

特斯拉 (TSLA.O) 2019 年报点评

证券研究报告
2020 年 02 月 03 日

Model 3 产销两旺助力千亿市值，国产替代机遇

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事件: 北京时间 1 月 30 日凌晨，特斯拉 (TSLA.O) 发布了 2019 年第四季度财务报告: Q4 实现营业收入 73.8 亿美元，同比上升 2.2%；营业利润 3.6 亿美元，同比下降 13.2%；归母净利润 1.05 亿美元，同比下降 25%。全年公司营业收入增长 14.5%至 245.8 亿美元，营业亏损为 6900 万美元，较上年同期减少 3.2 亿美元。归母净亏损 8.6 亿美元，同比下降 11.7%。第四季度自由现金流 10.1 亿美元，环比增长 173%。

点评:

四季度和全年毛利有所上升，汽车板块毛利率超预期。特斯拉 2019Q4 实现毛利 13.91 亿美元，同比下降 3.6%，环比上升 16.79%，主要是汽车业务毛利提升；全年毛利 40.69 亿美元，同比上升 0.67%。Q4 毛利率为 18.8%，环比 Q3 有小幅下降，其中汽车业务毛利率在上海超级工厂投产增加折旧和摊销的基础上，仍保持在 22.5%的高水平；全年毛利率 16.6%，同比下降 2.3%，汽车业务毛利率为 21.2%，同比下降 2.2%，主要受汽车租赁比重提高，Model 3 销量占比提高和 ASP 下调影响。

四季度销量创纪录，Model 3 热销，新订单占比高，展望 Model Y。根据财报显示，特斯拉 2019Q4 实现交付 112,095 辆，同比上升 23.6%，其中 Model 3 为 92,620 辆，同比上升 46.7%，全球库存周转天数再创新低，仅为 11 天；2019 全年交付量为 367,295 辆，同比上升 50.0%，其中 Model 3 交付创新高，同比增长 106.5%，**2019 年多数订单为新买家，在未有广告费用的前提下，预计 2020 年销量会在 Model Y 和上海超级工厂的推动下继续上升；Model S 和 X 销量乏力，交付同比下降 32.9%，总交付达成全年 36 万最低交付目标。预计特斯拉 2020 年全球销量约为 50-60 万辆，2021 年约为 90 万辆。预计 2021 年，Model Y 交付 12.5 万，在手订单超 20 万辆，交付提前，预计第三季度所有配置车型均可交付。**

产能有望持续扩张，产能布局全球化拓展。美国 Fremont 工厂方面，目前 Model Y 处于产能爬坡阶段，预计 2020Q1 末开始交付。2020 年加州工厂，Model 3 和 Y 总年产能达到 **40 万辆**，后续产能将继续扩张，生产车间增加额外设备，预计 **2020 年中，达到 50 万年产能**；上海工厂方面，随着零部件国产化提升将会带来毛利率的改善，上海工厂产能有望大幅增长，Model 3 和电池组生产持续爬坡，二期工程已破土动工，鉴于 SUV 车型热销，未来 Model Y 产能至少与 Model 3 持平，Model Y 生产进度提前，产能爬坡开始于 2020 年 1 月；柏林-勃兰登堡工厂已经进入准备阶段，第一批车辆交付预计在 2021 年开始。

储能业务需求强劲，全年装机量再创新高，同比增长 58.8%。在光伏和储能业务方面，2019Q4 特斯拉的光伏发电装机量为 54MW，环比上升 25.6%；储能装机量达到历史新高 530MWh，同比上升 135.6%，环比上升 11.1%。2019 全年储能装机量 1.65GWh，超过其他年份的总和，预计 2020 年光伏和储能业务继续保持快速增长，装机量同比上升超 50%。

自动驾驶性能提升，Model Y EPA 里程极值达 500 公里。据最新视频显示，目前车辆搭载的 FSD 已可判断交通路口信号灯的颜色，视觉识别范围进一步扩大，覆盖地面湿滑状况，天气状况及分别车道。

汽车软件持续升级，未来贡献收益，智能终端凸显。9.99 美元/月 (含税)汽车软件高级连接服务，在美国市场 2019Q4 首次推出。该功能旨在让车主通过嵌入式终端听音乐、上网等。同时，在 app 中可购买不同的软件升级，例如 Autopilot, FSD, acceleration boost 等其他高级功能。

零部件国产化率提升，带来供应链投资机遇。2019 年 12 月 30 日，特斯拉

高层在国产 Model 3 交付仪式上表示，目前下线车辆的零部件国产化率达到 30%，明年年中可达 80%，年底实现全国产化。推荐：常熟汽饰、宁波华翔、宁德时代（机械团队覆盖）、科达利（电新团队覆盖）、旭升股份、拓普集团、岱美股份。

特斯拉官宣与 CATL 和 LG 合作，动力电池国产供应链受益。特斯拉单车价值量拆分，电池系统占比最大，约 32%。电芯主要厂商宁德时代和 LG 成为公司在动力电池领域的新合作伙伴，双双受益，LG、【宁德时代】引领全球动力电池核心技术及其产业链，建议重点关注。

风险提示：经济持续低迷；强有力的竞争对手；需求不及预期。

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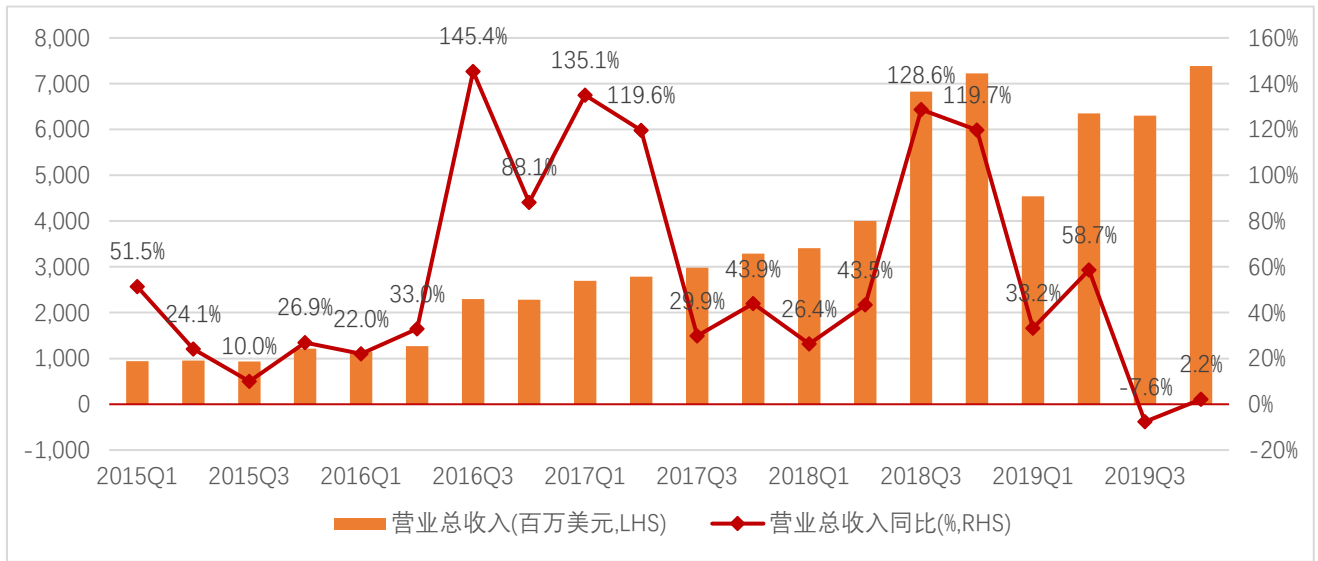
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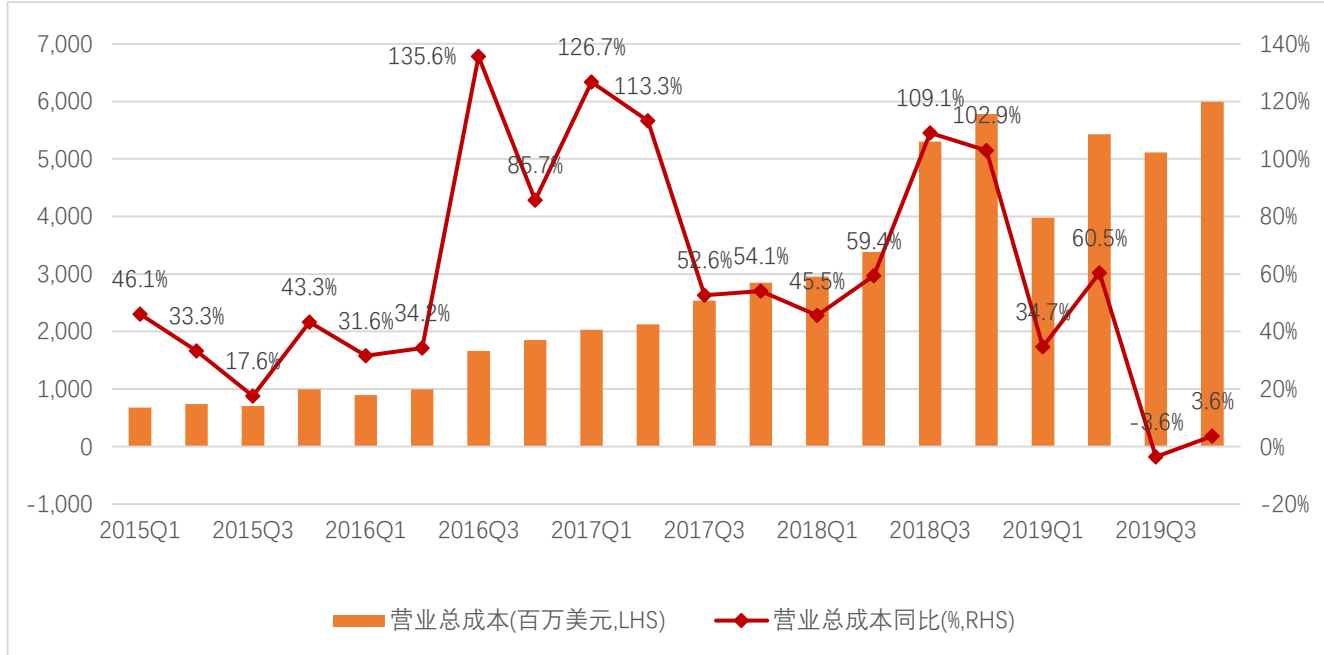
1. 相关图表

