

# Tesla

## Still Motoring Ahead?



## RESEARCH

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31 August 2017

Tesla has been in the news recently, delivering its first Model 3 mass-market vehicles and reporting 2Q17 results over the past month. Tesla is a company that motivates debate. Year-to-date, the share is up 65%. However, despite this, its short interest (or percentage of equity float that has been sold short by investors) is 22%. Bears can point to the lack of profitability, high degree of debt, capital intensity and oncoming barrage of competition from larger automakers as reasons. Bulls, on the other hand, can point to the unprecedented demand for the vehicles, CEO Elon Musk's entrepreneurial track record, the world's move to clean energy and the argument that the business is a technology play rather than an automaker. In this note, we examine the investment case for Tesla. We review initial strategic plans outlined by the company in 2006 and find that management has largely delivered on their original goals so far. We also evaluate management's plan for the company going forward – Tesla plans to ramp-up production by a factor of 12 over the next 3 years (to 2020). We expect material revenue growth to occur as a result, but believe the firm will not reach the margins required to justify its current valuation (we value the share at \$208 vs. the current c. \$353 share price). In addition, the balance sheet's debt-load is concerning. We thus conclude that the share carries a large degree of risk and recommend investors sell to take advantage of the current high valuation.

### Tesla's Mission

Tesla's mission is to accelerate the world's transition to sustainable energy. The company is working to meet that goal in three ways – by producing automobiles using sustainable energy (battery electric vehicles [EVs]), generating energy (solar energy systems and the soon-to-be-released solar roof) and storing energy (Powerwall 2, Powerpack 2). Whilst we find the corporate mission admirable, this note focuses primarily on the investment case.

### The Master Plan

Before evaluating where Tesla is now, it is useful to reflect on where the company has come from. In 2006, co-founder and CEO, Elon Musk wrote the following blog post outlining Tesla's basic business plan.

### Figure 1: Tesla's first Master Plan

#### The Secret Tesla Motors Master Plan (just between you and me)

Elon Musk, Co-Founder & CEO of Tesla Motors • August 2, 2006

So, in short, the master plan is:

- Build sports car
- Use that money to build an affordable car
- Use *that* money to build an even more affordable car
- While doing above, also provide zero emission electric power generation options
- Don't tell anyone.

Source: Tesla

Essentially, Tesla would first produce a sports car and use the cash flows from that vehicle to build progressively more-affordable EVs, whilst also providing sustainable power generation. Management have been true to their plan, starting with production of the Tesla Roadster in 2008.

### Figure 2: Tesla Roadster



Source: Tesla

### Evaluating The Master Plan

#### ✓Build sports car.

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Cash flows from the Roadster (and capital raises, more on those later) were used to design and produce the Model S and Model X.

**Figure 3: Model S and Model X**



Source: Tesla

Tesla's Sedan offering	Tesla's SUV offering
<b>Acceleration:</b> 0-100kmph in as little as 2.7s.	<b>Acceleration:</b> 0 -100kmph in as little as 3.1s
<b>Range:</b> 450km (starting)	<b>Range:</b> 475km
<b>Launch:</b> 2012	<b>Launch:</b> 2015
<b>2016 Deliveries:</b> 50,931	<b>2016 Deliveries:</b> 25,312
<b>Starting Price:</b> \$69,500	<b>Starting Price:</b> \$82,500

### Evaluating The Master Plan

- Build a sports car.
- ✓ **Use that money to build an affordable car.**
- Use that money to build an even more affordable car.
- While doing the above, also provide zero emission electric power-generation options.

The S and X are still high-end, premium vehicles. Tesla's mass-market "even more affordable" car is the Model 3, launching in the second half of 2017 (i.e. now).

**Figure 4: Model 3**



Source:

Tesla

Tesla's mass market offering
<b>Acceleration:</b> 0 to 100kmph in 5.1 seconds
<b>Range:</b> 354 km (standard model)
<b>Launch:</b> 2017 (second half)
<b>Anchor Capital 2018 Production Estimate:</b> 350,000
<b>Starting Price:</b> \$35,000

### Evaluating The Master Plan

- Build sports car.
- Use that money to build an affordable car.
- ✓ **Use that money to build an even more affordable car.**
- While doing the above, also provide zero emission electric power-generation options.

Finally, Tesla also offers zero-emission electric power-generation options in the form of solar-energy systems. A solar roof is set to be released in the second half of 2017.

**Figure 5: Power Generation Options**



Source: Tesla

### Evaluating The Master Plan

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Thus, the business now offers the following products shown in Figures 6 and 7.

