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Outperforming in the Evolving China Express Industry

China's express industry is largely evolving along with e-commerce development, led by e-commerce players. We believe intra-city express is prospering, providing ventures opportunities, as traditional players are not actively evolved. We expect Cainiao (privately owned) to improve its bargaining power in the express industry by strategic layout in technology, logistics solution e.g. storage for both B2B and B2C, last-mile solutions. We think M&A should consolidate and grow China's express firms. We like ZTO (ZTO US, BUY, TP\$19, covered by Ella Ji and Nicky Ge) for its efficient operation and balanced network with market share gain potential.

China's express industry follows the steps of e-commerce, with intra-city express demand rising

China's express industry largely depends on e-commerce dynamics. BABA (BABA US, BUY, TP\$128, covered by Ella Ji), as the largest client in the industry, should lead the industry's development. China's e-commerce industry has restructured from era 1.0 C2C to the 2.0 era of B2C/B2B2C and then to the 3.0 era of O2O (Online to Offline), which facilitates the intra-city express market. We expect the intra-city e-commerce parcels business to rise and increase its weight in total parcel volume from 14% in 2016 to 27% in 2020, providing new opportunities for national-scale and intra-city logistics firms, e.g. take-out O2O platforms.

Less labor, more technology is key for the profitability of the express industry

Labor is the largest cost item, accounting for 50% of the total cost bucket. Express players need to improve the operating efficiency of the whole network. We believe 1) Cainiao plays a key role in operating efficiency improvement for the express industry by its big data, electronic waybill and franchised last-mile stations. 2) Labor problems may be alleviated by breaking the borders of different express forms, e.g. intra-city, take-out O2O and express.

Expecting abundant M&A opportunities across the industry

Compared with developed markets, China's express market is still at an early stage and requires further development in service diversification, geographic expansion and business-line expansion to take the express market to the next level. We expect China's express players to take the same path as global leaders by crossing into other logistics areas through M&A. In our view, B2B logistics and the intra-city express opportunities should create strategic synergies for express players.

Network stations are on a survival threshold which may be the best timing for companies like ZTO to gain market share

Our tour checks shows that network stations in top-tier cities are earning by a thin margin or suffering losses when locations are not optimal. High ASP commercial parcels and headquarter subsidies are major profit composites. We believe this survival threshold offers a good opportunity for ZTO gain further market share for its more balanced profit-sharing mechanism and improving operating efficiency.

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PLEASE SEE ANALYST CERTIFICATION(S) AND IMPORTANT DISCLOSURES BEGINNING ON APPENDIX A

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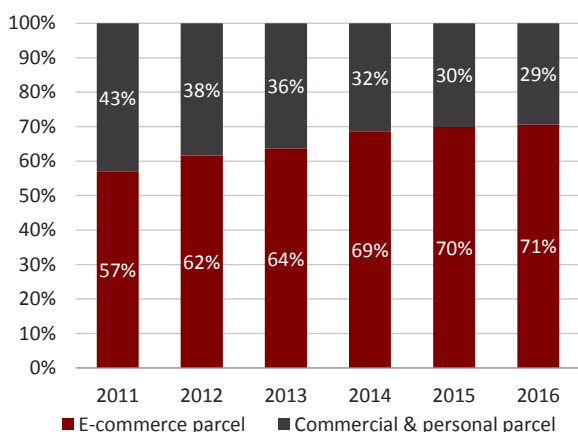
ERRATUM: Due to a technical problem, the member-related conflict of interest disclosures and the "Global Products, jurisdiction and distribution" sections of Appendix A were left off this report. We are re-circulating this corrected report which now includes these disclosures.

China's Express Is Stepping into a New Era

A fragmented market with two segments

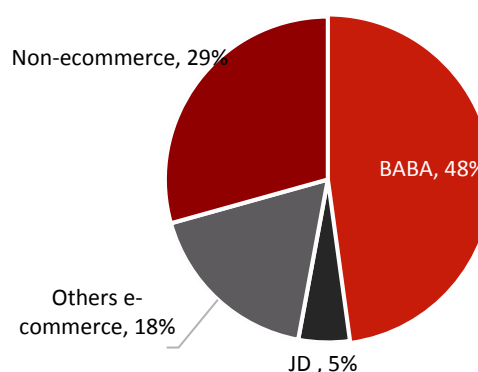
China's express market is fragmented into two segments: the e-commerce market, and the commercial & personal parcel market. These two express markets have different characteristics. E-commerce parcel clients are price sensitive with large-parcel volume e.g. clients like Taobao (the largest C2C online retailing platform in China, according to iResearch) merchants. Commercial or personal senders are less sensitive about price but prefer premium service quality. Despite that players in both markets have some overlap in the business, we think the competition among players from the two markets is largely separate. We expect one giant express company to emerge out of each of the two express markets.

Exhibit 1. China Express Parcel Mix



Source: Statistics Bureau of China, CRSHK, BABA, JD, ZTO reports

Exhibit 2. China Express Parcel Breakdown (2016)



Source: CRSHK, iResearch, BABA, JD, ZTO reports

E-commerce is the main demand for the express industry. We estimate the e-commerce parcel business to account for 71% of the express parcel market in 2016. Led by the e-commerce market, China's express industry is evolving as the e-commerce space restructures itself, especially along with Alibaba (BABA US, BUY, TP\$128, analyst Ella Ji) as the largest client for express firms, accounting for 48% of express parcels in 2016 according to the State Post Bureau of China and our calculations. Different e-commerce structures require different express infrastructures. We discuss the structure reform of e-commerce and its correspondingly required express infrastructure and service. We believe intra-city express services should benefit by further e-commerce penetration.

