Citron RESEARCH

September 24, 2015

How the Volkswagen Scandal PROVES Citron's Analysis of Mobileye

Citron Lowers Near Term Target to $20: See GPRO and AMBA

The biggest story in the business world over the past week has been Volkswagen's emissions cheating scandal. But the analysis has been overlooked by the media. The looming question not dissected in the press, nor answered by the automotive markets analyst community is not **WHAT** Volkswagen did … but **WHY** did they do it?

All you have to know was explained by Michael Cusumano, Distinguished Professor of Management at the Sloan School of Management and the MIT Engineering Systems Division, former Editor-in-Chief and Chairman of the Sloan Management Review, when he recently commented:

> "No one is putting a gun to their head to compel this bad behavior … Yet it's difficult to make money otherwise. … It's hard to increase market share. Profit margins are tight."
>
> *Michael Cusumano, professor at Sloan Business School, the Massachusetts Institute of Technology*

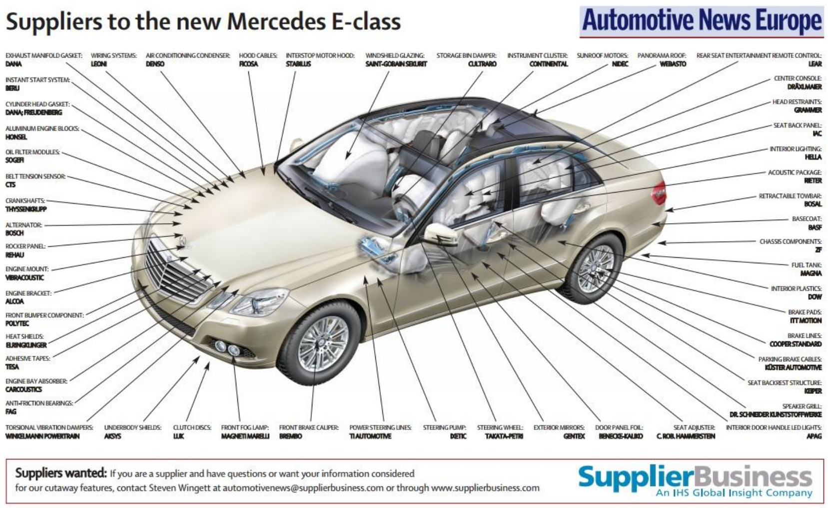
http://qz.com/507761/theres-a-very-simple-reason-why-no-carmaker-can-seem-to-rule-the-industry-for-long/

This disastrous conspiratorial decision by Volkswagen top management was simply a reflection of the brutal competitive realities of the auto industry -- notorious for razor thin margins and withering competition -- shaving profits throughout the supply chain -- to the point where almost anyone or anything can become collateral damage.

Does this seem like an industry that will **EVER** tolerate Mobileye (NASDAQ:MBLY) maintaining EBIDTA margins of 60% until 2025, while EVERY tech supplier to the auto supply chain struggles to post 10%? There is one analyst on Mobileye who at least acknowledges this risk:

> "The auto supply chain structure may ultimately turn from being a positive **to a negative for Mobileye. We believe these supplier partners have ample time to invest in similar technologies** to bridge technology gaps. Further, given that these systems are often being provided by suppliers with massive incumbent footprints in the vehicle, **competitors could certainly become more price aggressive. Finally, OEMs do not like to sole-source, which could limit Mobileye's pricing leverage."** *-- Pacific Crest Analyst's Note on Mobileye*

Anatomy of the Automotive Supply Chain



(Click to enlarge)

The bulk of Mobileye's volume will never come from selling product direct to automakers. Their ADAS system-on-a-chip is sold predominantly to Tier 1 suppliers who integrate it with their own modules to create ready-to-install components in a car on an assembly line.

These same Tier 1 suppliers are also Mobileye's **direct competitors** (see references to Denso, Bosch, and Continental below.) The Volkswagen debacle kills the theory that Mobileye can sustain monopoly-level margins and massive growth at the same time…. This industry is ALL about saving money wherever it is possible and looking for every angle every year, every day.