图 1：特斯拉 15 年至 19 年单季度营业收入及同比（百万美元 %）



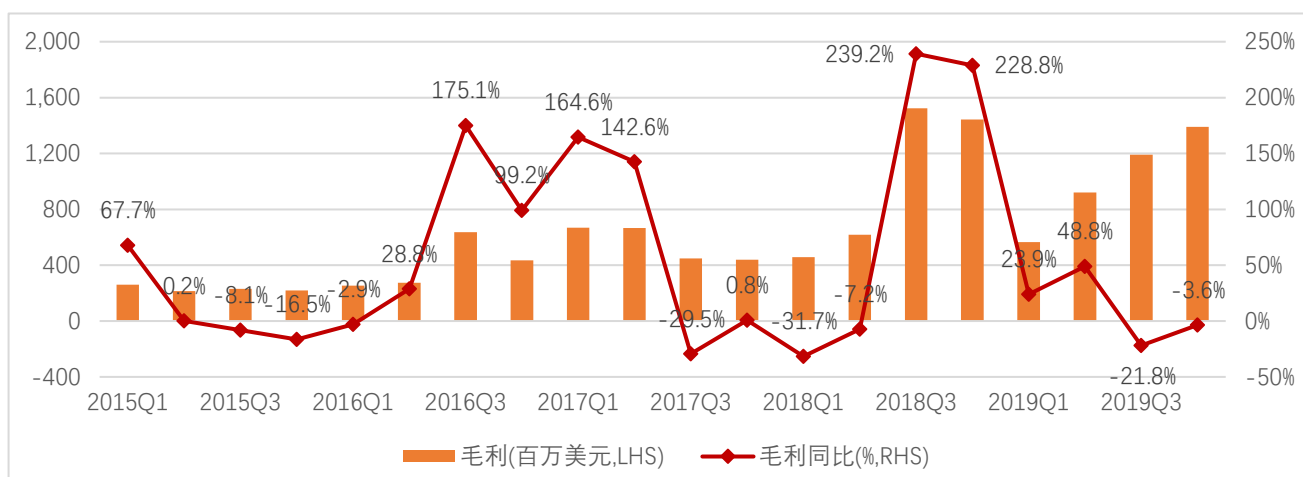
资料来源：公司公告，天风证券研究所

图 2：特斯拉 15 年至 19 年单季度营业成本及同比（百万美元 %）



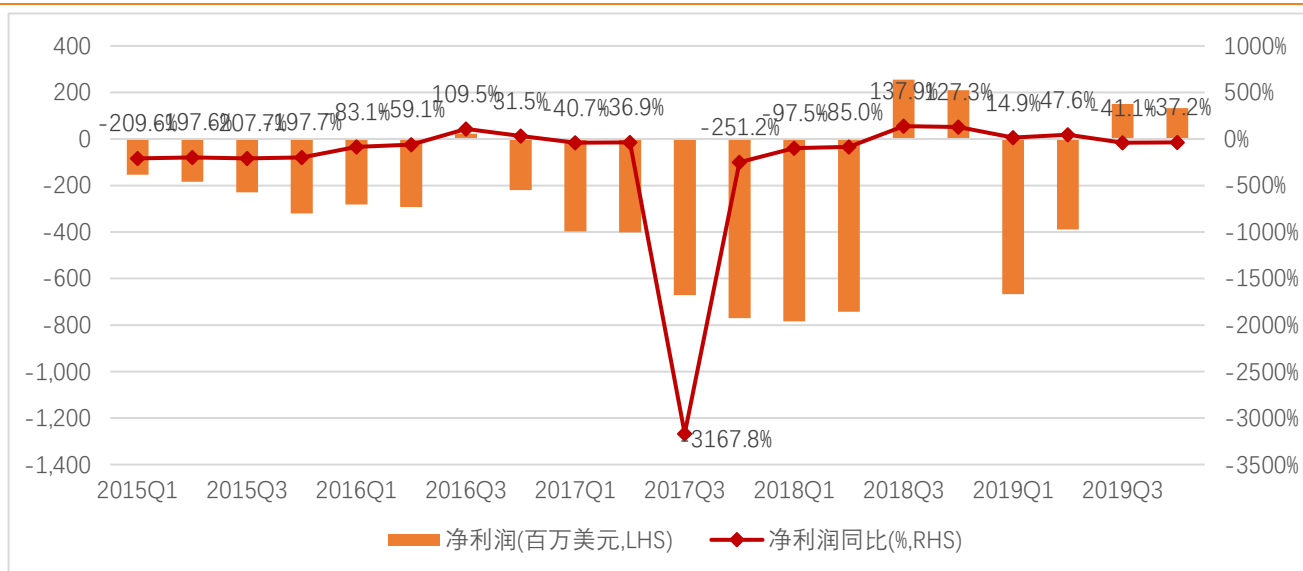
资料来源：公司公告，天风证券研究所

图 3：特斯拉 15 年至 19 年单季度毛利及同比（百万美元 %）



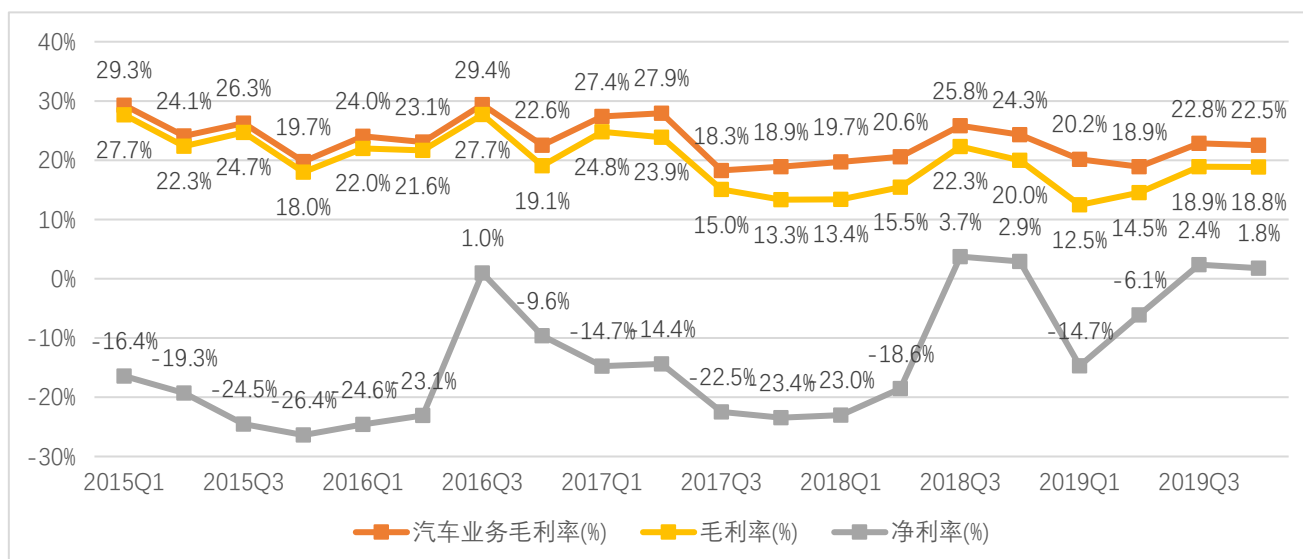
资料来源：公司公告，天风证券研究所

图 4：特斯拉 15 年至 19 年单季度净利润及同比（百万美元 %）