**Figure 6: Tesla's Current Automotive Product Portfolio**



Source: Tesla

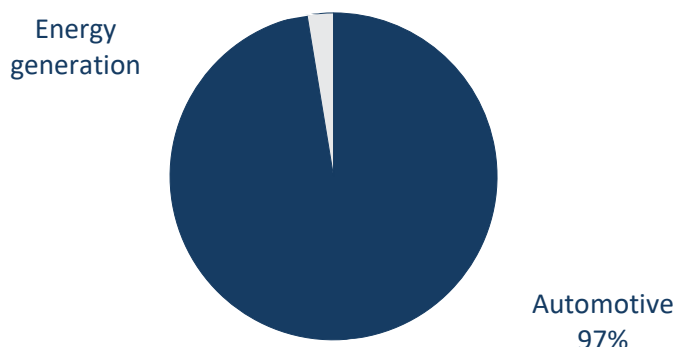
**Figure 7: Tesla's Energy Generation and Storage Products**



Source: Tesla

This note focuses primarily on the automotive side of Tesla, as we expect the auto division to be the primary value driver of the business. EVs contributed the majority of revenue last year (see Fig. 8), a trend we expect to continue.

**Figure 8: FY2016 Revenue Split**



Source: Company Data

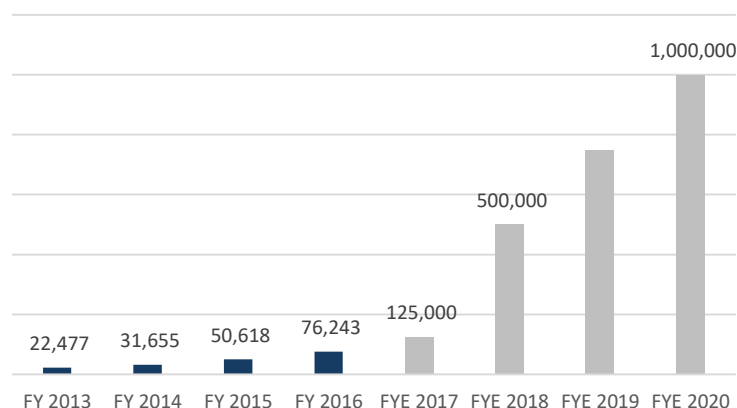
Based on the initial "Master Plan" it is difficult to find fault with the company in terms of its initial goals. From an investment standpoint, the relevant questions now are where do management intend to take the business and what valuation that could imply.

### Where Management Intend to Take the Company

Investors have been happy to ignore Tesla's lack of profitability in anticipation of the Model 3's release. The Model 3 is the vehicle through which the company intends to significantly scale-up production and reach profitability. Total vehicle targets have been increased – to 500,000 for 2018 and 1mn vehicles for 2020.

Whilst the majority of those vehicles will be the Model 3, no specific guidance has been provided beyond a production target of 5,000 Model 3s per week by the end of 2017 and 10,000 Model 3s per week at some point in 2018. Figure 9 displays our forecast of Tesla's ramp-up to 2020. We estimate the Model 3 to be 70% of FY2020 production. This is admittedly a rough estimate, based on CEO Musk's very approximate forecast of 2018 Model 3 production of 300,000 to 400,000 in a 2016 earnings call (see Fig. 10).

**Figure 9: Total Vehicle Delivery Outlook**



	FY 2016	FYE 2017	FYE 2018	FYE 2019	FYE 2020
<b>Deliveries</b>	<b>76,243</b>	<b>125,000</b>	<b>500,000</b>	<b>750,000</b>	<b>1,000,000</b>
Model X	25,312	40,000	50,000	75,000	100,000
Model S	50,931	75,000	100,000	150,000	200,000
Model 3	0	10,000	350,000	525,000	700,000

Source: Company Data, Anchor Capital Estimates

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**Figure 10: Musk on the 2018 Vehicle Mix**

**Dana Hull – Bloomberg**

“What is the mix in 2018 of the 500,000 cars?”

**Elon Musk – Chairman & CEO**

“I don’t think we’ve got like an amazing crystal ball to figure out exactly what it’s going to be. But...I feel confident about the top line number, but the mix internally is – I mean it’s difficult to figure that out...maybe it’s something like 100,000 to 150,000 S and X, and then 300,000 to 400,000 of 3. But this is, I don’t know, it’s really hard to say”

First Quarter 2016 Earnings Call

Source: Bloomberg

We have assumed the 2018 and 2020 targets will be met. It is important to note, however, that the last three annual vehicle delivery guidance figures have been missed (see Fig. 11).