The same Pac Crest analyst understood this point enough to write:

"We believe that expecting Mobileye to improve its leverage with tier-1 supplier partners in the future assumes that tier-1 suppliers' ADAS investments will not be successful. Not **a great bet, in our view. Mobileye has quietly lost two partners in the past year (Autoliv and Gentex), with others working on their own in-house developments."**

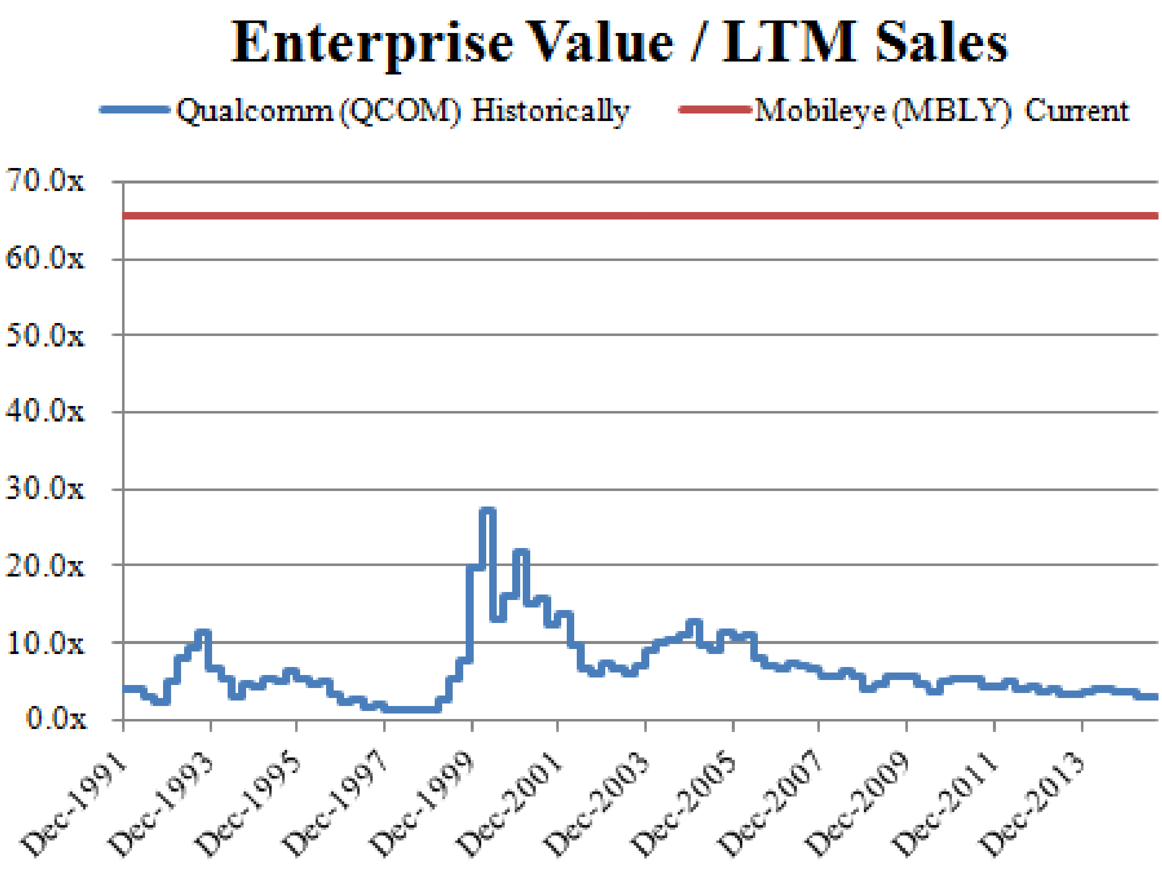
-- Pacific Crest Analyst's Note on Mobileye

http://www.streetinsider.com/Analyst+Comments/Mobileyes+(MBLY)+Valuation+Rich,+Pacific+Crest+Starts+at+Sector+Weight/10554724.html

Absurd: Mobileye, a Supplier to the Auto Industry, is making Qualcomm's 1999 valuation blush ...

Citron believes Mobileye is the most overpriced tech stock (in the billions) in the Nasdaq's history. We are aware this statement sounds like an overreach, but our analysis confirms that is the truth ... and it's not even close.

For those of you who faced the 1999 stock market, Qualcomm, the mother of all fabless semiconductor companies, is etched in our brains. The stock went completely parabolic nutso for the whole year as the world absorbed the game-changing potential of their technology and the patent moat they had built around it. Forget about ADAS – this was the cell phone and wireless technologies…. IT WAS BEYOND HUGE. **All of this unfolded amidst a massive tech and internet stock bubble. But during this whole interval, Qualcomm never even came close to being as overvalued as Mobileye now is … not even by half or a third.**



While not fabless, but still semiconductor, note that **Intel** never traded higher than 14.3x sales at Apr 1, 2000….the absolute peak, all the while the market was lit up by the imminent appearance of a computer in every home.