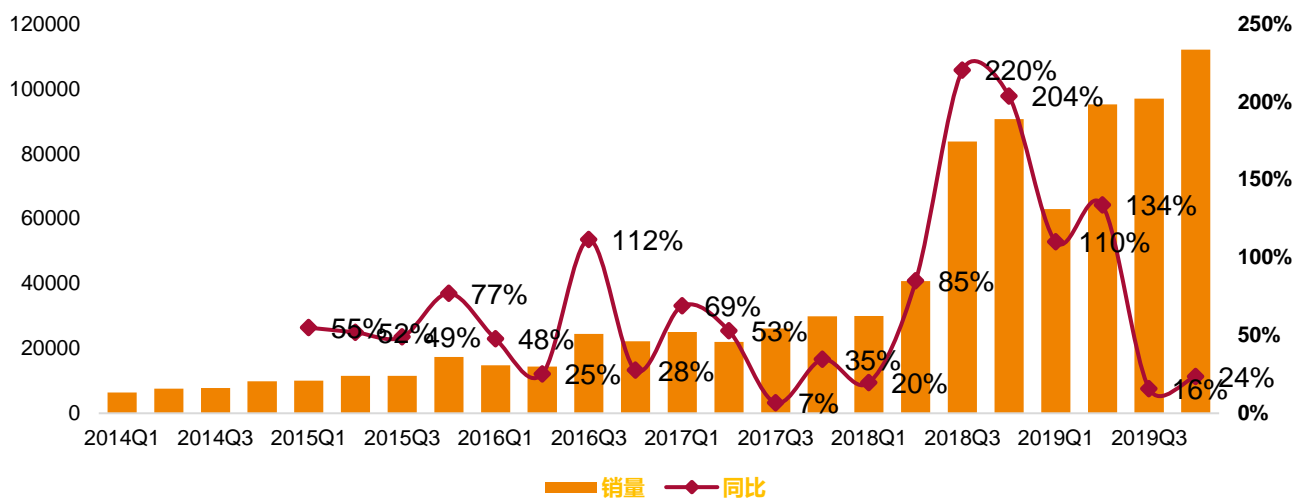
资料来源：公司公告，天风证券研究所

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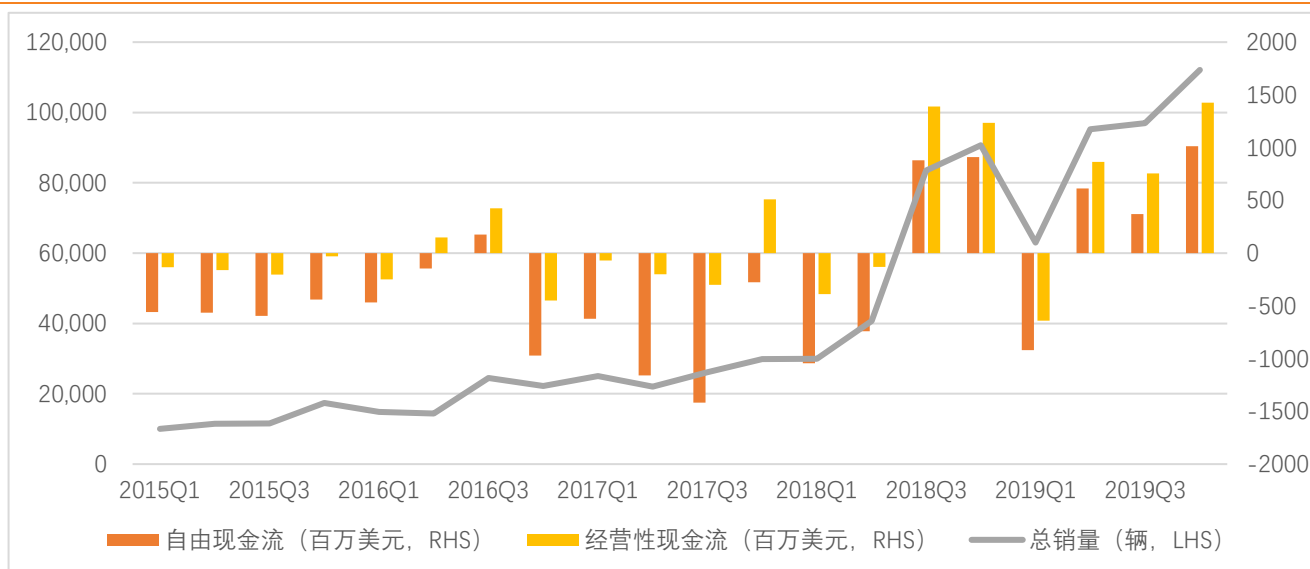
资料来源：公司公告、天风证券研究所

图 6：特斯拉 15 年至 19 年单季度销量（辆）



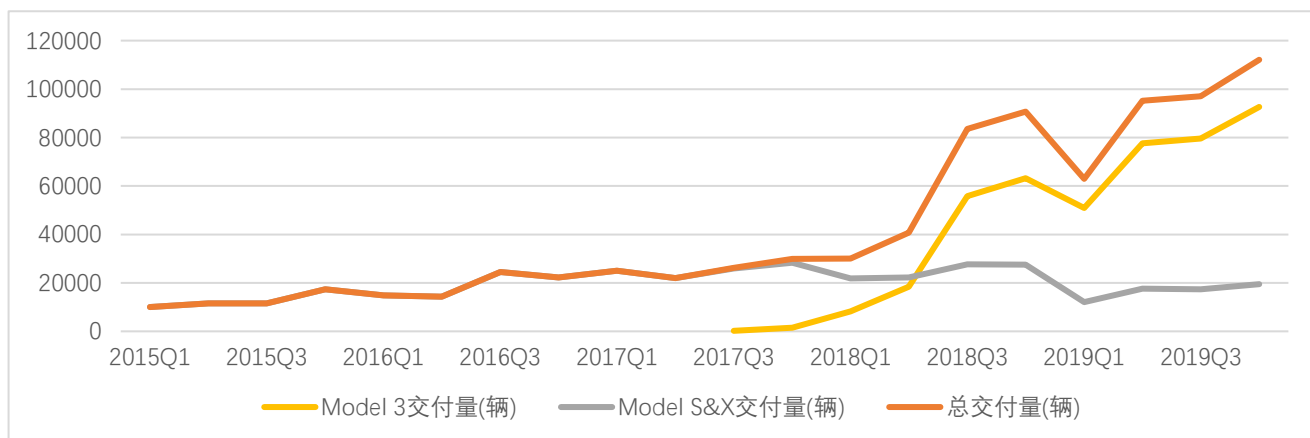
资料来源：公司公告、天风证券研究所

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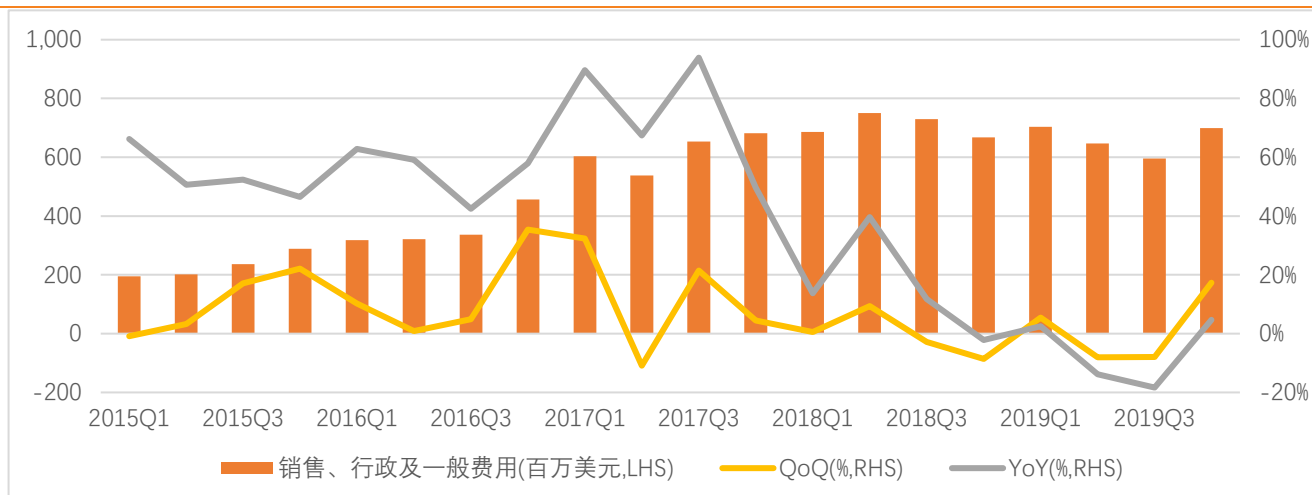
资料来源：公司财报、天风证券研究所

