Webscale Playbook: Baidu

R&D binge to continue as Baidu banks on long-term bets in AI and autonomous vehicles for competitive edge

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Latest Earnings Results (3Q18) – Key Takeaways

Baidu's healthy topline growth could slowdown in 4Q amid tightened regulations and trade war. Net earnings were strong in 3Q18, aided by non-core divestments

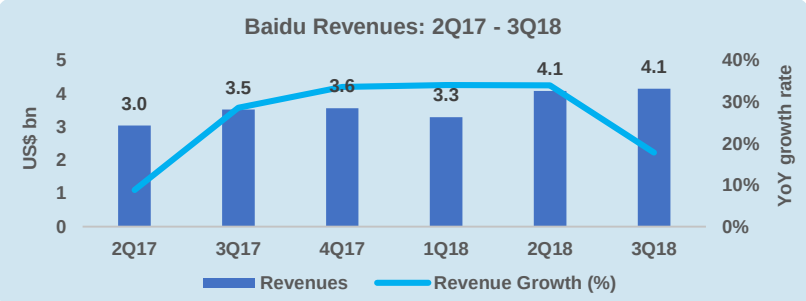
Key Takeaways

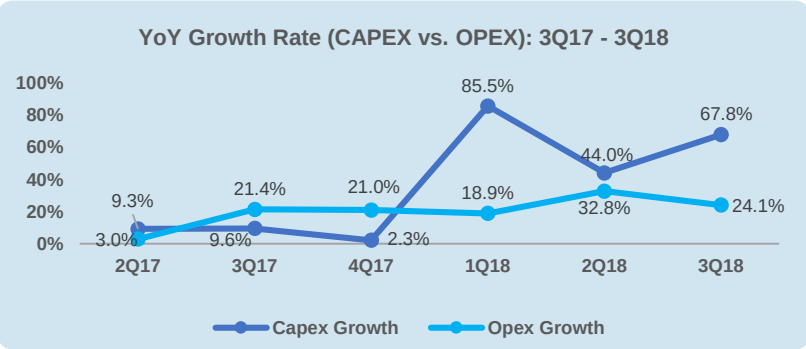
Revenue tops expectations but with looming uncertainty

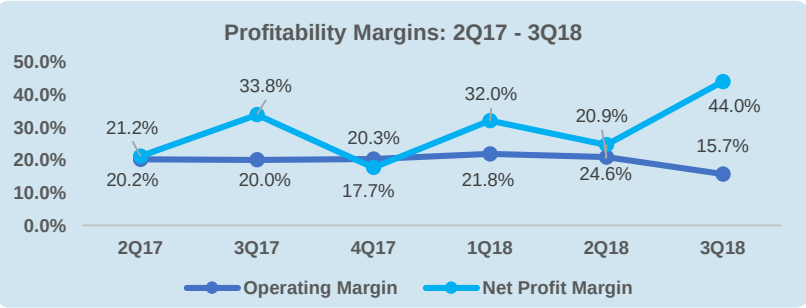
YoY spending has been lumpy

Solid net margins aided by 'other income'

Trend







Analysis

- Baidu's revenues grew 17.8% YoY (20.1% in local currency terms) in 3Q18 to post $4.1 billion, beating analyst expectations of $4.04 billion
- Increased advertiser adoption of Baidu's news feed service, along with subscriber growth in video, helped drive higher-than-expected 3Q revenues
- Going into 4Q, Baidu's topline will have to weather the impact of stiff regulations such as the deferral of new online game licenses and measures to censor undesirable/misleading content, coupled with uncertainty over the US-China trade spat

- On a YoY basis, both spending lines witnessed uneven growth over the last six quarters, with capex jumping more out of the two due to discrete asset acquisitions. Opex YoY growth remained in the narrower range of ~20%-30% annual growth.
- Content costs related to its video service along with traffic acquisition and R&D costs have largely driven opex. Baidu's greater focus on AI ventures could spike R&D investments in the medium term.
- Capex spend has mostly been on upcoming cloud data centers in Shanxi and Chongqing, and new office building construction in Shenzhen

- Operating margins have been mostly consistent despite slipping slightly in 3Q18, while net profit margins see-sawed throughout the past six quarters to post the best margins at 44% in 3Q18
- Non-operating gains from the disposal of financial services and Global Du businesses lifted net margins in 3Q18
- Operating margin in 3Q18 was, however, impacted by disproportionately high growth in cost of revenues and R&D investments

Source: Company Quarterly Reports; MTN Consulting analysis

Project "Apollo": Baidu's Big Bet in Autonomous Vehicles

Positioned as the "Android of self-driving technology", Baidu is going all out in the autonomous vehicles space with big R&D projects and a broad network-partner ecosystem supporting its "Apollo" self-driving platform

Semiconductor Vendors

- Baidu has formed alliances with major chip and semiconductor OEMs to assist in building autonomous vehicles under its Apollo program
- This includes NVIDIA, Intel, NXP Semiconductors, ON Semiconductor, and Infineon Technologies
  - Baidu uses NVIDIA's Drive PX 2 AI supercomputer and NVIDIA Tesla GPUs to power its self-driving vehicles
  - Baidu deploys computer vision hardware and software from Intel's subsidiary Mobileye; this develops visual perception solutions for autonomous vehicles under Mobileye's Responsibility Sensitivity Safety (RSS)
  - NXP will provide millimeter wave radar, security and smart connectivity
  - Infineon will provide microcontrollers, sensor chips and information-security products

Hardware Component Suppliers

- Baidu has key partnerships with automotive hardware component vendors such as Bosch and Continental to develop autonomous driving technology and intelligent mobility services
  - Bosch will provide sensors and other hardware components along with vehicle localization support for Baidu's Apollo platform
  - With Continental, Baidu will explore collaboration areas such as sensor systems and software for Baidu's Apollo platform including AI, cyber security and connected cars
- Other key partnerships with hardware component vendors include Delphi (for sensor components); TomTom, AutoNavi and NavInfo for GPS and navigation systems
- Baidu also has a $150M joint investment with Ford ($75M each) in Velodyne LiDAR for lidar sensor components used in driverless vehicles

Launched in April 2017, Baidu's Apollo project is an open source platform for autonomous driving software – similar to Google's open software platform for mobile OS "Android". It comprises three parts: an open-software platform, a cloud service platform, and localization

Operating System Vendor

- Baidu will bundle BlackBerry's QNX vehicle operating system into its Apollo self-driving car platform
  - The partnership includes integrating BlackBerry's more established in-car entertainment software into Apollo
  - Also as part of this, BlackBerry will integrate Baidu's CarLife, a smartphone integration software for connected cars, along with high definition maps to operate on the BlackBerry QNX Car (Infotainment) Platform
- This is Baidu's second operating system for its Apollo platform – it already runs on a Linux-based ROS (Robot Operating System) supporting C++ and Python, providing localization (a comprehensive positioning solution) and basic controls

Cloud Partner

Baidu partnered with Microsoft to use its global cloud scale for the technical development and adoption of its self-driving vehicles

- As part of this collaboration, Microsoft will provide its cloud services (Azure) to companies using Baidu's self-driving platform outside China
- This makes sense for Baidu, as it has its own cloud resources for Apollo within China through owned data centers & partnerships
- The lack of this computational and processing power outside China could make it tough for Baidu to take on the likes of Alphabet's Waymo and Uber's self-driving initiative. Tapping Microsoft would help Baidu counter that
- Furthermore, Microsoft's global scale could allow Baidu to take its Apollo platform anywhere in the world, enabling more widespread adoption opportunities

Source: Company Website; Press Articles; MTN Consulting analysis