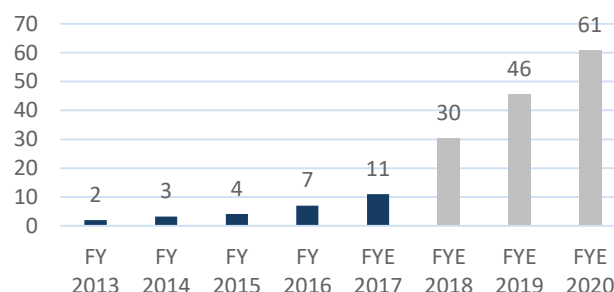
**Figure 11: Actual vs. Guided Deliveries**

Year	Deliveries Guidance	Actual Deliveries	Difference
FY14	35,000	31,655	-10%
FY15	55,000	50,658	-8%
FY16	80,000 to 90,000	76,285	-10%
FY17	47,000 to 50,000 (1H17)	47,077 (1H17)	0%
FY18	500,000		
FY20	1,000,000		

Source: Company Data

Rapid growth in vehicle deliveries, if realised, should translate into significant revenue growth, as forecast in Figure 12.

**Figure 12: Revenue Forecast (\$bn)**



Source: Company Data, Anchor Capital Estimates

The next question, perhaps one of the most central to Tesla’s valuation, is what margin is appropriate to assume the firm will reach a more stable state. Management are targeting a 25% gross margin at full capacity (2020) on the Model 3. Whilst Porsche has previously been cited as a benchmark for margins (45% gross margin), it is difficult to see a Tesla Group gross margin much above 30%. This is especially true considering the Model 3, its mass-market vehicle, will make up the majority of total vehicles.

An examination of margins across the peer group is informative (Fig. 13). Operating margins range from 3% to 10% for peers, except Ferrari and Subaru’s operating margins of 19% and 17%, respectively. It should be noted that these two firms may not be the most appropriate to benchmark against. Ferrari, for example, pursues a low-volume (FY17 vehicle shipment guidance: 8,400), premium strategy that allows for greater pricing power than a large automobile group (which Tesla is moving towards becoming).

We have thus assumed an operating margin of 10%, implying profitability will eventually settle in-line with the most efficient, profitable large automakers.

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**Figure 13: Margins at Peers**

Company	Gross Margin	Operating Margin
Ferrari	49	19
Subaru	32	17
Toyota	20	10
BMW	20	10
Daimler	21	8
Tata Motors	-	8
Mazda	25	7
Renault	21	7
Nissan	20	7
Suzuki	27	6
Mitsubishi	21	6
General Motors	18	6
Hyundai	19	6
Audi	17	5
Peugeot	19	5
Kia	20	5
Fiat Chrysler	14	5
Honda	22	3
Volkswagen	19	3
Ford Motor	11	3
Tesla	23	-10
Peer Group Mean	22	7

Source: Bloomberg

The scenario analysis below examines potential valuations assuming different operating margins and terminal value multiples on free-cash flow to the firm (FCFF) (a 10% discount rate is used for all scenarios). At the \$353 share price, we believe the market is pricing in flawless execution of the production ramp-up and a operating margin of *at least* 15% (or lower margins with a FCFF TV Multiple  $\geq$  30)

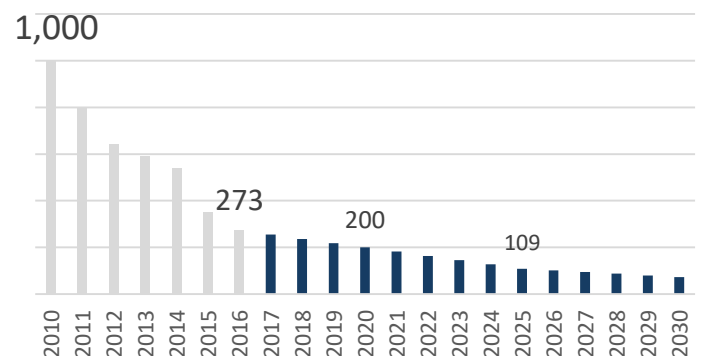
**Figure 14: Scenario Analysis**

Operating Margin	2020 FCFF	FCFF Terminal Value Multiple	Per Share Value Today
10%	\$4.1 billion	10	\$136
10%	\$4.1 billion	15	\$210
10%	\$4.1 billion	20	\$286
10%	\$4.1 billion	30	\$378
15%	\$5.8 billion	10	\$259
15%	\$5.8 billion	15	\$387
15%	\$5.8 billion	20	\$515
15%	\$5.8 billion	30	\$629
20%	\$7.5 billion	10	\$328
20%	\$7.5 billion	15	\$484
20%	\$7.5 billion	20	\$640
20%	\$7.5 billion	30	\$880