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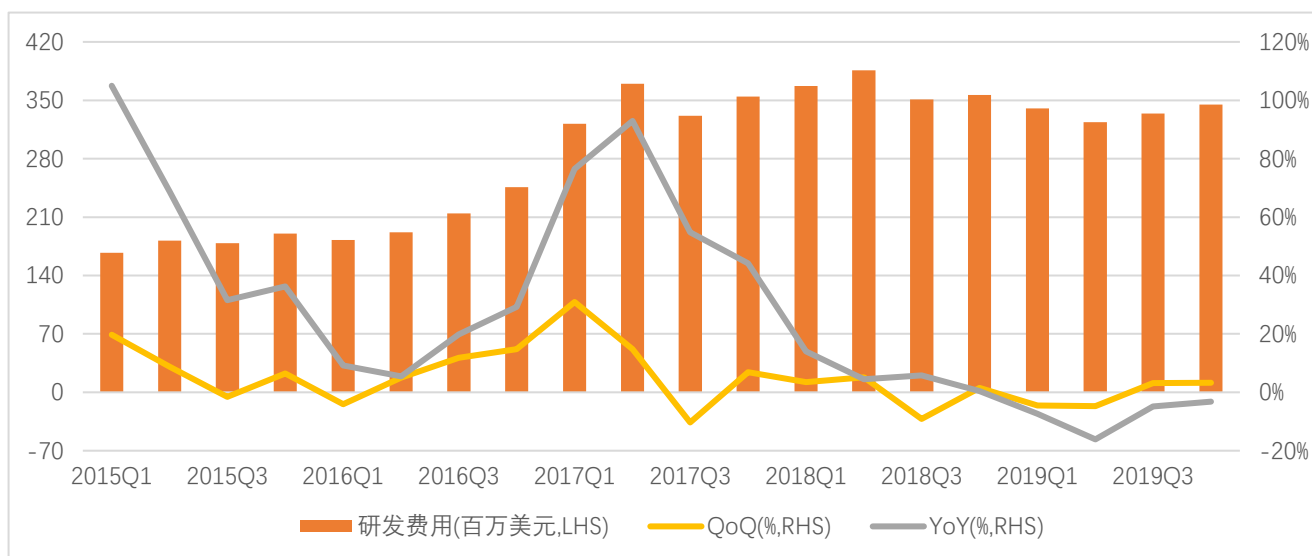
资料来源：公司公告、天风证券研究所

图 9：特斯拉 15 年至 19 年单季度销售，行政及一般费用（百万美元 %）



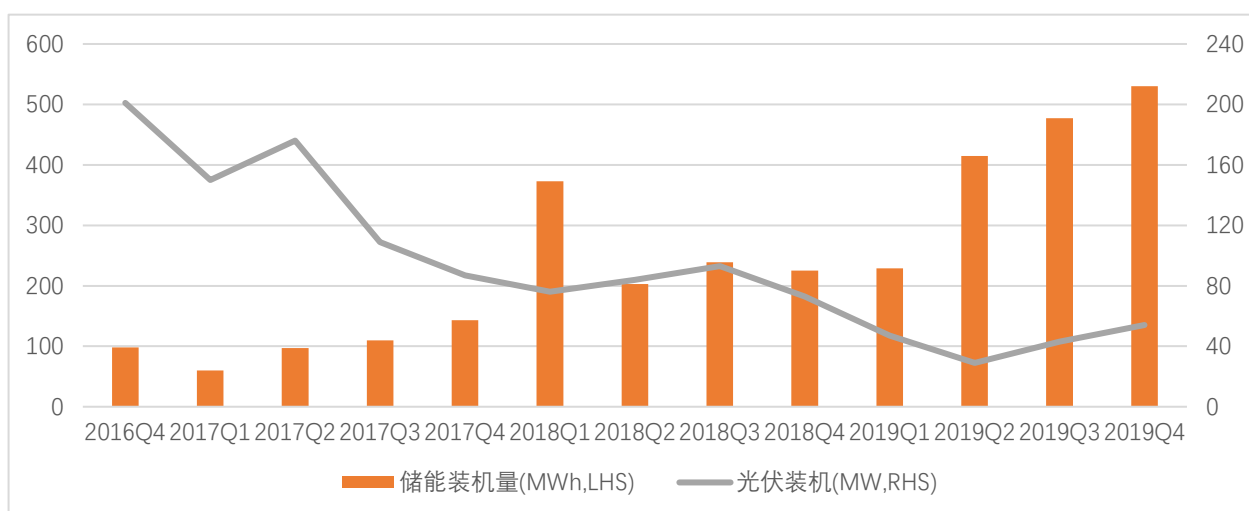
资料来源：公司公告、天风证券研究所

图 10：特斯拉 15 年至 19 年单季度研发费用（百万美元 %）



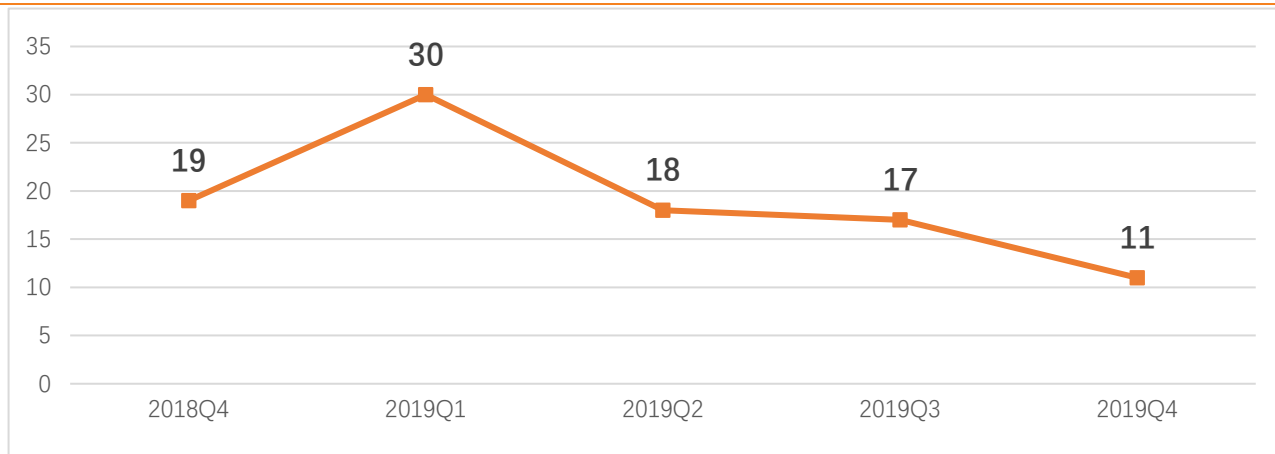
资料来源：公司公告、天风证券研究所

图 11：特斯拉 16 年至 19 年单季度储能及光伏装机量（MWh MW）



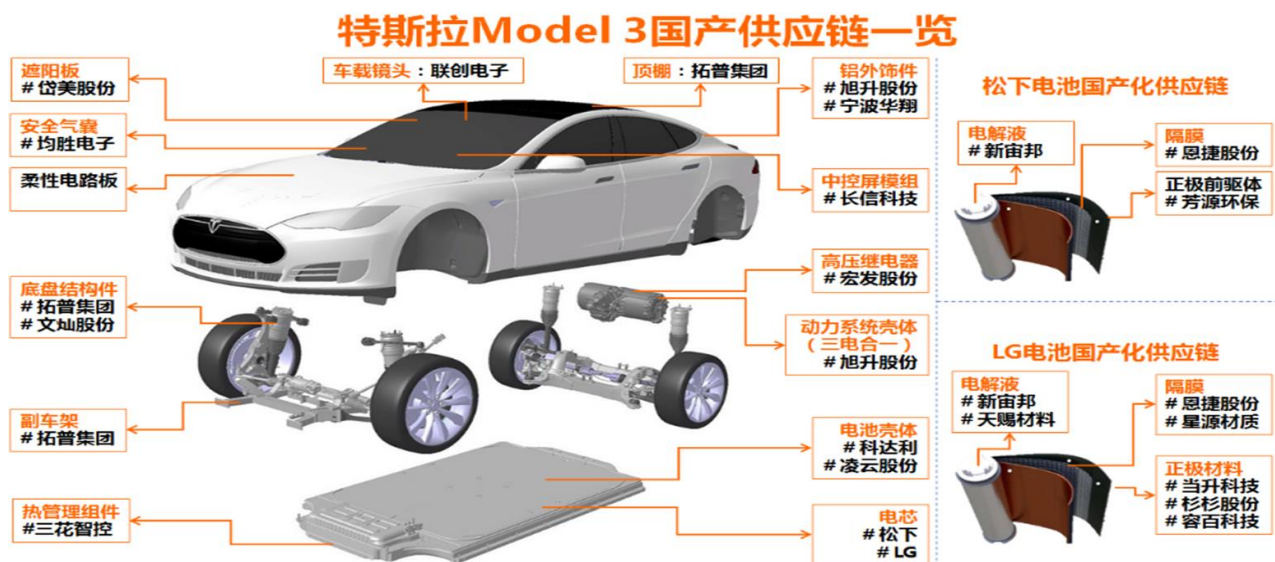
资料来源：公司公告、天风证券研究所

图 12: 特斯拉 18 第四季度至 19 年单季度存货周转天数 (天)