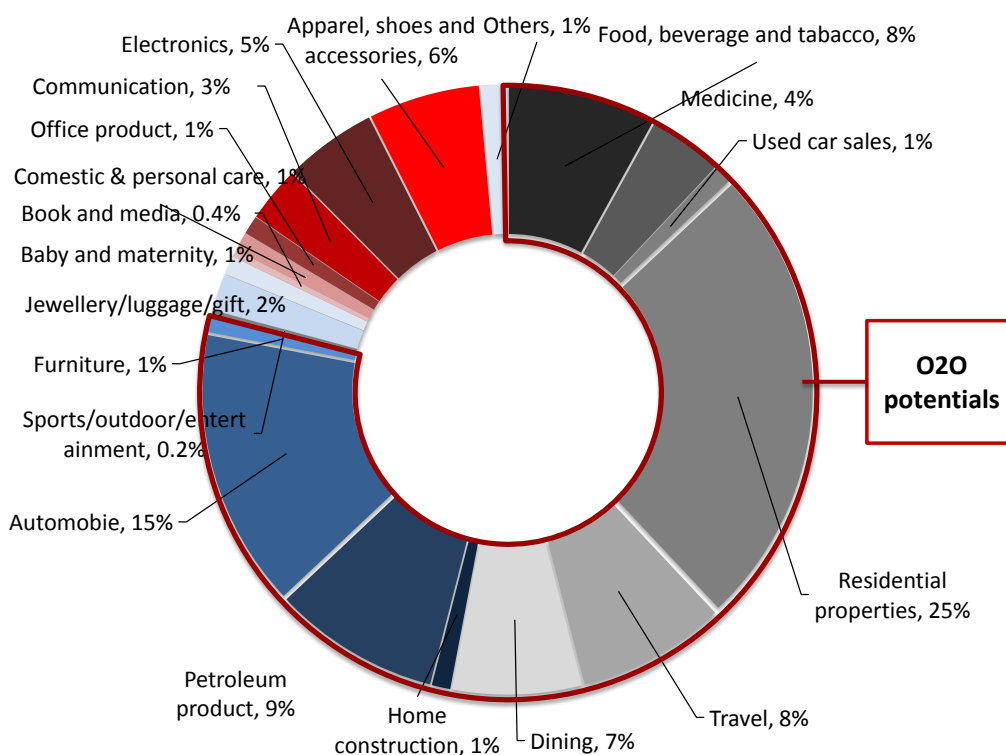
The structure reform of China's E-commerce from C2C to B2C/B2B2C and then to O2O

China's e-commerce began with C2C in 2003 with abundant SME (small and medium enterprises) and a low entry barrier. As some B2C/B2B2C players like Tmall, JD (JD US, BUY, TP \$43, analyst Ella Ji) and Vipshop (VIPS US, HOLD, TP\$14, analyst Nicky Ge) developed skills in e-commerce operation, B2C/B2B2C

began to emerge. Branded merchandise followed SME's steps and became e-commerce friendly. B2C/B2B2C delivered the robust growth of a 67% 2011-2016 CAGR. In 2015, B2C took C2C in terms of GMV with 42% market share in online retailing.

As e-commerce has penetrated consumer electronics, home appliances, apparel, cosmetics, and baby & maternities, e-commerce began pitching "high-hanging fruit" categories, e.g. fresh food, FMCG, residential properties, auto, gasoline, medicine and dining. This e-commerce penetration into these categories requires either governmental approval, e.g. licensing is required for medicine distribution, or offline support, including housing and vehicle purchasing, and dining.

Exhibit 3. China's Social Consumption Mix (2015)



Source: Statistics Bureau of China, CRSHK

In the meantime, omni-channel distribution has become key in new retailing, requiring both online and offline inventory to integrate as one. Under this new retailing mode, merchandise purchased online can be shipped from nearby offline stores, e.g. within 3 miles of the consumer. Brand sellers can benefit from this inventory integration for faster inventory turnover and less inventory storage separately for online distribution channels. Together with O2O (Online to Offline), we call this e-commerce stage era 3.0.

Exhibit 4. The Structure Reform of China E-commerce

(USD:RMB=6.9)

