THE MONTHLY RESEARCH CONFERENCE CALL

AUTOMOTIVE: CHARGING INTO THE FUTURE

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Argus ETF Report
• Argus has three ETF Model Portfolios
• We recently released data on our Growth ETF portfolio
• The 3-page report has allocations, drivers and components
• For more information, contact our sales team

Argus Weekly Stock List
• Relatively new feature flying under the radar
• This week: Companies Raising Guidance
• Last week: Stocks that Insiders & Argus both like
• On the website, look under Equity Research
• Then Choose Quick Notes, to start your week with a theme

Argus in the News
• Argus analysts quoted in national media
• John Eade on the Street.com on 3Q earnings trends
• Steve Biggar (CNBC) on Bank of America
• In the News & Media section, on Argus home page
MACRO FORECASTS

**REAL GDP W/FORECASTS (%)**

Source: Bureau of Economic Analysis, Argus Research Corp.

**TREASURY YIELD CURVE (%)**

Year-Ago, Current, 6-Month Forecast

**S&P 500 QUARTERLY EARNINGS GROWTH**

**MARKET SECTOR DISTRIBUTION - PERCENT OF S&P 500**

Sectors in Green are Recommended Overweight; Blue are Marketweight; Red are Underweight
What’s causing all the excitement about electric vehicles (EV’s)?

- Regulatory changes: Adoption of the Paris Climate Agreement in November 2016; member countries establish a framework to reduce/eliminate factors that lead towards global warming.

- The Electric Vehicle Initiative (EVI): created in 2010; a multi-government policy forum dedicated to accelerating the introduction and adoption of electric vehicles worldwide.

- Battery Technology Advancements: the rechargeable lithium-ion battery holds a charge longer than conventional batteries while having the convenient advantage of also being noncombustible.

- High profile production ramp: Tesla Model 3 electric vehicle (EV) production began in July 2017; major rollout to consumers begin in early 2018 with a mass-market entry price point of $35,000.

- Major OEM announcements: Within the past 12 months, Ford, General Motors, VW, Volvo, Audi, Mercedes-Benz and BMW all announced plans to significantly increase its EV production.

- China reshaping the auto industry: Already the #1 maker and seller of EV’s, the Chinese government recently stated that it is working on plans to ban the production/sale of vehicles powered by fossil fuels.
Current trends in the electric vehicle (EV) industry

- Today, more and more automakers are shifting their focus to EVs, a market that is expected to grow faster every year.

- Tesla invested $5 billion in its Nevada Gigafactory, where they will make batteries for EVs, and is grabbing headlines with the rollout of its first mass-market EV, the Model 3.

- Volvo recently announced its intent to focus new vehicle production solely on electric and hybrid vehicles. Keep in mind that Volvo is owned by Geely Automotive, a Chinese firm.

- Mercedes-Benz is investing $740 million in a new battery factory.

- In our view, these developments point to a trend where electric vehicle cars are much more than just a niche.

- They show that global competition is heating up quickly and that companies around the world see EVs as key to the automobile industry.
## The Pro’s and Con’s of Electric Vehicle & Gas-powered vehicle

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<tr>
<th>In favor of Electric Vehicles:</th>
<th>Against Electric Vehicles:</th>
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<tbody>
<tr>
<td>Cheaper to operate (cost of gasoline vs. cost of electricity)</td>
<td>Limited range of the vehicle</td>
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<td>Quiet drive (no noise pollution) and instant torque</td>
<td>A higher initial cost</td>
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<td>Tax breaks and government subsidies are available</td>
<td>Charging infrastructure a work-in-progress</td>
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<td>Environmentally friendly (zero tailpipe emissions)</td>
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<table>
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<tr>
<th>In favor of Gas-Powered Vehicles:</th>
<th>Against Gas-Powered Vehicles:</th>
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<tbody>
<tr>
<td>Infrastructure already in place (gas stations/repair shops)</td>
<td>Environmentally “unfriendly” (contributes to pollution)</td>
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<tr>
<td>Ownership is both convenient and easy</td>
<td>Health hazard (as in refueling a car)</td>
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<tr>
<td>Upfront cost for gasoline car more affordable than an EV</td>
<td>Relies on fossil fuels</td>
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<td>Refueling a clear advantage (a few minutes versus several hours)</td>
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What could slow down the Electric Vehicle (EV) transition?

- Charging infrastructure could prove more difficult to standardize and expand than expected.
- Automakers could renege on their promises, drag their feet, and create political resistance.
- Batteries could face unforeseen production or materials challenges (shortages of raw materials).
- A high-profile accident or series of tech malfunctions could create PR challenges, slowing public acceptance.
Assuming mass adoption of the EV, who will be the winner(s).

- Our research suggests that Tesla has a significant, “first-mover” advantage in electric vehicle (EV) technology.