资料来源: 公司公告、天风证券研究所

图 13: 特斯拉 Model 3 国产供应链一览



资料来源: 公司公告 天风证券研究所

图 14: 特斯拉 Model 3 价值量拆分

Model 3 价值量拆分

- 电动车的电池系统成本占比较高,以Model 3为例,电池系统价值量占比约38.6%,其中电芯
- Model 3 车身及附件占比约22.6%、电气系统约15%、

图: Model 3 价值量拆分 (单位: %)



资料来源: Wind、天风证券研究所

资料来源：公司公告、天风证券研究所

2. 特斯拉电话会议纪要

特斯拉电话会议概要：

现金

- 第四季度现金及现金等价物为 63 亿美元，增长 9.3 亿美元
- 第四季度减去资本支出后的运营现金流（自由现金流）达 10 亿美元

利润

- 第四季度 GAAP 运营收益为 3.59 亿美元，营业毛利率为 4.9%
- GAAP 净收益为 1.05 亿美元，非 GAAP 净收益（不包括股权激励费用）为 3.86 亿美元

运营

- 团队对未来 10 年充满兴奋。回顾从 2010 年到今天的 10 年，汽车产量约比 2010 年的产量增加了 1,000 倍，周产能达到 8,000 辆。太阳能屋顶，Powerwall 和 Powerpack 等产品。
- Model Y 生产进度提前，产能爬坡开始于 2020 年 1 月，预计毛利高于 Model 3。
- Model Y 全轮驱动 EPA 里程由 280 英里提高至 315 英里
- 第四季度车辆交付量创纪录，达到 112,095 辆
- 第四季度储能产品装机量创纪录，达 530MWh，太阳能业务环比增长 26%

要点总结：团队对未来十年充满信心。

- 1) 四季度和全年毛利有所上升，汽车板块毛利率超预期。
- 2) 四季度销量创纪录，Model 3 热销，新订单占比高，展望 Model Y。Model Y 交付提前，预计第三季度所有配置车型均可交付。
- 3) 产能有望持续扩张，产能布局全球化拓展。
- 4) 储能业务需求强劲，全年装机量再创新高，同比增长 58.8%。
- 5) 自动驾驶性能持续提升，Model Y 续航里程极值突破 500 公里。
- 6) 零部件国产化率提升，带来供应链投资机遇。
- 7) 特斯拉官宣与 CATL 和 LG 合作。
- 8) 上海工厂：产能持续爬坡，冠状病毒早期影响中，还在监测这一事件对供应链及利润率影响。
- 9) 保险业务会持续持续增长，目前在加州可用，基于 Autopilot，预计每个用户会付出 100-200 美金。

特斯拉电话会议详细纪要内容：

2019Q4 整体经营情况总结

伊隆·马斯克 Elon Musk (特斯拉 CEO)

第四季度对该公司来说极为强劲。单季度交付量超过 112,000 辆。很难想到需求量如此之大的同类产品，其广告支出为零，并产生超过 200 亿美元的收入。拥有世界上需求最高的电动汽车却没有广告支出是我的不凡之处，

并说明了产品的本质和产品本身具有足够的吸引力，足以在没有大量广告的情况下产生这种需求。

So Q4 was another strong quarter for the company. Our deliveries reached over 112,000 vehicles in a single quarter. It's hard to think of a similar product with such strong demand that it can generate more than \$20 billion in revenue with zero advertising spend. I think that's like where we do say that from time-to-time and I think it's often overlooked, but to have the highest demand electric vehicle in the world with no advertising spend is I think quite remarkable and speaks to the nature of the product and the fact that the product itself is compelling enough to generate that demand without much of advertising.

在弗里蒙特工厂，我们的产量与 NUMMI 工厂在其创纪录的 2006 年的生产率大致相同，显然，我们预计今年将大大超过该产量。我们甚至开始使用 Fremont 生产 Model Y，这种生产率是高效的，因此，超出这个数字的潜力很大。

At our Fremont factory we're producing at a rate roughly the same as the NUMMI factory did in its record year of 2006 and obviously we expect to exceed that significantly this year. This rate of production was cheap before we even started to produce the Model Y out of Fremont, so there's lot of potential to go beyond that number.

对于上海工厂，我要再次祝贺上海团队于上个季度推出 Model 3，并于今年初实现了首批交付。我对上海工厂的潜力感到非常兴奋和乐观。我认为这对公司来说将是一笔不可思议的财富，我们还在上海生产 Model Y 车型的二期工厂破土动工，因此在那里取得了许多良好的进展。

For the Shanghai factory, I'd like to say congratulations again to the team in Shanghai on launching Model 3 last quarter and achieving the first deliveries earlier this year. I'm really excited and optimistic about the potential for the Shanghai factory. I think it's going to be an incredible asset to the company and we also broke ground on the Model Y factory in Shanghai, so lot of good progress there.

关于 Model Y 车型，仅在 10 个月前，我们发布了 Y 型原型。从今年 1 月开始，我们已经开始限量生产 Y 型。这要归功于我们的工程团队的不懈努力，我们成功实现了迄今为止以每千瓦时 4.1 英里的速度生产的电动 SUV 中最高能源效率，这意味着 Y 型四轮驱动器的 EPA 额定值为 315 英里，到今天为止，这种改进已反映在配置器上。这比我们先前所说的要高得多。

Regarding Model Y, it was only 10 months ago that we revealed a Model Y prototype. And now in January this year, we started producing Model Y in limited volumes already. Now this is thanks to a great effort of our engineering team and we managed to achieve by far the highest energy efficiency of any electric SUV ever produced at 4.1 miles per kilowatt hour, which means Model Y four wheeler drive got EPA rating of 315 miles and this improvement is reflected on the configurator as of today. This is above what we previously stated by a pretty significant margin.

对于 Cybertruck，几个月前，我们发布了它并且获得极高的热度。我们试图构建一种在各方面都出色的产品，而没有对这种产品的外观敢为人先，并且配备极大的加速，最高的速度，这实际上是一个令人难以置信的规格。

And then just with great acceleration, top speed, it's really just an incredible specs all around. For the Cybertruck, a few months ago, we revealed -- obviously we revealed the Cybertruck and that was -- that went viral. And we tried to build a product that is superior in every way without any preconceptions of how such product should look so and just that with great acceleration, top speed, it's really just an incredible specs all around.

因此，从财务角度来看，回到 2018 年的，我们的自由现金流是盈亏平衡的，但是在 2019 年，我们设法产生了超过 10 亿美元的自由现金流，同时在创纪录的时间内在上海建立了工厂，同时建造了 Model Y 生产。

So and then stepping back in 2018 from a financial standpoint, we were free cash flow was break-even, but in 2019 we managed to generate more than \$1 billion of free cash flow, while building a factory in Shanghai in record time and while

building parts of Model Y production.

因此,我认为对于我们来说,拥有这样水平的自由现金流,同时进行大量投资,进行产能开发,开发新产品,改善核心工程技术,这证明了特斯拉团队和我的表现,与如此出色的团队合作真是太自豪了。

So, I think to -- for us to have this level of free cash flow while making massive investments in capacity, while developing new products, while improving the core engineering is a testament to the -- I think performance of the Tesla team and I'm just so proud to work with such a great team.

我要感谢特斯拉整个团队在成本控制方面的不懈努力,这是使我们能够获得如此引人注目的财务数字的同时,公司以惊人的速度发展的原因。总而言之,当我认为未来几年我们将拥有 Model Y,柏林超级工厂, Tesla Semi, Solarglass Roof, Cybertruck (电池技术有了一些令人激动的改进),完全自动驾驶。我们会推出下一代 Roadster,并且很可能还会在其他产品中加以补充。

I'd like to thank the whole Tesla team for their ongoing work on cost control and that's what has allowed us to get to this compelling financial numbers, while at the same time growing the company at an incredible pace. And in conclusion when I think what we have in front of us, the next couple of years, we've got Model Y, we've got Giga Berlin, Tesla Semi, Solarglass Roof, Cybertruck some very exciting improvements in battery technology. We have full self-driving, we got the next-gen Roadster and probably bunch of other products we'll come up with too.

很难想到另一家拥有更令人兴奋的产品和技术路线图的公司。因此,人们对特斯拉在未来 10 年的发展前景极为期待。如果您回顾从 2010 年到今天的 10 年,我们的汽车产量约比 2010 年的产量增加了 1,000 倍,周产能达到 8,000 辆。此外,我们有太阳能屋顶, Powerwall 和 Powerpack 等产品。因此,考虑到 10 年后的前景我们将非常兴奋。

It's hard to think of another company that has more exciting product and technology roadmap. So super-fired up about where Tesla will be in the next 10 years. If you look back 10 years from today to 2010, we will produce approximately 1,000 times more cars in 2020 than we produced in 2010, 8,000 and we have also Solarglass and solar retrofit and Powerwall, Powerpack, all those things too. So where we will be in 10 years, very excited to consider the prospect.