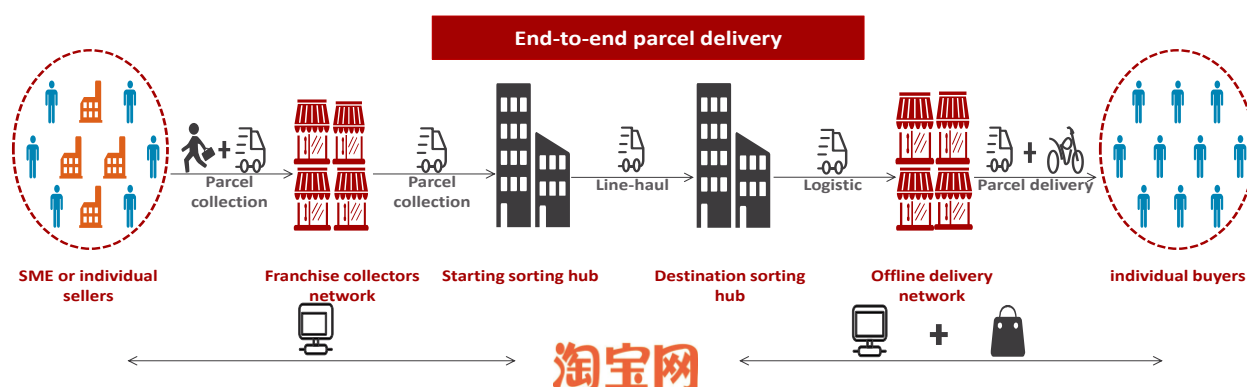
RMBbn	2011	2012	2013	2014	2015	2016E	2017E	2018E	2019E	2020E
China retail	18,392	20,717	23,438	26,239	29,125	31,757	34,467	37,237	40,043	42,860
Y-Y (%)	17%	13%	13%	12%	11%	9%	9%	8%	8%	7%
Online retail incl. O2O	1,057	1,558	2,378	3,451	4,698	5,804	6,938	8,090	9,144	10,039
% of China retail	6%	8%	10%	13%	16%	18%	20%	22%	23%	23%
Y-Y (%)	72%	66%	41%	45%	36%	24%	20%	17%	13%	10%
Online retail segments										
B2C/B2B2C	202	415	768	1,263	1,980	2,599	3,226	3,848	4,425	4,956
C2C	591	785	1,132	1,537	1,820	2,101	2,374	2,652	2,891	3,035
O2O	264	358	478	651	898	1,104	1,338	1,590	1,829	2,048
Online retail y-y growth										
B2C/B2B2C	207%	93%	65%	65%	57%	31%	24%	19%	15%	12%
C2C	46%	57%	29%	36%	18%	15%	13%	12%	9%	5%
O2O	364%	36%	34%	36%	38%	23%	21%	19%	15%	12%
Online retail breakdown										
B2C/B2B2C	19%	27%	32%	37%	42%	45%	46%	48%	48%	49%
C2C	56%	50%	48%	45%	39%	36%	34%	33%	32%	30%
O2O	25%	23%	20%	19%	19%	19%	19%	20%	20%	20%

Source: CRSHK, iResearch * O2O includes online travel, dining, education, hotel, entertainment, wedding, maternity/baby, beauty services.

Era 1.0: Franchise network partnership fits China at C2C stage

The rise of the network partnership business model is not a coincidence, but a result of the C2C driven e-commerce structure, in which sellers are mainly fragmented and diversified SME or individuals, e.g. there are ~10mn sellers on Taobao/Tmall. A C2C e-commerce structure requires wide and full geographical coverage of sellers and also buyers. Compared with a US direct-owned business model like Fedex (FDX US, not covered) and China's SF Express, which have heavy overhead cost burdens, the network partnership business model should encourage parcel collectors to grow their businesses through a profit-sharing mechanism, and thus expand more easily and faster. Parcel collectors have the flexibility to negotiate and decide how much to charge e-commerce sellers. The franchised network partnership business model is derived from the structure of e-commerce in China to meet the fragmented needs of more than 10mn SME and even individual sellers on e-commerce platforms.

Exhibit 5. The C2C Based End-to-End E-commerce Parcel Delivery Process



Source: CRSHK, Taobao.com

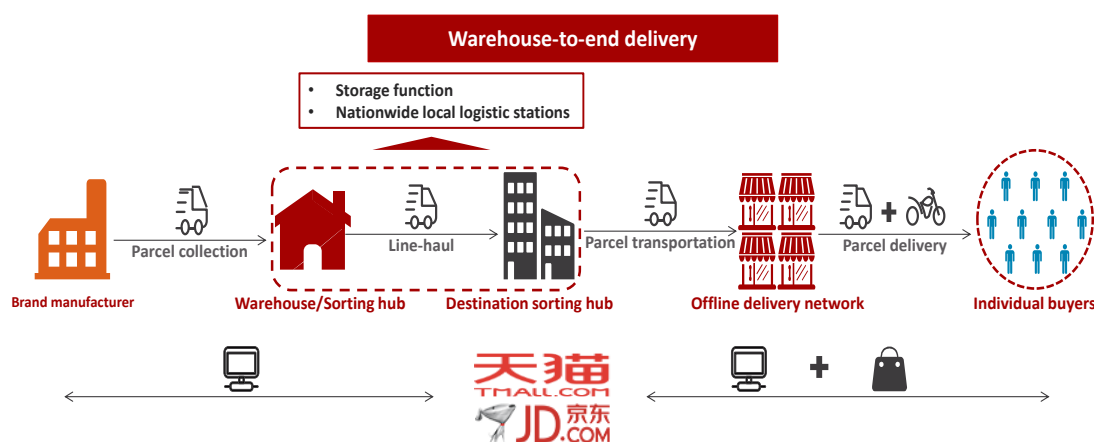
Era 2.0: The e-commerce B2C era is calling for a one-stop “storage +delivery+ B2C logistics” solution

The e-commerce space has facilitated many SMEs so they can become branded manufacturers and lift their businesses to a larger scale. Taobao brands are examples of this. In the meantime, brand merchants have begun to accept online retailing as an increasingly important distribution channel. Chinese consumption upgrades also facilitated consumption on branded consumer goods. As the e-commerce structure changes from C2C-focused to B2C/B2B2C-focused, the express industry likely will face new challenges in order to cater to the needs of branded sellers or larger-scale clients.