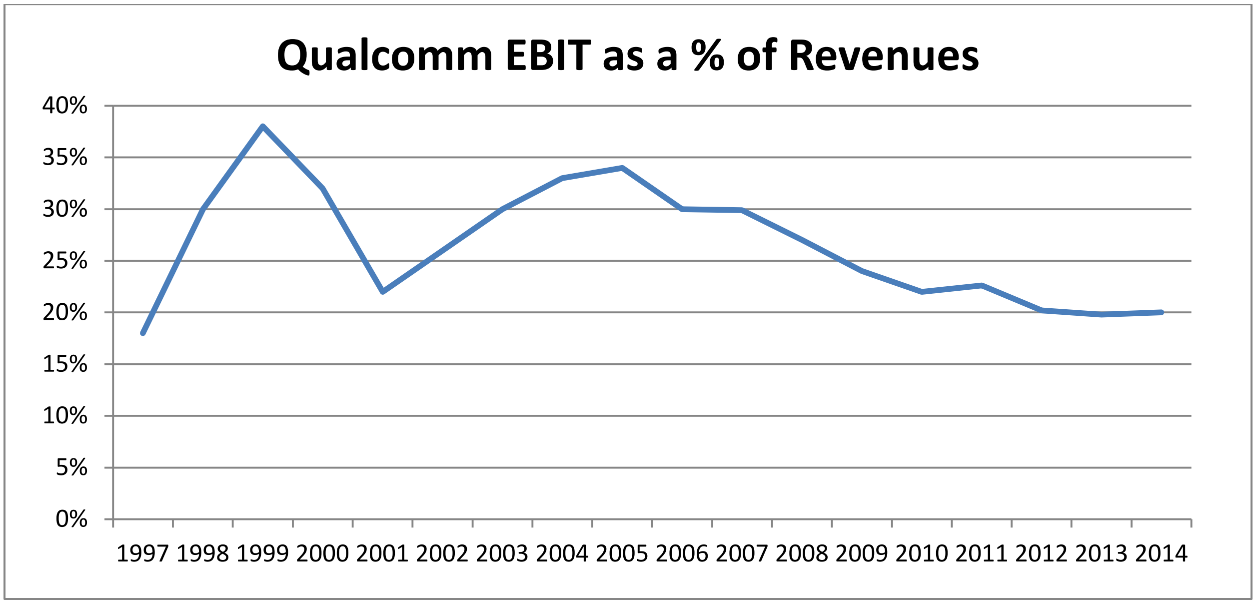
Citron will explain below how this turned out for Qualcomm – as we describe exactly how it will end for Mobileye. Trust us, it didn't turn out any better for Intel.

Despite becoming a legitimate 15+ year success story, continuing to innovate and hold its lead in the cell-phone ASIC industry, Qualcomm stock never recovered the highs of that period (even on a dividend-adjusted basis.)   To this day, Intel remains below half its peak valuation of 2000.

This demonstrates a tech company with unassailable accomplishments and an unparalleled record of execution dominating its space always presents the risk for investors of never recovering the valuation from its "hype phase".

So how exaggerated were Qualcomm's metrics at the height of its run and afterward? And how do these compare to Mobileye's at the present time, and in the analyst models for the next 15 years?

Historical EBIT for **Qualcomm** (adjusted for licensing rev)



Throughout its entire history, despite its unique IP technology for cell phones, Qualcomm **never** notched EBIT margins over 40%, and ultimately couldn't sustain anything over the 20%'s.

To compare to **Mobileye,** we begin at 2013, when the company turned profitable. Notice now Morgan's EBIT estimates soar above 50% -- **a level Qualcomm never achieved**, and **never return to earth below 50% ever again, even through 2029… according to Morgan Stanley's crystal ball.**

Morgan's Model of Mobileye's EBITDA

Year	2013	2014	2015	2016	2017	2018	2019	2020	Thru 2025	Thru 2029
EBIT% of Revenues	18.52%	43.75%	49.17%	54.40%	59.97%	62.44%	65.17%	65.25%	58.88%	52.97%

Citron's Response to the Mobileye Analysts: Morgan Stanley proves themselves Wrong.