Source: Anchor Capital Estimates

One argument for higher operating margins is that battery costs, the largest cost component for EVs, will continue to decline. Figure 15 illustrates the significant decline in the average EV battery cost across the industry since 2010. We expect battery costs to continue to decline but we do not believe this decline will lead to Tesla earning a sustainably higher operating margin than its peers. First, Tesla and Panasonic have partnered together on Gigafactory 1. Tesla is purchasing battery cells manufactured by Panasonic at Gigafactory 1 at negotiated prices (i.e. Tesla is not producing the batteries in-house in the pure sense of the phrase). Second, battery cost deflation is industry-wide, with peers also working to lower their respective battery costs.

**Figure 15: Average EV Battery Cost (\$/kWh)**



Source: Bloomberg, BNEF

We value Tesla on a free-cash flow basis, applying a 15x FCFF terminal-value multiple.

Our \$208/share valuation suggests material downside to the current share price. It is important to note, however, that Tesla's share price has been moved more by company news such as delivery guidance figures, new model releases and tweets from Elon Musk than by fundamental earnings and cash flow data. Nevertheless, this valuation exercise is instructive in highlighting potential valuation risk.



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Figure 16: Free Cash Flow Valuation

in USD billions except per share	FYE 2017	FYE 2018	FYE 2019	FYE 2020
Revenue	11.0	30.4	45.5	60.7
- Cost of sales	-8.8	-27.1	-36.1	-45.3
Gross Profit	2.2	3.3	9.4	15.4
- Operating expenses	-2.7	-4.0	-5.9	-9.1
Operating profit	-0.5	-0.6	3.5	6.3
- Interest income	0.0	0.0	0.0	0.0
- Interest expense	-0.3	-0.4	-0.4	-0.3
+ Other income (expense), net	0.0	0.0	0.0	0.0
Pre-tax profit	-0.9	-1.0	3.1	6.1
- Income tax expense	0.0	0.0	-1.8	-3.6
Net profit	-0.9	-1.1	1.2	2.4
Weighted avg no. shares in issue	0.16	0.16	0.16	0.16
Basic EPS	-4.77	-5.70	6.52	12.93
Diluted EPS	-4.77	-5.70	6.52	12.93
DPS	0.00	0.00	0.00	0.00
<b>Free Cash Flow</b>				
Operating profit *(1 - t)	-0.3	-0.4	2.1	3.8
+ Rental Expense	0.2	0.5	0.7	0.9
+ Dep. & Am.	0.9	1.1	1.3	1.4
- Capital Investment (Fixed & Working)	-2.3	-2.0	-2.0	-2.0
<b>Free Cash Flow to the Firm</b>	<b>-1.5</b>	<b>-0.8</b>	<b>2.0</b>	<b>4.1</b>
			<b>FCFF TV Multiple</b>	<b>15.0</b>
			<b>Terminal Value</b>	<b>58.4</b>
			<b>Discount Rate</b>	<b>10%</b>
Discount Factor	0.9	0.8	0.8	0.7
PV of Cash Flows	-1.3	-0.7	1.5	2.8
Sum of PV FCF (FY17-20)	2.3			
+ PV of Terminal Value	40			
<b>= Enterprise Value</b>	<b>42</b>			
- Net Debt	-8			
<b>= Equity Value</b>	<b>34</b>			
# of Shares	0.16			
<b>Per Share Equity Value</b>	<b>\$ 207.80</b>			
Share Price	\$ 353.18			
Upside (Downside)	-41%			

Source: Anchor Capital Estimates

ahead of the Model 3 ramp-up.

In addition to the share being overvalued, we also believe there is a material degree of financial risk from a large debt load on the balance sheet.