- We see meaningful advantages for TSLA in battery technology, charging-station availability and consumer awareness.

- We also believe that Tesla’s Model 3 ramp represents an exciting opportunity for potential investors. To date, the ramp has been below plan, largely due to a shortage of parts but, the quality and attractiveness of the Model 3 is exceptional, in our view.

- Along with Tesla, we believe that the copper industry will benefit from a transition to electric from gas.

- Finally, some other commodities should also benefit from the switch to EVs. Although lithium gets a lot of press for its role in batteries, as it should, we also expect nickel, manganese and cobalt to see significant volume growth with this transition.
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What happens to gasoline demand with the transition?

- Based on supply/demand forecasts, we believe that the decade of the 2020s will be the decade of the electric car.

- Electric car battery prices fell 30% last year and are on track to make EVs as affordable as their gasoline-powered cars over the next 5-6 years, according to a study by Bloomberg New Energy. That should be the start of a mass-market liftoff for electric cars.

- In addition, the study suggests that by 2040, long-range electric cars will cost less than $22,000 (in today’s dollars). At that point, 35% of new cars worldwide will have a plug.

- This isn’t not something oil markets are planning for, and it’s easy to see why. Today, OPEC maintains that electric vehicles (EVs) will make up just 1% of cars in 2040 and last year, ConocoPhillips CEO Ryan Lance said he believed that EVs won’t have a material impact for another 50 years! We think they’re both shockingly wrong.

- Here’s what we think. We believe the amount of oil displaced by EVs depend on when vehicle sales take off and using a “middle-of-the-road” approach, we could see a displacement of about 2 million gallons per day beginning around 2028-30. Keep in mind that today we currently consume 9 million barrels of oil per day.
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- Internals
  - Honeywell (HON): Electric Turbochargers
  - Parker-Haffin (PH): Smart Sensors
  - Cummins (CMI): All-Electric Cab

- Vehicles
  - Caterpillar (CAT): Already in Use
  - Paccar (PCAR): Partnership with Nvidia

- Safety & Insurance
  - 3M Corp. (MMM): Smart Signs
  - P&C Industry: Shift from drivers to OEMs

- Deployers
  - UPS (UPS): Focus on Drones
  - Fedex Corp. (FDX): Partnership with Truck OEMs

- Unicorns
  - Uber: AI integrating test data
  - Zoox: In stealth mode
Cloud: rapid adoption required for Autonomous Driving (AD)

- Total cloud: 16% CAGR 2016-20; $500 billion annual run rate

- Artificial intelligence & machine learning are symbiotic with cloud
  — AI needs massive computing power to grow
  — Cloud requires advanced processing solutions (AI) to move to next stage
  — Next gen Cloud enables accelerated sharing of AI technology
  — You’re not driving, but AI “not alone on the road”
AD: Cloud, AI, and VR rolled into one

- Old leaders: defensive move into AD:
  — QCOM/NXP (embedded); INTC/ALTR/Mobileye (cameras)

- GPU computing is growing cloud & enabling AI needed for AD
  — NVDA GPUs vs. Alphabet’s TPUs

- NVDA Pascal DRIVE Level 5 computer
  — Today’s AD cars have a trunkful of servers (too heavy for electric)
  — PASCAL DRIVE Level 5 the size of a mid-sized book
  — Access smart data center to solve driving issues in milliseconds
Top Pick: NVidia

- Can it keep growing?
  - Gaming (53% revenue) a cash cow AND growth center (51% YTD)
  - Funding growth in AI data center (20% of revenue, but growing 180%)
  - Auto mid-teens growth; about to explode with Pascal DRIVE Level 5

- Wait, isn’t NVDA super-expensive?
  - Although trading at 2.4-times market, vs. historical 1.2, two-year forward PEG is 3.0, barely above peer average of 2.5
  - Lean infrastructure + fast growth = explosive growth in cash flow
  - DFCF valuations support prices in the $230s, in rising trend.
  - Our blended valuation analysis – historical comparables, peer group, DFCF — supports values much higher than current levels
Google, the Freinemy

Strategy: To create and manage the operating system software at the heart of autonomous vehicle technology.
- Began working on AV technology in 2009
- AV start-up morphs into wholly owned subsidiary Waymo

Google/Waymo First Mover Advantages:
- Over 3 million road test miles already
  - Public road testing in Phoenix, Arizona launched April, 2017
  - Winter road test launch planned for Michigan
- Test fleet size already in the hundreds of vehicles
- Partners
  - #2 U.S. ride hailing service Lyft
  - Fiat Chrysler Autos

Competitors
- OEM’s trying to catch up
- Tesla
- Uber
BEST POSITIONED TELECOMS FOR THE CONNECTED CAR

- Verizon
  - Strength in fleet telematics

- AT&T
  - Strength in consumer connected autos/OEM relationships
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