Branded sellers or larger scale clients require upgraded services from express players. We outline the main demands from these rising sellers:

- 1) Inventory management assistance, i.e. storage is a main service item for branded or large scale sellers.
- 2) B2B Logistics needs, i.e. manufacturers with both an online and brick & mortar presence need to allocate their merchandise to local storage places nationally.

Exhibit 6. The B2C/B2B2C Based Warehouse-to-end Parcel Delivery



Source: CRSHK, Tmall.com, JD.com

We think “storage + delivery + B2B logistics” services should increase due to the demand from sellers that are growing their businesses through e-commerce distribution. Express companies need to reform their businesses in order to cater to this trend or they may lose their clients. ZTO, for example, has started to factor in storage capacity when building its sorting hubs.

On this matter, Cainiao also provides a storage warehouse network and provides an integrated logistic solution for merchants. Cainiao acts as a SaaS (Software-as-a-Service), which integrates different service providers for merchants, e.g. pickup, across-town transportation, storage, secondary packaging, last-mile delivery, returns management and corresponding software services. Notably, as different types of goods may largely differ in the requirement of storage, Cainiao has specially designed different storage solutions accordingly, which currently cover

seven categories: 3C electronics, fresh food, cosmetics, FMCG, household appliances, clothing and home decorations.

Exhibit 7. Express Firms' Warehousing Capacity Comparison

Company	Mode	Amount (in thousand square meters)
JD	Self-operated	5,600
Suning	Self-operated	4,780
VIPS	Self-operated+outsourcing	1,700
Cainiao	Self-operated	1,000
SF	Self-operated	1,000
Yunda	Self-operated+outsourcing	530
BEST	Self-operated+outsourcing	500
IL logistic	Self-operated	410
YTO	Self-operated+outsourcing	170
FineEx	Self-operated	150
BZUN	Self-operated	50

Source: CRSHK, Company reports

Era 3.0: O2O and omni-channel distribution require economic last-mile intra-city service

In the e-commerce era 3.0, two new markets have come into being for the last-mile intra-city express industry, namely 1) new e-commerce categories, e.g. freshfood, FMCG and take-out meals; 2) online and offline retailing integration under omni channel distribution, e.g. "storefront inventory" (which would allow e-commerce platforms to fulfill an order by taking inventory from nearby stores and delivering it to users, rather than taking the merchandise from e-commerce warehouses), etc.

We believe further e-commerce penetration will likely create intra-city express opportunities. We estimate intra-city parcels from e-commerce (including O2O take-out and omni-channel distribution) should grow from 5bn in 2016 to 23bn in 2020 at a 41% 2017-2020 CAGR vs. 18% CAGR of total express parcels excluding O2O take-out.

Exhibit 8. Intra-city Parcel Volume Forecasts

(USD:RMB=6.9)

	2012	2013	2014	2015	2016E	2017E	2018E	2019E	2020E
China express parcels including O2O take-out	5.7	10.8	14	22	34	47	60	74	85
Intra-city parcels including O2O take-out	1.35	3	4	7	10	18	24	31	37
Non e-commerce intra-city parcels	1.1	2.3	3	5	8	9	11	13	14
E-commerce intra-city parcels	0.3	0.6	1	3	5	8	13	19	23
O2O take-out market size (RMBbn)	1	4	10	44	100	199	338	508	660
Order size (RMB)	40	40	40	40	40	40	40	40	40
O2O take-out parcel volume	0.0	0.1	0.2	1.1	2.5	5.0	8.5	12.7	16.5
Omni-channel intra-city market (RMBbn)	-	-	-	-	13	48	77	111	149
Order size (RMB)	126	127	128	129	130	130	130	130	130
Omni-channel parcel volume	-	-	-	-	0.1	0.4	0.6	0.9	1.1
Fresh food online market size (RMBbn)	4	13	29	33	48	62	74	85	97
Order size (RMB)	50	50	50	50	50	50	50	50	50
Fresh food online parcel volume	0.1	0.3	0.6	0.7	1.0	1.2	1.5	1.7	1.9

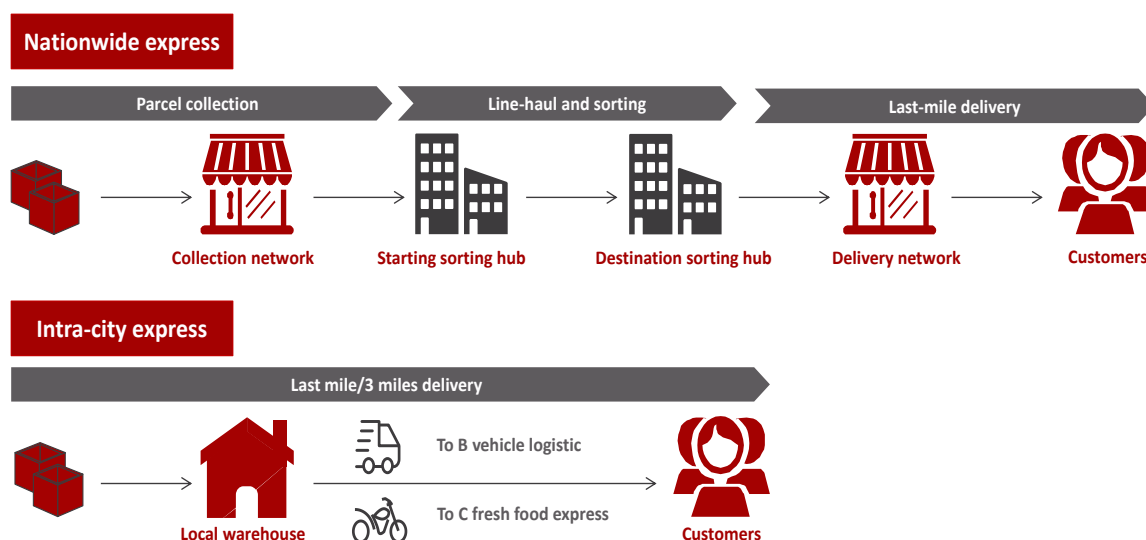
JD parcels delivered by JD	0.2	0.3	0.5	0.9	1.2	1.8	2.5	3.3	3.8
Intra-city e-commerce parcels as % of total	5%	6%	9%	12%	14%	18%	22%	25%	27%
Intra-city parcels incl. O2O take-out as % of total	24%	26%	27%	30%	29%	37%	40%	42%	44%

