

Can Tesla make money by manufacturing the Model 3?

I have just returned from London where I attended an event hosted by Patrick Hummel, the Executive Director and Head of European Autos & Mobility Research at UBS. He presented a detailed analysis on the manufacturing cost of the Chevy Bolt.

When they extrapolated this cost to the Model 3, the results were very surprising and demonstrated a way that Tesla may improve its bottom line.

For the purpose of this analysis, UBS Evidence Lab entered into a partnership with Munro & Associates of Auburns Hill, Michigan. This firm specializes in teardown benchmarking and accurate costing in the automotive industry. The project included a breakdown of all electric powertrain-related parts and components as well as the modules related to connectivity/HMI and ADAS (advanced driver assistance systems). The Munro cost estimates reflect the cost an automaker would pay a supplier. Generally, these costs are calculated by estimating the raw material costs, the amortization of parts tooling, an estimate of labour costs and applying an industry standard mark-up for supplier overhead and profit. To create its estimates, Munro looks for numerous variables, including materials and material comparisons, process, machinery, tooling, labour (modelled by region of production), geography, competition, and logistics.

The components of the Bolt under analysis turned out to be \$4,600 cheaper than previously anticipated. The car had the "Premier" trim but they also did the math for a "naked" Bolt without any options. The contribution margin of the "Premier" would be 14% or \$5,063 over all direct costs, while the contribution margin of the "naked" would be 10% or \$3,165. At the EBIT level though, both trims are unprofitable although over the next few years, the economics changes and they start

turning profitable. They are further expected to generate an EBIT margin of about ~20% by 2025, assuming the sticker price stays the same.

A lower manufacturing cost has an important impact on the total cost (TCO) of electric vehicle (EV) ownership. UBS now sees TCO parity with internal combustion engine (ICE) cars as early as 2018 in Europe. That's 2-3 years ahead of what they thought before analysing the Bolt. They see TCO parity in 2023 for China and in 2025 for the US where gas is cheaper and environment regulations more lenient.

There are many similarities between the Bolt and the Model 3. Thus UBS believe the profitability analysis of the Bolt can be applied to the Model 3. Both cars have similar base version pricing, range/battery capacity, a single e-motor with two-wheel drive and about the same interior space. The differences overwhelmingly play into Tesla's advantage. The Model 3 will enjoy the higher premium appeal of the brand which translate into more pricing power and a longer list of profitable options. The rear-driven Model 3 will use a different battery chemistry to be produced at the Gigafactory which will give Tesla more scale in battery manufacturing. The car's software will be kept current via over-the-air-upgrades and it will ship with autonomy-relevant hardware (cameras, sensors) as standard. Tesla's production target for the Model 3 is more than 10 times what GM has for the Bolt. Higher production will likely give Tesla better fixed cost absorption.

There are also differences in the distribution model and marketing. The absence of dealerships allows Tesla to receive the full retail price, whereas GM's manufacturer's suggested retail price (MSRP) includes a ~15% mark-up for the independent dealerships and incentives. However, Tesla has higher distribution costs.

UBS believes the biggest uncertainties in applying the read-

across from the Bolt to the Model 3 is the battery costs. Since Tesla has guided for a battery size of less than 60 kWh and accounting for cells with better energy density and economies of scales at the Gigafactory, UBS thus believe the Model 3's 55kWh battery pack will be 26% cheaper to build than the Bolt. They also analysed the expected manufacturing cost of the Model 3 against the BMW 330i and they came to the conclusion that Tesla will lose \$2,830 at the EBIT level for each "naked" Model 3 they sell, but will break even at a sticker price of \$41,000. For example, enabling autopilot functionality shall allow Tesla to make close to a 100% margin on that option alone. UBS thus sees the break-even price of \$41,000 likely to be exceeded on a high take rate of options.