Agenda

- How are financials reported?
- Cash flow & P&L
- Unit modeling -- building blocks
- Operational Optimization
- Related career paths
Company financials

What is typically reported during an earnings call?

• Profit and Loss statement
• Balance sheet
• Cash flow

I will be focusing on cash flow and P&L statements. Balance sheets are snapshots of cash positions within a business.
What is typically reported in a P&L statement?

- Revenue
- Cost of Revenue
- Gross profits/losses
- Operating expenses
- Net profits/losses
- Earnings per share
## Example P&L

**FINANCIAL SUMMARY**  
(Unaudited)

<table>
<thead>
<tr>
<th>($ in millions, except percentages and per share data)</th>
<th>Q2-2020</th>
<th>Q3-2020</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Automotive revenues</td>
<td>5,179</td>
<td>7,611</td>
<td>9,314</td>
<td>9,002</td>
<td>10,206</td>
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</tr>
<tr>
<td>of which regulatory credits</td>
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<td>397</td>
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<td>Automotive gross margin</td>
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<td>28.4%</td>
<td>298 bp</td>
</tr>
<tr>
<td>Total revenues</td>
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<td>Total GAAP gross margin</td>
<td>21.0%</td>
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<td>Operating expenses</td>
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• Product lines
  • Production capacities
  • Storage costs
  • Start up costs
  • Demand curves
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  - Expected revenue & cost per unit
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• Product lines
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  • Storage costs
  • Start up costs
  • Demand curves
• Unit economics of each product line
  • Expected revenue & cost per unit
• Cash flows associated with product line
  • How are revenue lines/cost lines distributed over time?
# Product Production Summary

## Operational Summary

(Non-audited)

<table>
<thead>
<tr>
<th></th>
<th>Q2-2020</th>
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<th>Q2-2021</th>
<th>YoY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model S/X production</td>
<td>6,326</td>
<td>16,992</td>
<td>16,097</td>
<td>0</td>
<td>2,340</td>
<td>-63%</td>
</tr>
<tr>
<td>Model 3/Y production</td>
<td>75,946</td>
<td>128,044</td>
<td>163,660</td>
<td>180,338</td>
<td>204,081</td>
<td>169%</td>
</tr>
<tr>
<td><strong>Total Production</strong></td>
<td>82,272</td>
<td>145,036</td>
<td>179,757</td>
<td>180,338</td>
<td>206,421</td>
<td>151%</td>
</tr>
<tr>
<td>Model S/X deliveries</td>
<td>10,614</td>
<td>15,275</td>
<td>18,966</td>
<td>2,030</td>
<td>1,895</td>
<td>-82%</td>
</tr>
<tr>
<td>Model 3/Y deliveries</td>
<td>80,277</td>
<td>124,318</td>
<td>161,701</td>
<td>182,847</td>
<td>199,409</td>
<td>148%</td>
</tr>
<tr>
<td><strong>Total Deliveries</strong></td>
<td>90,891</td>
<td>139,593</td>
<td>180,667</td>
<td>184,877</td>
<td>201,304</td>
<td>121%</td>
</tr>
<tr>
<td>of which subject to operating lease accounting</td>
<td>4,716</td>
<td>10,014</td>
<td>13,636</td>
<td>13,602</td>
<td>14,492</td>
<td>207%</td>
</tr>
<tr>
<td>Total end of quarter operating lease vehicle count</td>
<td>54,519</td>
<td>61,638</td>
<td>72,089</td>
<td>83,032</td>
<td>95,491</td>
<td>75%</td>
</tr>
<tr>
<td>Global vehicle inventory (days of supply)&lt;sup&gt;(1)&lt;/sup&gt;</td>
<td>17</td>
<td>14</td>
<td>11</td>
<td>8</td>
<td>9</td>
<td>-47%</td>
</tr>
<tr>
<td>Solar deployed (MW)</td>
<td>27</td>
<td>57</td>
<td>86</td>
<td>92</td>
<td>85</td>
<td>215%</td>
</tr>
<tr>
<td>Storage deployed (MWh)</td>
<td>419</td>
<td>759</td>
<td>1,584</td>
<td>445</td>
<td>1,274</td>
<td>204%</td>
</tr>
<tr>
<td>Store and service locations</td>
<td>446</td>
<td>466</td>
<td>523</td>
<td>561</td>
<td>598</td>
<td>34%</td>
</tr>
<tr>
<td>Mobile service fleet&lt;sup&gt;(2)&lt;/sup&gt;</td>
<td>816</td>
<td>833</td>
<td>894</td>
<td>1,013</td>
<td>1,091</td>
<td>34%</td>
</tr>
<tr>
<td>Supercharger stations</td>
<td>2,035</td>
<td>2,181</td>
<td>2,564</td>
<td>2,699</td>
<td>2,966</td>
<td>46%</td>
</tr>
<tr>
<td>Supercharger connectors</td>
<td>18,100</td>
<td>19,437</td>
<td>23,277</td>
<td>24,515</td>
<td>26,900</td>
<td>49%</td>
</tr>
</tbody>
</table>
Revenue and costs associated with selling a product might not be incurred at time of sale alone.
Time nature of line items

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The problem of defining when cash flows need to be recognized is the purview of accounting -- called GAAP. Non-GAAP numbers might have regulatory issues when disclosing to shareholders.
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Example: Insurance
What comes out of modeling the cash flow?