Source: CRSHK, iResearch

There are two forms of intra-city parcel delivery, namely unfixed routes and fixed routes. We compare these parcel delivery processes in the following chart.

- 1) **Fixed routes.** Intra-city last mile express only takes the responsibility of delivering parcels within a city from a client's warehouse to the individual consumers. Normally, these intra-city, last mile express companies do not need sorting hubs or line-haul capacities, nor do they collect parcels. And thus, intra-city last mile express companies tend to have better ROIC with limited CAPEX. We compare intra-city last-mile express with the nationwide express parcel delivery process in the following chart.

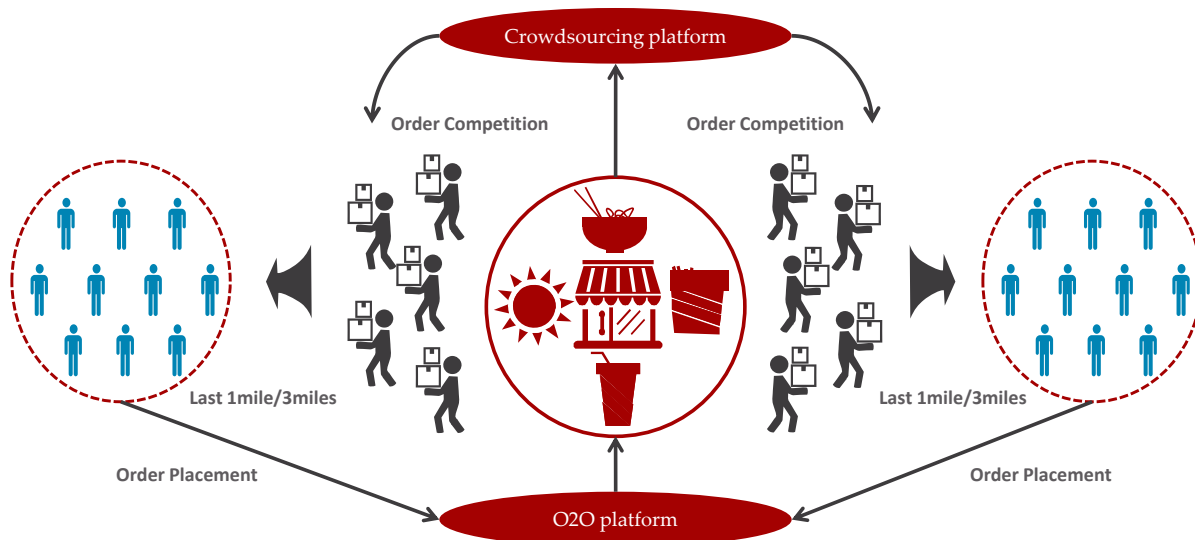
Exhibit 9. Parcel Delivery Process Comparison of Intra-City Last-Mile Express vs. Nationwide Express



Source: CRSHK

- 2) **Unfixed routes.** This applies to contingent consumption, e.g. urgent intra-city express needs, take-out orders for dining, fruits, afternoon tea, flowers, medicine, etc. The key players for these parcel deliveries are crowd sourcing take-out platforms such as Dada (privately owned), Baidu Take-out (BIDU US, not covered), Meituan (privately owned), etc. There are players like Lin Qu (privately owned) and Shan Song (privately owned) also working for various intra-city delivery needs. We illustrate the process of unfixed routes parcel delivery as follows.

