

## Appendix: Carvana Memo (NYSE: CVNA)

*Note: This was originally an internal memo written by Philip Kor at Hayden Capital. It's been republished here, for the benefit of our partners.*

We've always been impressed by portfolio managers who were able to successfully bet on what were early-stage companies on their way to disrupting whole industries. For example, Nicholas Sleep of Nomad Investment Partnership's writings on Amazon from the early 2000s comes to mind. With hindsight, the business case for Amazon and e-commerce may seem obvious. But back then, at less than \$7 Billion in revenues, Amazon's ability to challenge the likes of Barnes and Noble or Walmart was uncertain at best.

Was the investment purely a bet on Jeff Bezos? Was the total addressable market just large enough to take the chance? Was this decision more along the lines of a venture capitalist than a value investor? Is this a type of bet that one can get good at and therefore repeat over time?

These were the questions we had to answer for Carvana (CVNA), our long thesis today. This is a company that intends to disrupt the \$764B used car industry by using an e-commerce model. The used car industry is highly fragmented and its biggest player, CarMax, has only a market share of ~1.9%. Over 90% of the used car dealerships are still owned by small mom & pop businesses. We think Carvana is well-positioned to consolidate this industry.

With Carvana's e-commerce model, there is now no need for each market to be served only by local inventory (what the dealership can buy and display). When coupled with a nationwide logistics network, Carvana is able to deliver the nation's inventory to any individual market. This lowers the capital required to build inventory in each market.

Carvana is able to keep all its 15,000+ inventory of cars in just four locations (IRCs mentioned below), versus CarMax which has ~350 cars per location. A pooled national inventory improves inventory turns as supply and demand can be more accurately matched nationwide. This lowers working capital and boosts margins as there is less depreciation with quicker turnarounds.

A typical dealership costs at least \$20 million to build and set up, including sizeable real estate to hold their inventory. In Carvana's case, all they need in each new market is \$500K: consisting of an optional 10-car hauler, a small office space, and a few flatbed trucks. Even their car vending machines cost just \$5m, considerably cheaper than a traditional dealership, and has the added PR value and helps legitimize the brand in consumer's eyes.

The low capex requirement for expansion along with the lack of a need to build inventory in each new market gives Carvana a scaling advantage that traditional car dealers do not have.

Carvana currently has 91 markets opened, with four (soon to be five) regional Integrated Reconditioning Centers (IRCs) that serve as the "hub" to each market's "spoke". Centralized reconditioning processes allows car quality standards to be kept consistently high.

Carvana is on track to sell ~95,000 vehicles this year, about an eighth of CarMax's unit sales. Growth has been explosive, with unit numbers by end 2018 estimated to be double last years', and 2017 numbers 2.4x higher than 2016's unit sales. We expect sales numbers to grow at a moderated, although still rapid, 46% CAGR over the next few years. We expect to Carvana to sell approximately 650K units in five years. If we are right, Carvana will realize over \$1 Billion in net profit, and we'll realize a 23% IRR on our investment. Below, we'll describe why we believe the company has a high probability of achieving this.

The e-commerce model is clearly superior, so why hasn't this been done before?

Carvana's CEO and founder is Ernie Garcia III, whose father founded DriveTime Automotive, one of the largest auto-dealerships in the country. The younger Garcia graduated from Stanford and worked in DriveTime for a few years before starting Carvana, an online version of his father's business. After growing Carvana internally for two years, it was finally spun off to stand on its own in 2012.

We believe Carvana's unique relationship with DriveTime from its founding years is one of the reasons why previous online-only car dealerships have not had the same success. Building IRCs is capital intensive, but Carvana was able to lease space from DriveTime's existing infrastructure. The partnership turned what would have been a significant total \$100 Million fixed cost, into a variable cost. This provided it an unfair advantage versus competitors, who didn't have access to the same terms. In addition, other start-ups would not have had the advantage of industry relationships and know-how that Carvana was able to benefit off DriveTime.

