tech challenges emerge when 4K technology is implemented. According to a recent Wired article, 4K live feeds are simply too burdensome for broadband connections. Nor would the incremental difference between 4K and 1080p bring additional benefits in this particular segment of the market, or the other above niches either, for that matter.

<http://www.wired.com/2015/02/live-4k-broadcasts/>

Similarly, bulls in Ambarella have made the erroneous assumption that growth in the action camera space will be coming primarily from high-end units. Go Pro’s own product offerings clearly reflect management’s belief that substantial market exists in the lower-end, which does not require the 4K chipsets in which Ambarella has its 9-month pricing and technological edge. Even if you believe that the continued growth rates in the action camera space are realistic, likely a disproportionate percentage of that growth will come from the lower end, powered by a cheaper chipset from Ambarella or its competitors. Moreover, given the commoditization in the low end, Ambarella investors should not overlook the eventuality that GoPro will inevitably decide to include an additional chipset manufacturer for its lower end offerings.



Competitive Landscape is Serious Business

In addition to commoditization risks from its own lower end offerings, Ambarella’s technological edge is hitting a wall. Its last innovation was its 4K60 chip at 14nm unveiled in Oct 2014; they will likely be in products in later 2016. However, as discussed previously, such competitive edge – which endures for about 9 months -- offers increasingly diminishing return as less unit growth results from ultra-high end devices. While the 4K60 chip at 14nm provides a power advantage over competition, the real market for these chips is only in the high-end action camera market priced at \$400 plus. As its innovation edge increasingly concentrates in the ultra high end of the niche market products, the rest of Ambarella’s product portfolio become increasingly commoditized. In other words, not all 9-month technological edges are created equal.

Ambarella’s competition includes: Hisilicon, Dahua, Novatek, Axis and Sony to name a few. As its innovation increasingly gravitates towards ultra high-end products and its

lead time experiences diminishing value due to the limited market size, the rest of Ambarella's product portfolio faces price competition from other Asian cost-based competitors that will eventually drive down its economic profit.

So How Did We Get Here?

Ambarella, a video processing chip designer, came public in October of 2012, yet investors did not start bobbling the shares up for real until the GPRO IPO in 2014.

The IPO was initially marketed at a price range between \$9 to \$11 a share; despite having Morgan Stanley and Deutch Bank as its lead underwriter, the Company eventually went public at just \$6 a share, a whopping 40% discount to the midpoint of the marketed range. Ambarella's decision to proceed with the IPO, in the face of such a drastic pricing disappointment, was incredibly puzzling for a number of reasons.

We can't fault management for competent execution into the action camera channel, but this nice 2x growth is where the story stops.

This chip designer isn't disrupting an industry or defining a new marketplace. Wall Street's love affair with Ambarella unjustifiably started with the IPO of GoPro. Citron has seen this movie too many times, and when the shine comes off investors will be looking at a chip company that will trade at the same valuation multiple of its peers -- which in this case put the stock at \$30.

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