Exhibit 10. Parcel Delivery Process of O2O Take-Out Platforms



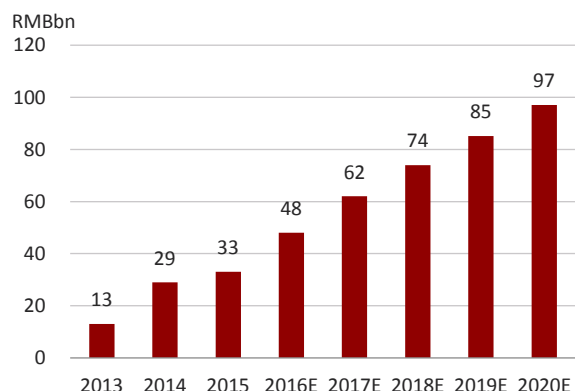
Source: CRSHK

We disaggregate intra-city e-commerce parcels in three segments, including

▪ **Fresh food and FMCG with last-mile (fixed routes)**

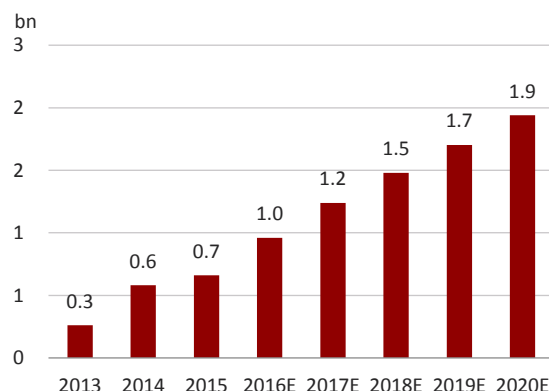
Most fresh food B2C use third-party line-haul services to deliver fresh food merchandise from production origins to regional distribution centers and then be sent by last mile, rather than choosing Tongda express for logistics. Fixed-routes last mile services are adopted for fresh food online retailing. We expect the fresh food online retailing market, excluding O2O, to reach RMB97bn in 2020, which would contribute 1.9bn parcels for intra-city parcels, assuming front-storage is adopted for fresh food e-commerce platforms. (i.e. merchants store inventory in warehouses close to user end, very much like JD's model)

Exhibit 11. Fresh Food Online Retailing Market Size



Source: CRSHK, iResearch, Company data

Exhibit 12. Fresh Food Online Retailing Parcel Volume



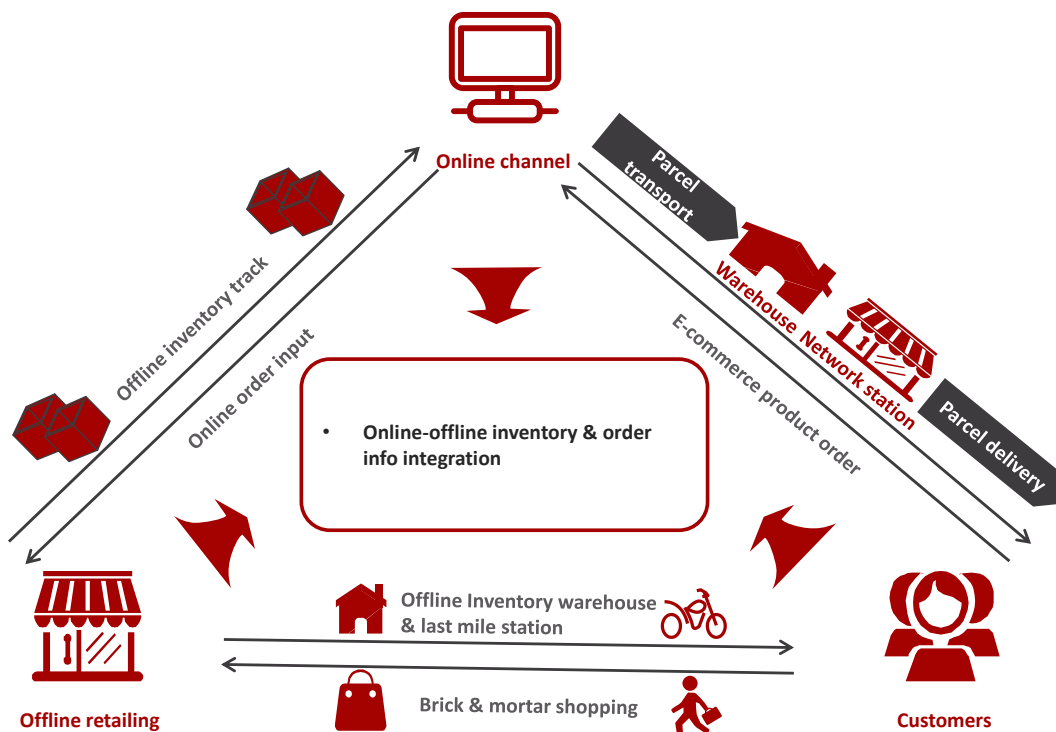
Source: CRSHK, iResearch, Company data

▪ **Omni-channel retailing e.g. order online, deliver from nearby stores**

We expect express delivery demand from omni-channel distribution to reach 370m parcels in 2017 and 1.1bn parcels in 2020 under the assumption of gradual adoption of omni-channel distribution. Omni-channel distribution requires online and offline distributors to integrate their inventory management, which should improve inventory turnover. We illustrate how omni-channel distribution works in the following chart. Baozun (BZUN US, BUY, TP\$30) is a pioneer in providing omni-channel inventory management. For example, 10% of online orders on Tmall were fulfilled by offline stores during the last Dual 12 shopping holiday. Also, SF's delivery couriers pick up merchandise in a 3-mile radius and deliver the parcel to customers.

We think brands or retailers would be slow to adopt this, especially since omni-channel distribution requires cooperation from an offline distributor, brand manufacturer and also an online retailer. We also expect the omni-channel distribution penetration for categories like apparel, 3C, cosmetics to be challenging and gradual.