扎卡里·科克霍恩 Zachary J.Kirkhorn (特斯拉 CFO)

过去的一年对特斯拉来说确实是变革性的一年,我要感谢所有参与实现这一目标的人。在 2019 年,我想强调一些要点。按需提供服务,尽管我们已经提到过几次,但值得再次强调,在一年过程中,我们已完全从生成 Model 3 订单从订单积压过渡到有效交付,创造新的有机的需求。

This past year was truly transformational for Tesla and I want to thank everyone who has been a part of making this happen. On 2019 a few key points I'd like to highlight. On demand, while we've mentioned a few times, it's worth highlighting once again. Over the course of the year we've transitioned entirely from generating Model 3 orders from a reservation backlog to generating new and organic demand.

在第四季度,我们还看到 Model 3 ASP 的稳定甚至在第四季度略有增加,并且在第二季度发布了更长续航版本的 Model S 和 X 车型后,ASP 出现增长。

We've also seen a stabilization of Model 3 ASPs even increasing slightly in Q4 and we've seen an increase in ASPs of S and X after the launch of the longer-range versions in Q2.

关于产能扩张,我们从弗里蒙特和里诺的 Model 3 的开发和发布中学到了很多经验。因此,我们能够更快地以更低的成本带来新的产能。这在上海工厂推出了 Model 3 以及在 Fremont 推出 Model Y,两者都不到一年的时间上得到了证明。

With respect to capacity expansion, we've greatly learned from the development and launch of Model 3 in Fremont and Reno.

As a result, we've been able to bring new production capacity on board faster and with less cost. This is evidenced by the launch of Model 3 in Shanghai, as well as Model Y in Fremont, programs that were both launched in under one year.

在财务上，我们已经展示了多个季度的强劲现金产生能力，实现了更高的交易量，资金使用效率的提高，营运资金管理的进步以及产品和运营成本的持续改善。基于这些原因，我们在 2019Q3 和 Q4 实现了 GAAP 准则下的正净利润，自由现金流创造能力强劲。

Financially, we have demonstrated multiple quarters of strong cash generation, enabled to higher volumes, improvements to capital efficiency, progress on working capital management and continued improvement in our product and operational costs. And we're able to achieve positive GAAP net income in both Q3 and Q4 for many of the same reasons that enabled strong cash generation.

通过实施高级连接和开始通过特斯拉移动应用程序进行购买的升级，我们在经常性和基于软件的收入方面也取得了进展。最后，基于股票的薪酬增加了 8200 万美元，这几乎完全由下一轮 CEO 津贴相关费用所驱动。这是由于我们改善了公司的预期财务业绩，而首席执行官的股票赠款也与之相关。

We've also made progress on recurring and software-based revenue with the implementation of premium connectivity and the beginning of upgrades available for purchase via the Tesla mobile app. Finally on stock-based compensation, it increased sequentially by \$82 million, driven almost entirely by an expense related to the next tranche of the CEO grant. This is a result of our improved, expected financial performance of the company, which the CEO stock grant is tied to.

展望 2020 年，这对公司而言将是重要的一年。我们未来的任务是执行下一阶段的增长，同时管理现金流以支持该增长。对于 Model Y，我们预计本季度晚些时候将首次交付且数量有限，并在之后的季度逐渐增加。如前所述，我们预测 Model Y 相比 Model 3 毛利率更高。

As we look ahead to 2020, this again will be an important year for the company. Our task ahead is to execute on the next phase of growth, while managing cash flows to support that growth. On Model Y, we expect first deliveries and limited quantities later this quarter and will ramp over subsequent quarters. As mentioned previously, we are forecasting higher gross margins on Model Y compared to the Model 3.

今年，对于上海建造的 Model 3，我们希望达到预设的生产和交付速度。此外，我们预计将在上海工厂和该地区实现大部分供应链本土化。这是降低生产成本最重要的组成部分之一。我们还看到本地制造的 Model 3 订单量很高，并将继续专注于提高产量和控制成本。我们还预计上海和柏林建造的 Model Y 的工厂建设将取得重大进展，这将导致资本支出持续增长。

This year for the Shanghai built Model 3, we expect to achieve run rate production and delivery rates. In addition, we expect to have completed the majority of plant supply chain localization at the factory or in the region. This is one of the most important components to achieve lower production costs for the site. We are also seeing strong order rates for the locally built Model 3 and remain focused on continuing the production ramp and managing costs. We also anticipate significant progress on factory construction of the Shanghai and Berlin built Model Y, which will result in continued increases in capital spending.

关于运营费用，预计 2020 全年会增加，以支持我们不断增长的产品线和国际影响力。但是，OpEx 的增长率应低于收入增长率。总体来说，我们相信这会使新的一年有更好的财务表现，有充足的现金流来支持与公司成长相关的投资决策，资产负债表更加出色。

On operating expenses, I expect an increase over the course of the year to support our growing product pipeline and international footprint. However, operating expense growth should increase at a lower rate than top line revenue. Overall, we believe this will set us up for a strongest annual financial performance yet, with sufficient forecasted cash flows to support investments related to our growth and further strengthening of our balance sheet.

对于第一季度，请记住，该行业总是受季节性因素的影响。此外，我们的两大主流车型（上海的 Model 3 和 Fremont 的 Model Y）产能正在不断爬坡，我预计这将暂时影响我们的利润率。

For Q1, please keep in mind that the industry is always impacted by seasonality. Additionally, we are in the process of ramping two major products Model 3 in Shanghai and Model Y in Fremont, which I expect will temporarily weigh on our margins.

我们还处于了解冠状病毒是否暂时性会影响我们的早期阶段。目前，由于政府要求工厂停产，我们预计上海制造的 Model 3 产能爬坡会延迟 1 到 1.5 周。这可能会稍微影响该季度的盈利能力，但由于上海工厂 Model 3 利润贡献仍处于早期阶段，影响有限。

We are also in the early stages of understanding if and to what extent we may be temporarily impacted by the Coronavirus. At this point, we're expecting a 1 to 1.5 week delay in the ramp of Shanghai built Model 3 due to a government required factory shutdown. This may slightly impact profitability for the quarter, but is limited as the profit contribution from Model 3 Shanghai remains in the early stages.

我们还将密切监视 Fremont 制造的汽车供应链是否会中断。到目前为止，我们还没有发现任何实质性内容，但请务必注意，这是一个不断发展的过程。但是，我们有足够的现金来继续我们的扩张计划，同时进一步加强资产负债表。

We are also closely monitoring whether there will be interruptions in the supply chain for cars built in Fremont. So far we're not aware of anything material, but it's important to caveat that this is an evolving story. However, we have more than sufficient cash to continue our expansion plans, while further strengthening the balance sheet.

投资者问答 Q&A

Q1:由于加利福尼亚州所有新住宅建筑都需要太阳能，因此您是否可以从任何加利福尼亚大型住宅建筑商那里获得任何可索性的 Solarglass Roof 订单。加利福尼亚州太阳能屋顶的安装数量到 2020 年的目标是什么？

Since solar is required for all new home constructions in California, do you have any substantial orders for Solarglass Roofs from any of the large California homebuilders that you can share. What's the 2020 target for the number of Solarglass Roofs installations in California?

Elon Musk:我确实承认，从一个很小的基础上，我保证我们的 Solarglass Roof 的需求和产量将呈指数增长。因此，很难预测今年将是什么，除了需求非常强劲之外，我们不仅通过特斯拉太阳能，而且还通过新的房屋建筑商以及整个屋顶行业（无论是北美）来开展工作每年约有 400 万个新屋顶。

Well, I think we do -- we are seeing mostly from a small base, exponential growth in demand and output for our Solarglass Roof. So it's difficult to predict what that will be this year except that the demand is very strong and we are working also not just through Tesla Solar Roof, but also through new homebuilders and through just the roofing industry in general, whether is in North America on the order of 4 million new roofs per year.

因此，这只是完善安装过程的一个问题，需要培训许多人员进行安装。但是随着时间的流逝，我希望新屋顶中的很大一部分能够以一种形式使用太阳能玻璃。这真的将是您的选择而且我认为人们会想要一个能产生能量的活动屋顶，它看起来不错，可以持续很长时间，这是我们想要的未来。因此，这将是一个重要的产品，但由于它是一个新产品，具有革命性的产品，并且有许多挑战需要克服，但这些挑战将克服，这将成为特斯拉的主要产品线。布法罗的工厂做得很好。

So, we see a lot of interest and so it's just a question of refining the installation process, getting lots of crews trained to do the installation. But over-time, I would expect a significant percentage of new roofs to be something to use solar glass in one form or another. It's really going to be your choice, do you want to roof that is alive with power or dead without. And I think people will want a live roof that generates power and it looks good and lasts long time and it's the future we want. So it will be a significant product but because it is a new one, quite revolutionary product and that there is a lot of challenges to overcome, but they will overcome and this will be a major product line of Tesla. And the Buffalo factory is doing great, so

yeah.