### Access to Capital Markets Remains Critical

Access to the capital markets has been an important part of the Tesla story so far. Given the rate of cash burn (see Fig. 17 on the next page), continual capital raises in both the equity and debt markets have been required to fund operations and capital expenditure. At 30 June 2017, Tesla had \$8bn of net debt. \$1.5bn of debt was raised via senior notes in August 2017 to shore up the balance sheet

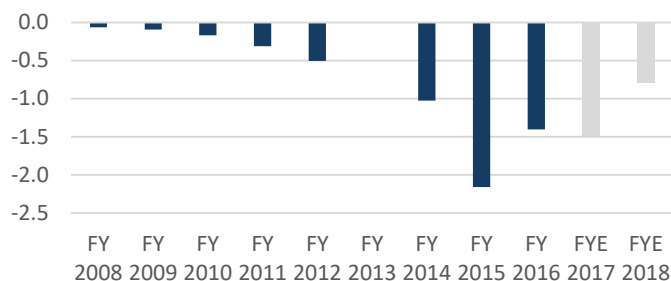
Musk remarked that Tesla would be going through “manufacturing hell” over the coming months during the ramp-up. If cash burn over the next few years exceeds our forecast (we estimate \$2.3bn of cash burn over the next two years), another capital raise may become necessary. It is important to note that our valuation assumes further equity raises will not be necessary. It assumes that positive cash-flow generation will come through from FY19 onwards. To the extent that further equity raises become necessary, there may be dilution for shareholders (depending on the share’s valuation at the time).

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**Figure 17: Free Cash Flow to the Firm (\$bn)**



Source: Company Data, Anchor Capital Estimates

The balance sheet continues to look weak. At its recently reported 1H17 results, net debt-to-equity was 161%. Tesla may be viewed by some investors as a technology company rather than an automaker. Unfortunately, the capex profile and capital intensity, at present, is much more reminiscent of an automaker than a technology firm. The majority of capital spending is on fixed assets rather than, say, intangibles. Capex guidance for FY17 is \$2.0 – 2.5bn.

**Figure 18: Current Financial Position**

in USD billions except per share		1H 2017
<b>Book value of assets</b>		<b>26.0</b>
<b>Book value of equity</b>		<b>5.1</b>
<b>Net Debt</b>		<b>8.2</b>
Financial liabilities		11.6
+ Short-Term Borrowings		0.8
+ Long-Term Borrowings		7.1
+ Resale Value Guarantees (Current)		0.3
+ Resale Value Guarantees (Non-Current)		2.5
+ PV Operating Leases		0.8
Financial assets		3.4
+ Cash & Near Cash Items		3.0
+ Restricted Cash and marketable securities		0.4
+ Short-Term Investments		0.0
Equity-to-assets		20%
Debt-to-assets		80%
Debt-to-equity		410%
Net Debt-to-Equity		161%

Source: Company Data

In the 1H17 earnings call, management indicated that further equity raises are unlikely. This appears even more true in the short-term, following the recent \$1.5bn debt raise. It is important to note, however, that management have perhaps been overly optimistic on the business' capital needs on previous occasions.

For example, in a February 2012 earnings call, the CEO remarked that Tesla, “does not need to ever raise another round of funding, in terms of need” (see Fig. 19). This was overly enthusiastic as Tesla has subsequently burned \$5.1bn in negative free cash flow (FY 2012 – 2016) and raised \$4.7bn of equity since then.

**Figure 19: Musk on Future Capital Raises in 2012**

### Elon Musk – Chairman & CEO

“Well, I feel confident in saying that Tesla does not need to ever raise another financing round, in terms of need. It’s possible that we may choose – that we may want to do so. But importantly, we do not need to do so, at least by our projections. So, yeah, we are in a really strong cash position”

Fourth Quarter 2011 Earnings Call

Source: Bloomberg

### Conclusion

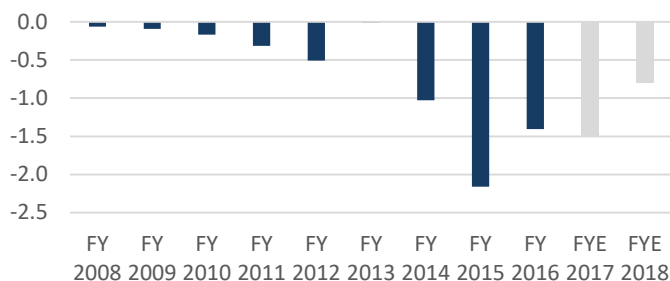
Tesla is a company with an admirable corporate mission and exciting products. Management have delivered on the goals initially outlined in 2006. Going forward, the business is targeting a rapid production ramp-up that will translate into significant revenue growth. We believe, however, that Tesla will not earn the margins on that revenue required to justify the company’s current valuation. Furthermore, the high level of debt on the balance sheet is cause for concern. For these reasons, we believe investors should make use of the currently lofty share price and sell.

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