Exhibit 13. Omni-Channel Inventory Management Solution Example

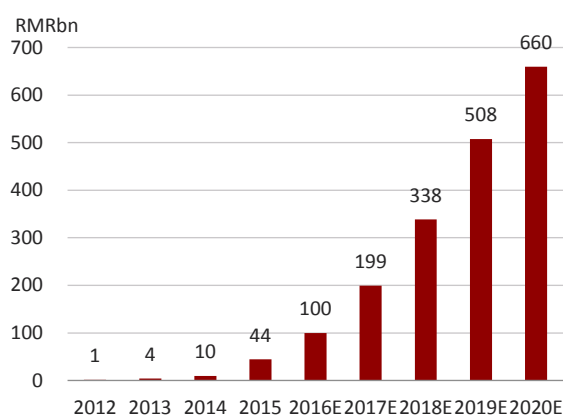


Source: CRSHK

▪ **Take-out O2O demand**

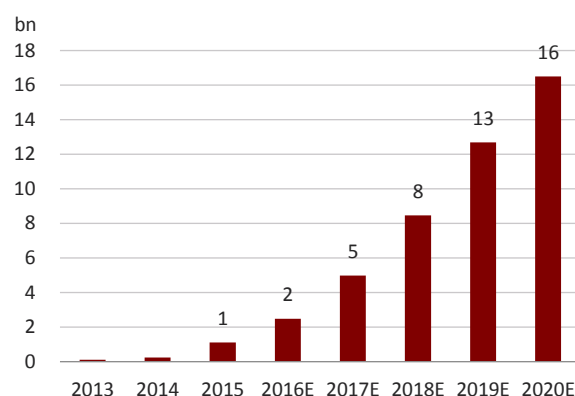
The other express demand is from take-out O2O platforms, which deliver intra-city unfixed route parcels e.g. meal takeout, fresh food orders, flowers, medicine orders, etc. We expect this express delivery demand from the O2O take-out market should reach 5bn parcels in 2017 and 16.5bn in 2020.

Exhibit 14. Take-Out O2O Market Size



Source: CRSHK, iResearch, Company data

Exhibit 15. Take-Out O2O Parcel Volume



Source: CRSHK, iResearch, Company data

Multiple players' eyes on the intra-city express market

Tongda's express companies are not currently very active in the intra-city express market as their advantages lay in line-haul and sorting. The intra-city express market is rather fragmented with multiple players like O2O take-out players and local last-mile players. The market awaits consolidation, in our view.

Exhibit 16. Express Players with Intra-city Coverage

Regional intra city		National express	
Name	Region	Name	Region
QC-Express(全成快递)	Shanghai	ZTO(中通快递)	National
East-union express(东方万邦)	Shanghai	SF Express(顺丰速运)	National
BS Express(邦送物流)	Shanghai	YTO(圆通速递)	National
Xiaohongmao(北青小红帽)	Beijing	Yunda(韵达速递)	National
Barents(巴伦支快递)	Chongqing	Best Express(百世汇通)	National
BGEX (邦工快运)	Heilongjiang	STO(申通快递)	National
alRush Logistics(成都立即送)	Chengdu	Anneng (安能物流)	National
Shengbang Express(晟邦物流)	Jiangsu	Debang(德邦物流)	National
Neptune Logistics(大洋物流)	North China	Tiantian Express(天天)	National
DTKD(店通快递)	Shanghai	EMS(邮政速递物流)	National
Dongjun Fast Logistics(东骏)	Sichuan	Crowd sourcing	

		Name	Region
Dasu Logistics(D 速物流)	Xiamen		
Rufengda(如风达)	Beijing	Meituan(美团)	1 st /2 nd /3 rd -tier cities
FXTX(风行天下)	Hunan	Ele.me(饿了么)	1 st /2 nd /3 rd -tier cities
Fengcheng Logistics(丰程)	South West	Baidu take-out(百度外卖)	1 st /2 nd /3 rd -tier cities
Huangmajia(黄马甲快递)	South West	Fengniao(蜂鸟)	1 st /2 nd /3 rd -tier cities
Huiwen Express(汇文配送)	Anhui	Da Da(达达)	1 st /2 nd -tier cities
NmHuahe(华赫物流)	Nei Mongolia	SHBJ.com(生活半径)	1 st /2 nd -tier cities
HD Express(华达快运)	Zhengzhou	Shansong(闪送)	1 st /2 nd -tier cities
Ci Chen Da Express(河南次晨达)	Henan	Dianwoda(点我达)	1 st /2 nd -tier cities
Hefeng (和丰同城)	Wuxi	Lin Qu (邻趣)	1 st -tier cities
Qingdao Hengtong Express(恒通快递)	Qingdao	Spacepar(空间客车)	1 st -tier cities
Jinmajia(金马甲)	Chengdu	TANZHIDA(弹指达)	Shanghai
KYD Express(快优达速递)	Sichuan		
KSUDI(快速递)	Shanghai		
L.TIANEXP(乐天速递)	Shanghai		
D2D Commercial Delivery(门对门)	Suzhou		
MSLY Express(闽盛快递)	Xiamen		
QB-Express(秦邦快运)	Shanxi		
Hongmajia Express(山西红马甲)	Shanxi		
SSD Express(顺时达物流)	Henan		
So Fast(嗖一下同城快递)	Harbin		
TDSD(腾达速递)	Guangxi		
TJS Express(特急送)	Liaoning		
Wanbo Express(万博快递)	Shijiazhuang		
XAETC(西安胜峰)	Xi'an		
ZY Express(卓焯快递)	Harbin		
Topspeed Express(优速通达)	Beijing		
Zhongrui Express(中睿速递)	Henan		
Sihaiet.com(四海快递)	Shenyang		

Note: National express firms all have some intra-city business coverage, yet not meaningful in revenue contribution.
Source: Kuaidi100.com

The Aim Is for Less Labor, More Technology

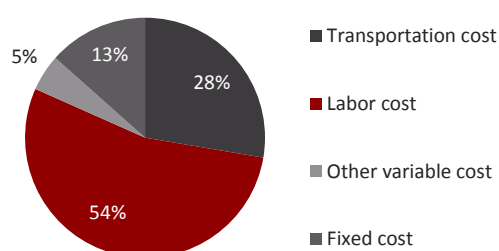
We believe network stability is essential for healthy network expansion and development. Compared with end-to-end express service, Tongda's network express relies on a profit-sharing mechanism, which is associated with high labor turnover due to the lack of social benefits and work contacts. It is a challenge for Tongda express to balance profits between themselves and network partners in a competitive environment. Network partners are earning a thin margin of profits e.g. 10% if they do not pay taxes and employee social benefits.