On the other hand, existing auto dealerships would not be able to enter the online world so easily as they face the typical "Innovator's Dilemma" problem: the internal start up would have faced cultural hurdles from the old guard, and would find it hard to attract required engineering or marketing talent required to scale a technology-enabled company targeting the millennial customer.

Ernie's unique position as the son of Drivetime's founder puts him in a better position to push for change within a more traditional establishment. His educational background, relative youth, entrepreneurial drive, and having the personal network required to recruit qualified co-founders, enabled the disruption from within DriveTime. When would be the next time we find a big auto retailer with a son possessing the required qualifications and ambition?

Current competitors to Carvana sell at a fraction of the volume, and face the exact hurdles mentioned above. While they have received investments from brick and mortar car retailers, we don't expect the integration or sharing of assets to be easy.

At a higher level, we also think consumers' preferences and trust needed to evolve before the idea of buying cars online was commonplace. It takes a while for e-commerce to disrupt industries dealing in tangible, high-value items. We've seen this happen with diamonds, furniture, and clothes, defying sceptics along the way. Millennials are also more open to buying items from the internet, and Carvana is able to capitalize on this trend and tailor their marketing accordingly. The time is right for a purely online model for cars.

The negative experience of the current car shopping process is a big factor in this push online too. Carvana, as the biggest online retailer, is now in the game of changing consumer behavior. They know this, and it shows in their laser focus on the customer experience and brand-based marketing.

#### Bringing Silicon Valley to Detroit (or Phoenix): Management's ability to craft a superior brand.

Everyone dislikes the current car buying process of haggling, visiting dealer after dealer, and wondering just how the salesperson is going to take advantage of you when your guard is down. Carvana's vertically integrated e-commerce model offers a much better alternative, where you can shop from home and fill up paperwork any time of the day. We like to back a company where the customer themselves would want the company to succeed.

Management has repeated their principle of placing customers first, and from details like how customer service deals with customer complaints, to their social media engagement, to their sales process and policies, we believe the customer-centric philosophy has spread through the organization.

Reviews online have generally been positive. All Net Promoter Score numbers and crowd-sourced review sites have Carvana rated significantly higher than their competitors. We take these numbers with a pinch of

salt, but it does offer at least a directional sense and helps rule out extremes. Certainly if a company is hated, they will clearly rank low, and this is not the case for Carvana.

Carvana is being compared and ranked alongside other technology start-ups, which alone is a compliment for any auto-dealer. Do check out their Instagram account (and #carvana hashtag) to get a sense of the employee culture and customer response.

Carvana is very conscious of every touch point with the customer, starting from viewing cars on their site where they have a unique 360-degree car viewing technology for both the exterior and interior of the car. They quote you a trade-in price within seconds for your current car. Financing and conditional approvals are all done online. The whole process takes 10 minutes. Delivery is done on one of their Carvana branded trailers, your traded-in car is picked up, and you even receive a goody-bag of Carvana swag. You have 7 days to test drive the car and return it if you choose to (yes, Carvana will even come pick it up again). Painless and easy.

Ernie, along with his co-founders Ryan Keeton and Ben Huston, are more like successful Silicon Valley founders who just happen to have had the natural advantage of a relationship with an existing large used-car dealership, and therefore found their start-up opportunity. Ernie's involvement in a previous start up with co-founder Ben Huston called Looterang, all while still working at DriveTime, shows his inherent entrepreneurial drive to do something more.

Delivering a service well adds to the brand of Carvana. But the conscious crafting of a brand uplifts the experience even further. The founders were able to attract top notch creative talent. Carvana's Chief Creative Officer Paul Keister, for example, spent nine years at Crispin Porter Bogusky, renowned for their BMW Mini campaigns. This fact is easy to take for granted, but we do not think many used car retailers are able to attract such talent.

From leveraging social media, to their ad campaign tie-ups with Disney's movie Ralph Breaks the Internet, and the exciting vending machines deployed, we believe making the car buying experience fun and having customers feel an emotional attachment to the brand is important. Carvana's customers skew young, and have better credit than the average used car customer.