Cash flow over time for product after consummation

<table>
<thead>
<tr>
<th>Revenue</th>
<th>Costs</th>
<th>Gross Profit ($)</th>
</tr>
</thead>
</table>
| - Premiums  
- Commissions | - Claims  
- Payments |                   |

Month 1 | Month 2 | Month 3
---|---|---
Revenue  
- Premiums  
- Commissions | Revenue  
- Premiums  
- Commissions | Revenue  
- Premiums  
- Commissions |
Costs  
- Claims  
- Payments | Costs  
- Claims  
- Payments | Costs  
- Claims  
- Payments |
Gross Profit ($) | Gross Profit ($) | Gross Profit ($) |
What do we need to model? Ex. Insurance.

- Revenue
  - Pricing: Premiums that can be expected per unit sale
  - Commissions: Channels and market dynamics
What do we need to model? Ex. Insurance.

- **Revenue**
  - Pricing: Premiums that can be expected per unit sale
  - Commissions: Channels and market dynamics

- **Costs**
  - Payment collections: Network and processor costs
  - Claims: Average claims over time once purchased.

These models typically will have analogues that are deployed in funnel which decision in real time as well.
Operational optimization

Given target P&L statements, we need to set up an optimization problem that takes the following as inputs:

• Target P&L over a certain set of future time periods
• Constraints
  • Examples: cost line items not going above a threshold or cash balances which are above a threshold.
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- Target P&L over a certain set of future time periods
- Constraints
  - Examples: cost line items not going above a threshold or cash balances which are above a threshold.

The output typically needs to be:

- Possible optimal production numbers for product lines in future time periods -- i.e. optimal scenarios.

There might actually be no solution as well.
# Uplift’s P&L -- Revenue

<table>
<thead>
<tr>
<th>Category</th>
<th>Account</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>Consumer revenue</td>
<td>Interest Revenue</td>
<td>Charge-off Interest</td>
<td>Origination Fees</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Net Consumer Revenue</td>
<td></td>
</tr>
<tr>
<td>Merchant Rev</td>
<td>Merchant Revenue</td>
<td>Subvention Revenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Net Merchant Revenue</td>
<td></td>
</tr>
<tr>
<td>Total Revenue</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Revenue</td>
</tr>
<tr>
<td>Provisions for credit losses</td>
<td>Fair Value Adjustment</td>
<td>Charge-off Principal</td>
<td>Provision for credit losses</td>
<td>Recoveries</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------</td>
<td>-----------------------</td>
<td>----------------------</td>
<td>-----------------------------</td>
<td>------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding Costs</td>
<td>Interest Expense</td>
<td>Facility Amortization - Capital</td>
<td>Utilization Fees</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Processing and Servicing</td>
<td>Bank Origination Costs</td>
<td>Credit Bureau</td>
<td>Fraud Tools</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bank Verification</td>
<td>Payment Issuing Costs</td>
<td>Merchant Acquiring Costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Third Party Collections</td>
<td>Loan Servicing Software</td>
<td>Customer Service Costs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Verification Services</td>
<td>Intangible Funding Variances</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales &amp; Marketing</td>
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<td>Product &amp; Engineering</td>
<td>General &amp; Administrative</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Operating Expenses</td>
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<td>Other Income</td>
<td>Net Income (Loss)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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**Total Provisions For Credit losses**

**Total Funding Costs**

**Total Processing and Servicing**

**Net Income (Loss)**
What do we need to model? Ex. Uplift

Revenue
- Pricing
- Interest accruals over time
- Merchant pricing and risk
- Interchange through card networks

What about costs?
What aspects of data are important?

• Data for as many items in the P&L as possible at a reasonable cadence.
  • Reasonable depends on industry sector -- Tech companies would mostly be every few minutes or seconds. A hard drive manufacturer might be daily.
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• Reliability and QA of data pipelines.
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• Reliability and QA of data pipelines.
• Analytical metrics and dashboarding/monitoring.
• Models -- could be ML based or other stochastic/predictive models.
  • Could be used to estimate financials, but also live in funnel decisioning.
• Model deployment and lifecycle management.

There are a plethora of roles supporting such a cross company endeavor typically.
Career tracks in data

Specialist (Type B):
• Data engineering/infrastructure
• Machine learning researcher
• Machine learning engineer

Generalist (Type A)
• Data Scientist
• Data Analyst
• Business intelligence

My path started with the Generalist track -- took on more responsibilities infrastructure and business modeling.
What do you need to know?

- Business knowledge -- Not important to know when you join, but critical to learn to progress in any company.
- Convex optimization, linear programming, operations research - [Book 1], [Book 2], [Course].
- Classification/Regression modeling - [Book 1], [Book 2].
- Probability & Stochastic processes - [Book 1], [Book 2].
- Information theory - [Book 1].
- SQL querying and dashboarding - [Link 1], Looker, Tableau.
- Basics of data structures and object oriented programming. - Even if you don’t deploy production level code, you need to learn how to read code and understand it along with the data architecture.
Questions?

Thank you!