Q2:来自我们股东的第二个问题是，您会在完全自动驾驶技术成熟和保险条款允许车主在网络上开车之前，发布特斯拉打车服务网络 APP 吗？如果是的话，什么时候会发生？可能会先把加州的机场作为目标吗，同时也是增加超级充电站布局的好地方。

Second question from retail shareholders is, will you release the Tesla ride-hailing network app before full autonomy and change the terms of Tesla Insurance to allow owners to be drivers on the network. If so when will this happen? Might want to target California airport first, also good place to add Superchargers.

Elon Musk:所以我认为这是可能的，我们希望在一种类型的自动驾驶出租车之前启用汽车共享，因为可以在监管机构批准完全自动驾驶之前完成汽车共享。因此，这可能是我们在启用某种类型的机器人出租车之前启用的。

Well, I think it's -- probably will make sense to have like to enable car sharing in advance of the kind of sort of drive robotaxi fleet because the car sharing can be done before Full Self-Driving is approved by regulators. So it's probably something that we would enable before sort of robotaxi fleet is enabled.

Q3:下一个问题是有多多少加州的车主现在用的是特斯拉保险？2020 年特斯拉保险的目标是多少？什么时候开始利用车队的数据来降低覆盖的成本？

The next question from retail investors is how many California owners are currently insured with Tesla Insurance? What's the target for Tesla Insurance in 2020? When will you start to significantly leverage the data you have from the fleet to lower the cost of your coverage?

Zachary Kirkhorn:是的，因此特斯拉保险目前在加利福尼亚州可用。我们在此方面正在做的几件事，首先是将其扩展到其他地区，我们正在准备监管流程，准备流程以通过这些地点的监管流程。我们还在制定程序，以继续调整我们在加利福尼亚州的费率，由于保险业受到严格监管，因此还必须通过监管程序。这就是我们现在花时间专注于 Tesla Insurance 的地方。正如我们之前在这个领域中讨论的那样，这里有大量创新，正是要解决问题的意图，这里是使用我们的技术来降低费率。随着时间的流逝，这将被推广。

So Tesla Insurance is currently available in California. A couple of things that we're working-on on this front, the first is to expand it to other locations and we are preparing the regulatory processes, preparing our processes to go through the regulatory processes in those locations. We're also working on the processes to continue to adjust our rates in California, which also have to go through regulatory processes as insurance is quite heavily regulated. And that's where we're spending our time focusing on Tesla Insurance right now. There is a significant amount of innovation as we've discussed before in this space, exactly getting to the intent of what the question here is, using our technology to reduce rates and this will be rolled in over-time.

Q4:对于使用自动巡航系统的特斯拉车主而言，特斯拉保险会有折扣吗？

Will there be a discount for using Autopilot with our cars?

Elon Musk:是的，但是我认为，高程度的自动巡航系统使用是有意义的，它减少了保险的成本和受伤的可能性。因此，我认为随着时间的推移，保险将成为特斯拉的主要产品。人们花在汽车保险上的钱占汽车成本的比例非常高，就像您现在可以每月以 400 美元的价格租用一辆 Model 3 一样，但是在加利福尼亚，一个典型的车主将为此付出每月 \$ 100 到 \$ 200 的保险。

Right. But I think it would make sense for us to close-loop on higher use of Autopilot, it reduces the insurance costs as well as the probability of injury. So I think insurance is going to be I think quite a major product of Tesla over-time. The amount of

money that people spend on car insurance is like a remarkably big percentage of the cost of a car, like you can lease a Model 3 right now for \$400 a month, but a typical owner in California will be paying sort of between \$100 and \$200 a month in insurance.

因此，我们所谈论的是保险费用可能占汽车租赁成本的四分之一或二分之一。而且很多保险费用只是因为保险公司没有关于驾驶员的信息，也没有很好的方法可以在哪里提供反馈信息。关于保险费率与实际驾驶方式的反馈机制非常差，而我们可以实时进行。这是保险公司所没有的基本信息优势。

So we're talking about something which is maybe a quarter or two half of the cost of the lease of the car is insurance. And a lot of that insurance cost is just because the insurance companies don't have good information about the drivers and that there is no good way to provide feedback where it's a very poor feedback mechanism in terms of the insurance rates versus the actual way that the car is being driven, whereas we can do that in real time. It's a fundamental information advantage that insurance companies don't have.

Q5: 下一个问题是，您期望在 2019 年底之前在 FSD 上具有完整的功能。能否请您提供有关我们何时会看到此功能的更新？但对于终端用户，您打算在哪里改装 FSD 计算机以使其适应较旧的型号？

The next question is, you set expectations that you would be feature-complete on FSD by the end of 2019. Can you please provide an update on when will we see this -- but with end users, where are you in retrofitting the FSD computer to older models?

Elon Musk: 好吧，我的意思是，确切地说，我说我希望两个 FSD 都能在去年年底完成。我们已经很接近了，看起来我们可能会在几个月后完成功能。完整的功能就意味着它有一定的机会可以从家中去上班。所以我认为现在看来可能要几个月了。

Well, I mean, to be precise, I said I was hoping it would be feature-complete with both FSD by the end of last year. We got pretty close. It's looking like we might be feature-complete in a few months. The feature-complete just means like it has some chance of going from your home to work let's say with no interventions. So, that's -- it doesn't mean the features are working well, but it means it has above zero chance. So I think that's looking like maybe it's going to be couple of months from now.

关于自动驾驶和完全自动驾驶，并不十分明显的事情是，团队在改善自动驾驶的基本要素上做了多少工作。我认为，就像 Tesla 核心自动驾驶技术、Autopilot、AI 团队，取得了非常巨大的进步。

And what isn't obvious regarding Autopilot and Full Self-Driving is just how much work has been going into improving the foundational elements of autonomy. The -- like the core autopilots in Tesla or Autopilot software and AI team is just is I think very, very strong in making great progress. And we're only beginning to take full advantage of the Autopilot hardware and the FSD hardware.

因此，我认为消费者所看到的进步似乎非常快，但实际上，我真正想起的事情是我们拥有非常强大的基础软件。然后根本的事情转向了视觉计算和学习。因此，就标签学习而言，在所有八个摄像机中同时对视频进行标签。这确实就像标签效率提高了三个数量级一样。对于了解这一点的人来说，这是极其基础的，因此在这方面确实取得了很大的进步。

So I think it's -- the apparent progress, as seen by consumers, will seem to be extremely rapid, but actually what's really going on my head it seems like that is just having the foundational software be very strong and we've got really strong foundation. And then a really fundamental thing is moving to video training. So in terms of labeling, labeling with video in all eight cameras simultaneously. This is a really, I mean in terms of labeling efficiency, arguably like a three order of magnitude improvement in labeling efficiency. For those who know about this, it's extremely fundamental, so that's really great progress on that.

Q6: 既然大多散户投资者对特斯拉的见解比分析师要好，把个人很大一部分的财富放在特斯拉上，将更多的问题从我们之中选出不是更明智吗？您甚至还有必要回答分析师的问题吗？

Since most retail investors seem to understand Tesla better than analysts and are risking a larger part of their own personal wealth on Tesla. Doesn't it make sense to take mostly questions on these earnings calls from us via Say? Do you even have to

take questions -- answer questions from analysts?

Elon Musk: 好吧, 我想, 我们不必-我确实认为, 许多散户投资者实际上比许多大型机构投资者拥有更深刻, 更准确的见解, 而对我而言, 比许多分析师都具有更好的见解。他们可能会从这些预测中获得最高的准确性和非凡的洞察力。

Well, I guess, we don't have to -- I do think that a lot of retail investors actually have deeper and more accurate insights than many of the big institutional investors and certainly better insight than many of the analysts. It seems like if people really looked at some of the smart retail investor analysts and what some of the smart smaller retail investors predicted about the future of Tesla, you would probably get the highest accuracy and remarkable insight from some of those predictions.

Q7: 现在让我们转向机构股东问题。第一个问题是, 您之前曾说过, 上海每单位产能的资本支出要低 65%。从 OpEx 的角度来看, 您是否学会做得更好或有所不同? 如果是的话, 我们期望对长期毛利率产生什么样的影响?

Okay. So now let's switch to institutional shareholder questions. The number one question is, you have spoken previously about Shanghai Giga being 65% lower capex per unit of capacity. Have you learned to do anything better or different from an OpEx perspective? And if yes, what kind of impact might we expect on the long-term gross margin?

Zachary Kirkhorn: 是。上海工厂在 Model 3 的 COGS 所有项上都有相当出色的成本经验。我们已经谈论了很多关于 CapEx 容量较低的问题, 但是我的意思是, 您基本上可以在劳动力成本, 因本地化而产生的材料成本之间列出 COGS 的整个清单, 并开放那些从各州不具有经济意义的供应商。

Yeah. The Shanghai factory has been a quite remarkable cost experience across all line items of COGS for the Model 3 there. We have talked a lot about the capex that is capacity being lower, but I mean you can basically run down entire list of COGS between labor cost, material cost due to localization, opening up suppliers that would not have made economic sense from the states.