Carvana has 15 vending machines, as of the end of 2018. Each vending machine costs \$5m to build and may at first come across as gimmicky. In fact, they do contribute positively to sales, as there is an uplift in each market of 2x each time a machine is built. It also legitimizes the brand, so the company doesn't just exist within a few webpages. Collecting a car via vending machine is chosen by 50% of customers, showing its popularity. The car collection process also automatically produces a video for you, which is meant to be shared on social media, and results in organic referrals. The vending machine ranks high on virality and is great for branding.

Carvana has suggested that the ease and positive experience of buying cars online may prompt people to change cars more frequently, growing the market. We may not go as far, but at the very least, having a strong brand and customer experience will help make sure Carvana is top of mind. This is a moat that not many other auto retailers own.

The numbers: Losses today, but scale and profits to be achieved in two to three years.

Carvana is expected to make a loss of about \$240M for 2018, off a revenue of \$2B, or a 11.3% EBITDA loss. That has improved from a 16.9% loss a year ago. Thus far, all metrics point to scaling advantages being realized. We expect breakeven in 2020 and profits in 2021. We project \$300M of operating losses over the next two years, which we think is comfortably supported by the current \$440M cash reserve. There are additional levers the company can pull to conserve cash, if needed.

Carvana aims to be in 200 markets, covering most of the US population, and are currently are about halfway there at 91 markets opened (as of January 2019). Carvana even provides cohort data, which gives a level of transparency that is useful for sales projections. Atlanta was opened in 2013 and went from 0.04% of market share to ~1.9% today. Subsequent cohort years show similar rates of growth. By blending new market openings and maturing of existing markets, we conservatively estimate ~650K units sold in 5 years, or by 2023.

Current GP per unit (GPU) is around \$2,200, with half coming from financing and other fees. A typical brick and mortar retailer has a GPU of \$3,000. But due to the cost advantages of an online model, we think Carvana is able to hit a GPU of \$3,600 at scale. The increase in GPU will come from a combination of sourcing directly from consumers instead of through car auctions, improving time taken to turnaround inventory as scale is achieved, and increasing fees from financing and extended warranties, which have been under-monetized (low cross-selling rates).

Currently, total costs per unit sold are at \$4,400. We think that can drop by half in 2022, or to \$2,200. One indication of how costs scale is the cohort data for marketing. In the most mature markets marketing spend is at \$440 per unit, which is almost three times less than the current cost of \$1,181 per unit. To put our cost-scaling assumptions in perspective—as we see a 6.5x increase in units sold (~100K to 650K) in 2023, we only build in a halving of costs.

With \$3,600 GPU and \$2,200 of costs per unit, this gives a profit per unit of \$1,400. At sales of 650K units, that's \$910M of EBITDA. We do think Carvana's higher growth and low capital requirement should deserve a higher multiple than any other auto retailer today. But to be conservative, we assign CarMax's (KMX) historical EV/EBITDA multiple of around 16x, and that gives an EV of \$14.6B in 2023.

Carvana is trading at \$5.3B EV today, which is a 2.8x gain over 5 years, or an IRR of 23%.

#### If the outlook is so great, then why is short interest at over 90% of the float?

There are those that are bearish on the auto market in general and Carvana being loss-making and having the highest EV/Sales ratio seems like the best way to short the theme. However, we believe this is ignoring Carvana's specific business qualities and unit economics.

There is a risk of ride-sharing and autonomous vehicles shrinking the market for used vehicles, and while we agree that less people in the future may find the need to own cars, especially in dense urban areas, we think Carvana's ability to capture market share starting from a very small base today will far out-pace the speed of decline of used car sales.

A quick look at auto dealership stocks will reveal how unkind the market has been over the past year, with most trading in mid to high single digits PE multiples today. Compressed margins due to off-lease vehicle supply and rising costs are reasons for this bearish view, and this has led to more M&A between dealerships. We do feel Carvana is best positioned as the industry goes through consolidation due to its lower-cost and lower-capex model, with these saving being passed back to consumers regularly at a +\$1,000 discount to competitors. A downturn in the industry in fact gives Carvana a better chance in gaining market share.