Since the initial Citron report on MBLY was presented, we have reviewed responses from Barclays, Citi and even a conference call from Morgan Stanley with great interest. We could write 30 pages tearing apart the research from these firms, detailing why it is devoid of any intellectual honesty, and making examples of recent similar analyst hype-phase disasters like Mellanox and DDD. But we do not want to bore our readers. We are open to a debate on the topic with any of those analysts anytime. Instead, we will focus on the one firm considered the "hammer" in Mobileye, and PROVE the lack of integrity in the research: Morgan Stanley.

In part 1, Citron referenced a Blue Paper -- penned by Morgan Stanley just eight months before MBLY's IPO --on the future of autonomous driving. There was virtually no notice given to Mobileye. Than the IPO comes and now Morgan Stanley (after a few banking fees) is the blind cheerleader.

Citron presents some chronology of the M.S. research and the basis behind the current price targets that are going to make the analyst wish he could channel the late, great Yogi Berra, and utter: **"I never said most of the things I said…"**

Hello Ravi!

One year ago, Ravi Shanker, Morgan Stanley's MBLY analyst, held this CNBC interview. Contrary to all of his recent research, Ravi stated that he assumes Mobileye's margins would erode, that competitors would enter the space, and that the next 18 months would be pivotal for assessing whether Mobileye could maintain market share with its technology.

He had a $46 target on Mobileye at the time.

He identified 3 key points that were a risk to the complete Mobileye story. Let's evaluate how these key indicators turned out:

Ravi #1: "Mobileye claims to have 80% or 90% of the [ADAS] market, Continental and Bosch have the rest. Those two are going with stereo systems. We don't believe they are coming in with a mono camera just yet. "

Sorry Ravi: Continental's mono camera component was released in early 2015.
http://www.continental-automotive.com/www/automotive_de_en/themes/commercial_vehicles/chassis_safety/adas/product_portfolio/multi_function_mono_camera_mfc400_en.html

Ravi #2 and #3: "if they lock up Volkswagen and Toyota, two of the biggest automakers in the world, it's going to be hard for others to break in. "

Sorry Ravi: **Toyota.** In December 2014, Toyota disclosed their sensors for automatic braking, and sure enough, they are based on Denso's module for mid-range cars and Continental's monofocus camera at the low end.
http://techon.nikkeibp.co.jp/english/NEWS_EN/20141215/394482/
http://corporatenews.pressroom.toyota.com/releases/lexus+toyota+safety+packages+march30.htm

Sorry Ravi **Volkswagen.** Much has been made of Mobileye's inclusion in Volkswagen's FAST program. However, the reality is that Bosch, already an award winning VW supplier with over 2,000 ADAS engineers, and already deeply entrenched in VW's supply chain, supplies a radar-based AEB system to Volkswagen for the Golf, that has proved to reduce insurance claims for 3rd party injury claims dramatically, and will cover all VW's US models in 2016. Other than that … good luck squeezing big profits out of VW.

Despite the **failure** of his three key leverage points of 2014 Ravi has the cohones to actually upgrade the stock in 2015 with assumptions that make Citron almost embarrassed to repeat.

As he states in his most recent note he publishes a model justifying a target nearly doubled from just a year ago, that projects gross profit margins unprecedented in the semiconductor industry, or more importantly the automobile industry … extended out to 2025 and beyond.

Someone should show this model to the people at Volkswagen. We are sure they can use a good laugh about now

The analysts might know how to write about a semiconductor company or an automotive supplier but they certainly have no idea how any of this could possibly be executed.

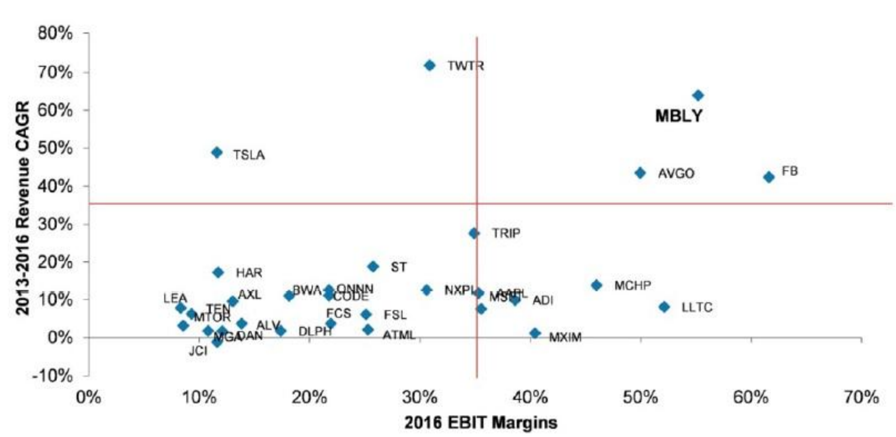
Because Morgan Stanley knows the valuation is so absurd the analyst was forced to note:

> We believe a long-and-fat-tailed story like MBLY cannot be valued using multiples on near-term earnings. Numbers through 2017-18 do not come close to reflecting the true earnings potential fo the stock, in our view... **We believe there is no direct comp to Mobileye.**
>
> *-- Ravi Shenker, Morgan Stanley Lead Analyst*

He states the only way to judge the company is CAGR, which is an obviously misleading number because it is notoriously difficult to maintain revenue growth rates as small revenue numbers become large. (Mobileye's current revenue run rate is just breaking through $50 million per quarter! Where are the billions? 2020? 2025?)

He identifies Mobileye as the 2nd highest CAGR in his coverage group, and uses #1 -- **Twitter** -- to justify his logic.   It should be noted that Twitter is down over 50% since he put out this research… so much for his CAGR.

Exhibit 13: MBLY vs. Peers: 2016 EBIT Margins vs. 2013-2016 Revenue CAGR



Source: Company data, Thomson Reuters, Morgan Stanley Research

How we are valuing MBLY

Mobileye's Tale of Ownership Structure

Retail investors should heed that Mobileye has the **lowest** institutional ownership (58%) of any fabless chip manufacturer of size. The last time we noted this dynamic was when Ambarella (AMBA) was trading at $110 a share. http://www.nasdaq.com/symbol/mbly/institutional-holdings

And yet, consensus analyst's targets are 40% higher than Mobileye's current market price. Obviously, institutional investors aren't fooled by the lure of a "huge upside"... so you have to ask yourself, who is the sucker at this table?

Compare this to NVidia, who no one will argue is a direct competitor to Mobileye. The two companies have skirmished publicly over their respective technology claims as competitors commonly do. The consensus analyst price targets on nVidia are ($23.84), appx 1.5% above current stock price yet institutional ownership is over 85%.

The Third Rail

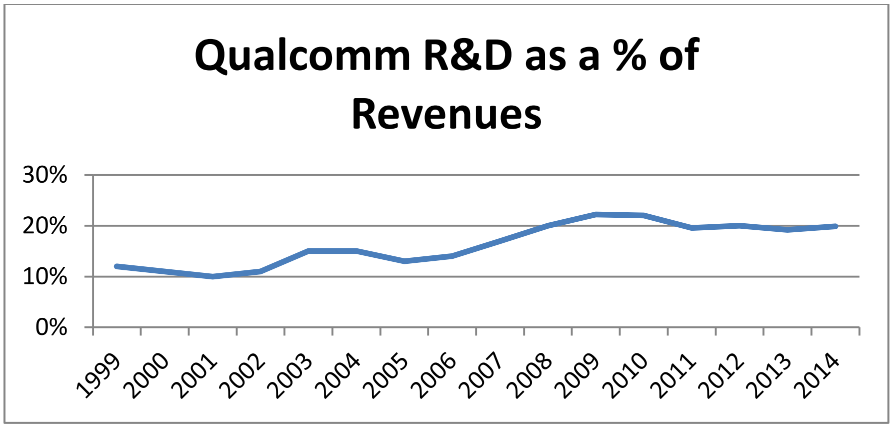
In all of the analyst reports, not one noted the extreme insider selling and the absence of commitment to R&D. These two numbers are the cornerstone of the company's commitment to the future. Mobileye went to Wall St for two stock offerings, raising $1.8 billion. Of this, $1.6 billion went to insiders and only $200 million went in the company. Now, the analysts want investors to believe that MBLY can dominate a new, hotly contested, highly technology-driven industry, and maintain record margins with only token R&D spend. Mobileye is somehow going to grow margins and revenues without ever having to make a dedicated commitment to R&D!