供应链本地化加上入库物流和出库物流成本, 因此我们不会将汽车从加利福尼亚运送到中国。然后, 可以相应地节省与进口相关的较低成本。股东函中有一张幻灯片, 显示了我们在加利福尼亚的弗里蒙特工厂与中国的 Model 3 工厂之间的布局比较, 可以明显看出流程的简化, 并通过布局的改变来节省设施运营费用。

Localizing the supply chain flows into inbound logistics and outbound logistics costs as well, so we're not shipping cars from California over to China. And then that has a corresponding savings on our lower import related costs. And there is a slide in the shareholder letter that shows the layout comparison between our Fremont facility here in California and also the Model 3 factory in China and the simplification in terms of the flow is pretty evident from that layout and that cascades itself into all sorts of savings for the operations of the facility.

因此, 如果将所有这些费用加起来, 我们的内部估算值将使中国的 Model 3 成本相对于 Fremont 大大降低, 但我认为, 牢记标准续航升级版的成本也很重要, 从上海销售的车辆成本要低于从弗里蒙特工厂销售的同类汽车。我在之前的财报电话会议上已说过这一点, 我认为可以预料, 上海工厂的利润率将与 Fremont 工厂的利润率相同。

And so if you add all of this up, our internal estimates are a pretty significant reduction in the cost of Model 3 in China relative to Fremont, but I think it's also important to keep in mind that the cost of the Standard Plus that we're selling out of Shanghai is also lower than that of the similar car coming out of Fremont from price perspective. And so and I've said this on previous earnings calls, I think it's fair to expect the margin coming out of the Shanghai facility to match the same margin for the vehicle in Fremont.

Elon Musk: 是的, 至少在客户所在的大陆上, 特斯拉仅通过制造汽车, 特别是负担得起的汽车 Model 3 和 Y, 就可以在很大程度上提高基本效率。这是有道理的-但我们要做的事情会发生, 过去在加利福尼亚制造汽车, 然后将其运送到世界各地的亚洲和欧洲真的很愚蠢。

Yeah. I feel there is a pretty big fundamental efficiency gain that Tesla has by just making cars, especially affordable cars than 3 and Y, at least on the continent where the customers are. It kind of makes sense. But what we're doing -- or have been doing in the past was really pretty silly in making cars in California and then shipping them halfway around the world to Asia and

Europe.

这造成了很多成本，因为你必须运送这些汽车，所以它们有很多制成品，坐在订单上或在港口等待，或者通过海关，就有了关税和运输。加州工厂的复杂性很高，因为对中国，北美和欧洲有不同的法规要求。

And this created a lot of cost, because you got to ship those cars, so they got lot of finished goods, sitting on the order or waiting at the port or going through customs, you got tariffs, transport. And then the factory complexity in California is very high, because you've got different regulatory requirements in China, North America and Europe.

因此，我们生产了三种不同类型的汽车，这非常复杂，仅在中国有一家工厂，在加利福尼亚有一家工厂，在欧洲有一家北美工厂。好吧，仅此一项就可以极大地提高我们的运营效率。现在，我认为这可能不完全被理解。

So we got three different types of cars that are being built, it's very complex and just having a factory in China or a factory in California or a factory in North America and a factory in Europe will -- just that alone is a massive improvement in our fundamental operating efficiency. That I think this may not be fully appreciated.

Q8:机构投资者的下一个问题是近期的股价走势，为什么不立即筹集资金并显著加快产量的增长，即建立超级工厂，对超级充电站和客户服务进行投资。

The next question from institutional investors is, given the recent run in the share price, why not raise capital now and substantially accelerate the growth in production, i.e., build the Gigafactories, investment in Supercharger and customer service?

Elon Musk: 好吧，我们实际上正在尽可能合理地花钱。因此，如果有任何明智的消费方式，我们会花钱。我看不出任何人为地抑制支出的现象。如果有任何创造明显价值的地方需要资金投入，答案是立即。但我认为我们在高效地花钱，没有人为地限制进度。尽管有这些，我们仍在产生正现金流量。因此，筹集资金没有任何意义，因为即使投资在增长，我们预计仍会产生足够的现金流。

Well, we're actually spending money as quickly as we can spend it sensibly. So if there's any sensible way to spend money, we're spending it. There is no artificial hold back on expenditures. Anything that I see that is what looks like it's got good value for money, the answer is yes immediately. But we're spending money I think efficiently and we're not artificially limiting our progress. And then despite all that we are still generating positive cash. So in light of that, it doesn't make sense to raise money because we expect to generate cash despite this growth level.

Zachary Kirkhorn:是的，我完全同意。我认为我们在 Model 3 推出期间的一些学习经历使我们成长太快且过于复杂。它阻碍了我们继续扩展的能力，而我们在 2019 年一直在进行旅程的一部分，凸显了一系列无意的过程，即该过程是随着时间的推移在公司中积累的。

Yeah, I completely agree with that. I think some of our learnings during the Model 3 launch period where we grew too quickly and with too much complexity and it held back our ability to continue to scale and part of the journey that we've been on in 2019 is to underline a series of unintentional bad processes that kind of accumulated in the company over-time.

因此，随着我们变得更加精明，这就是导致一年中运营支出减少的原因。现在，我们已经奠定了良好的基础，我认为并且我也同意您的看法，即我们没有阻碍增长。我的意思是我们有两种产品，两种汽车产品目前正在投放市场，这将消耗公司的大部分资金，以在一年中稳定这些产品。然后展望明年，我们将推出更多产品和更多工厂。因此，我们在如何以可持续的方式花钱和增长上需要保持睿智。因此，我们不会成为一年半前犯的错误的受害者。

And so that's kind of what contributes to the reduction in OpEx over the year as we get smarter about that. And now we've laid a good foundation and I think and I agree with you on that we're not holding back on the growth. I mean we have two products, two vehicle products launching right now and that will consume much of the bandwidth of the company to stabilize

those over the course of the year. And then looking into next year, we have even more products launching, more factories. So we want to be smart about how we spend money and grow in a way that's sustainable. So we don't fall victim to the mistakes I think we made a year and a half or so ago.

Q9:我们能否从增长与毛利润的增长方面谈谈成本控制和运营支出的可持续性。我们如何实现最新的 OpEx 趋势? 随着车辆和地域覆盖面的增加, 应如何考虑 OpEx 的需求?

The following question would be, can we please talk about cost control and OpEx sustainability in terms of growth versus gross profit growth. How did we achieve the recent OpEx trends and how should we think about OpEx needs as we grow both vehicles and geographic workloads?

Zachary Kirkhorn:从第三季度到第四季度, 我们确实看到了运营费用的增加, 甚至不包括基于股票薪酬的部分。它将支持 Model Y 计划以及上海计划。因此, 我认为作为一家公司, 我们取消了许多不正确的流程, 包括使事情自动化需要自动化。我们将继续这一过程。但是我认为我们现在正处于一个阶段, OpEx 至少会开始增长以支持我们的全球扩张及公司的发展。我们的目标在于使营业费用(OpEx)的增长远低于营收的增长, 以改善经营杠杆, 这是我们非常关注的一点。

We did see an increase in operating expenses from Q3 to Q4, even excluding the portion of that attributed to stock-based compensation. And when you double click into that growth, it's supporting the Model Y program and also Shanghai program as well. And so I think we as a company are now at the point where we've learned a lot on cost efficiency as I've just mentioned and we've unwound a number of the processes that were not in the right place including automating the things that need to be automated. And we'll continue on that journey. But I think we're at a point now where OpEx will start to tick up at least if you look annually from 2019 to 2020 to support our international footprint and then the growth of the Company. It -- our job is to grow that significantly slower than the pace of growth of revenue to improve the operating leverage, which we're very, very focused on.

Q10: 机构投资者的最后一个问题是, Model S 和 Model X 的销量已经持平了几个季度, 主要原因是他们仍然使用 18650 电池。自此以后, S&X 将使用 21700 电池, 其制造能力为 18650, 可用于电池存储系统。

And the last question from investors is the sales of Model S and X have stayed flat for several quarters, the main reason is that they still use 18650 batteries. When will S and X use 21700 batteries? Manufacturing capacity of 18650 may be used for battery storage systems instead.

Elon Musk:好吧, 实际上, 多年来, 18650 电池内部的核心化学性质已多次改进。因此, 与核心技术相比, 它实际上是外形尺寸。所以, 我认为我们对这两种车辆的能量含量, 售后以及效率的提高感到非常满意。例如, Model S 续航能力正在迅速接近 400 英里, 实现该目标就在不久之后。

Sure. Well, actually the core chemistry inside the 18650 cell has improved many times over the years. So, it's really just a form factor as opposed to a core technology. So it's -- yes, I think we're pretty happy with where the -- with the energy content of the cell and the improvements in efficiency of the vehicle. The -- we're rapidly approaching a 400 mile range for Model S, for example. So, this is -- it won't be long before Model S is 400 -- has 400 mile range

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