Shorts are also concerned with Ernie's dad, Ernie Garcia II. Ernie senior was embroiled in a savings and loan scandal in 1990 and was fined and placed under probation after pleading guilty to a charge of fraud. The predecessor to DriveTime Automotive was a company called Ugly Duckling, where in 2002, Garcia had taken private after the stock price crashed from \$25 to \$2.50. DriveTime Automotive deals in the subprime market and was also fined by the Consumer Financial Protection Bureau in 2014. Basically, Garcia II has not had a good track record reputation-wise.

[Click to enlarge](#)

In 2014, Carvana was spun out of DriveTime and Ernie Garcia II is not a director in the company nor does he hold any management responsibilities. He does still, along with his son, own close to 70% of the company, and 97% of voting power.

There are shorts out there that look at the non-straight forward financials of Carvana through the lens of Garcia II's past actions and feel something is not right. We have dug into the financials and are comfortable with what we see. In fact, the apparent messiness and the fact that the name doesn't screen well is an opportunity for us.

We also do not think it's fair to form a judgement on a father's business history and assume that culture continues to his son. Ernie checks out well, and is very much running Carvana, not his dad. From what we gather, we find Ernie to be thoughtful, driven, and has shown the leadership required to pull together a strong senior team with low turnover. In September, to celebrate 100,000 cars sold, Ernie even gifted \$35 million worth of his own stock to his employees.

Let's not forget that Carvana is very much shaped by the other co-founders too, who have had a hand in creating what we feel is a customer-oriented and employee-engaged organization (from Glassdoor reviews, ability to attract non-automotive industry talent, etc.).

#### What is the bet here, exactly?

Carvana is a bet on the management team and their ability to execute a business that has shown tremendous growth, a clear path to positive unit economics, attacking a large addressable market, and possesses a strong brand and culture that wins both talent and customers.

Typically, culture clashes impede the growth of an internal start-up. However, we see Carvana as a positive example of Clayton Christenson's "Innovator's Dilemma". The old economy world of DriveTime is incentivized for the new economy version of themselves to succeed, not just due to shared ownership, but also for the simple reason that this is family business, where there could be a hope for the senior generation to witness a "succession plan" that could be even bigger than themselves. With a large ownership stake in Carvana, we estimate Garcia senior's holdings to be valued at multiples of his Drivetime stake. In this sense, the son has overtaken the father. DriveTime is therefore incentivized in giving Carvana the start it needs with its facilities, relationships and know-how.

An investment in Carvana is a chance to put money behind a growth start-up story, that uniquely also comes with old-economy industry support.

Without an earnings track record, a strong balance sheet backstop, and with execution uncertainty, Carvana sits in a riskier category within a typical value manager's portfolio; a term we use broadly with the belief that "value" can be found in all places. We attempt to mitigate this risk by holding a smaller than standard position, and to diversify by making sure to limit positions that have similar risk profiles of being earlier in a company's growth cycle.

#### Is being early worth it?

The question is: if we project profitability in two years, why not wait till then to invest? The simple answer is that we fear it would be too late. Once the success of the business model is obvious, it's likely this will be already reflected in the market's valuation.

We never know when the tipping point of attention will be reached for any stock, and when the multiple may expand. Anecdotally, the name seems to be getting more attention from investors, so the story isn't entirely unknown at this point. By being early, we are being compensated for taking a view when the rest of the market is still uncertain.

We estimate that ~\$1.8B of capital has been already been put into the business, to get it to where it is today. This can be thought of as the approximate tangible replacement cost for the business, and doesn't even include the qualitative advantages Carvana benefits from, as described above. If our analysis and thesis is correct, we expect to make multiples of our investment within just a few years, as customers and the market alike recognize the advantages of this business.