From the Morgan Stanley model on Mobileye: Projected Percent of Revenue Spend for R&D:

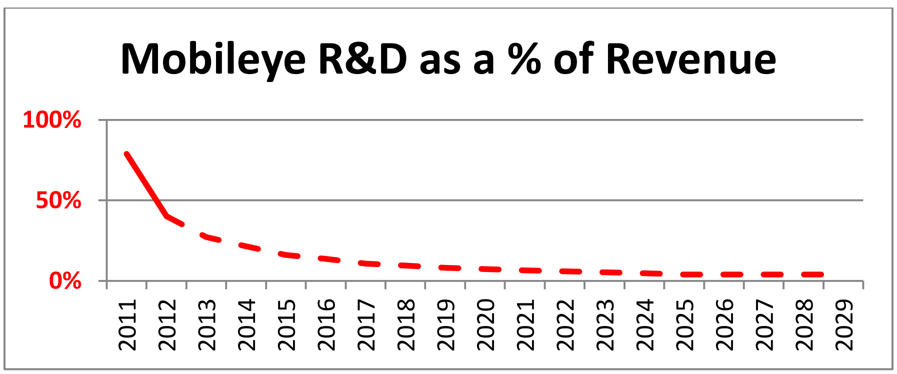
Year	2014	2015	2016	2017	2018	2019	2020	2025	2029
% of Revs spent R&D	**21.4%**	**16.1%**	**13.7%**	**10.6%**	**9.5%**	**8.1%**	**7.3%**	**4.0%**	**4.0%**

Chew on this - if Mobileye spends on R&D as per Morgan Stanley estimates, and insiders never cash out even a single additional share of stock, then the amount they just cleared from insider sales will **exceed the company's aggregate R&D spend – not just for the company's disclosed history (2011), but through its future until 2029.**

And for those who believe the R&D is not necessary to maintain leadership in the semiconductor industry just follow the leader- look at how absolutely stupid these charts look next to one another.



Now let's look at the track record of Qualcomm's R&D spend. Once its revenues flowed into the billions (appx 1998-99), it was compelled to ratchet up R&D – sustainably.



(* Morgan Stanley's Mobileye Model through 2029)

Citron KNOWS How this will end

There are only 2 scenarios for how this will end. We base this on a historical analysis of 20 years of top tier technology companies to conclude that NO technology company has ever maintained the nosebleed valuations with which Mobileye is now anointed, while Wall Street gifts them an incredible 10 or 15 years to grow into themselves. NOT ONE. Is Mobileye really the greatest technology story every??

Here's the future and you heard it from Citron.

Short term, there will be a piece of news that sends this stock dramatically lower. It could be a loss of a RFQ, comments or a product introduction from a competitor, a wake up call to an analyst, or as simple as a general market decline. Once this happens, the stock will no longer become a market darling and investors and analysts will be forced to rethink their position.

When that happens, here are the 2 scenarios:

Best Case Scenario: Mobileye becomes as relevant to automotive technology as Qualcomm is to cell phones. It executes on all cylinders while hitting all numbers (as unrealistic as they are) while keeping costs low. If MBLY is in fact the next QCOM than it should be able to continue to put up growth and eventually get back to its current market price in around 10 years ... Note: This took QCOM 15 years. Intel never made it... and neither did Microsoft or Oracle, either.

Other than Best Case Scenario: Once the stock, declines people start questioning the complete lunacy of the bull case and the stock quickly trades to what is just an expensive fabless semiconductor company in the $20-$25 range. It will face increased competition and margin compression like every other industry in the world, and will end up in a few years at multiples similar to NVDA or Freescale, and trade in the single digits….and there it will sit...for years.

Conclusion that all shareholders must read for themselves.

If you are a shareholder in Mobileye, you have to go to sleep at night believing at its current valuation that you own the most perfect technology company that has ever existed. Not Microsoft, Apple, Google, Facebook, Qualcomm or Intel have EVER traded even close to these valuations -- even during the dot com boom -- without collapsing.

No semiconductor company in HISTORY has every maintained margins and market share that the analysts have conferred upon Mobileye -- through 2025 and even 2029. You have to buy the notion that they can maintain this powerful control of their market niche not just for years, but for decades, as a supplier to one of the most cost-sensitive and price-cutthroat businesses in the world: the automotive business.

To make it crazier, you must go to sleep knowing that Mobileye is going to be able to maintain this advantage while spending a drastically lower percentage of their revenue on research and development than any of the aforementioned companies ever did.

All this blind faith, while **knowing** that insiders have been selling their stock at an unprecedented pace -- **85%** of the money raised from stock sales has been to enrich insiders, not build company coffers for the battles ahead.

To Citron, believing the analyst targets on Mobileye sounds like the financial version of locking yourself in the garage with the motor running -- in a Volkswagen Diesel.

Cautious Investing To All