The potential profitability of network partners should strengthen network stability. Currently, express companies are mostly focusing on automatic sorting lines in order to reduce labor and thus improve operating efficiency. We think there is potential for operating efficiency improvement for the other two procedures e.g. 1) parcel collecting, and 2) last-mile. We believe this is even an urgent task for network partnership express players. Network express players, in our view, should guide and help their partners improve operating efficiency and thus profitability. We discuss different methods to save labor costs in 1) parcel collecting, 2) sorting and line-haul, and 3) parcel last-mile delivery.

Labor is the largest cost item

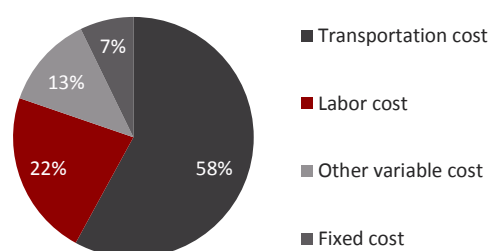
Labor accounts for 50% of the delivery fare and is the largest variable cost item. For example, labor accounted for 22% of ZTO's revenues in 2016, but that percentage rose to ~50% if integrating its network partner's P&L. We illustrate the cost structure of ZTO and SF express in the following charts as a point of reference.

Exhibit 17. SF Cost Structure Breakdown



Source: CRSHK, Company reports

Exhibit 18. ZTO Cost Structure Breakdown



Source: CRSHK, Company reports

Exhibit 19. Calculation of Labor Cost for Franchised Network Partner

RMB	Parcel collection	Sorting and line haul	Last mile delivery	End-to-end process
Revenue	2.5	2	1.5	6
Labor costs	1.5	0.5	1	3
Labor costs as % of revenue	60%	25%	67%	50%

Source: CRSHK, Company reports

Rising labor costs due to a shrinking blue-collar labor population may put burdens on the whole labor-intensive express industry. Players who can better control labor costs are likely to outperform peers.

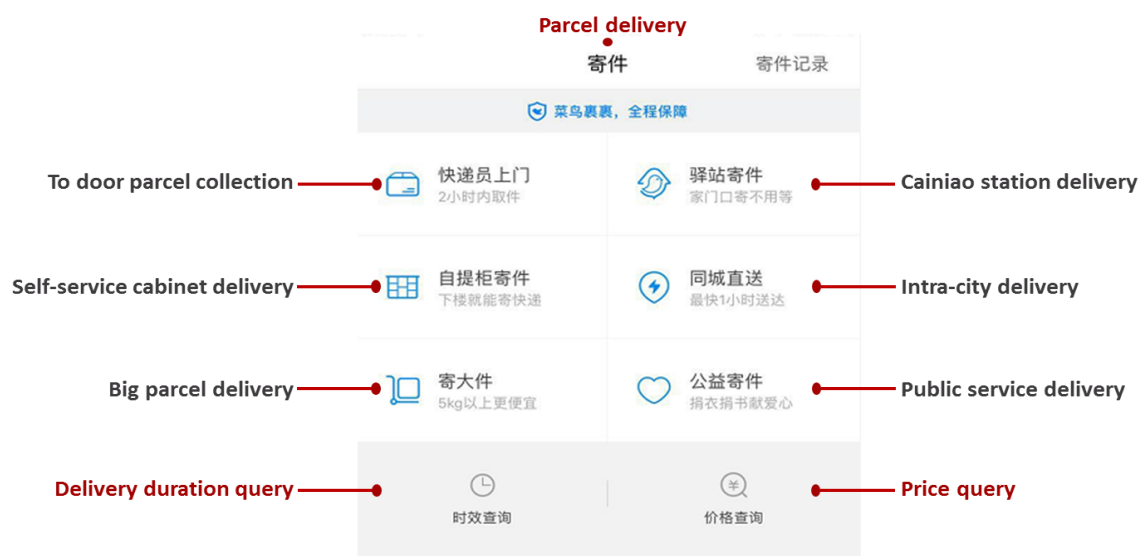
Parcel collecting: effective sales forecast and warehousing storage

Operating efficiency on collection reflects the cost saving on labor. Parcel collection is a non-standardized process both for personal parcels and e-commerce Taobao parcels. Normally, couriers would pick up parcels from the senders' appointed locations (normally e-commerce merchants with large volume and frequent orders), or sit in network stations waiting for individual senders to come in. The parcel delivery fee is negotiation-based, not fixed. Network partners would then have to balance their profitability and the KPI of parcel volume required by express companies.

Parcel collection works in two modes: 1) the collector takes a 10-15% commission of the fare; 2) the collector earns a spread between its asking price and the fixed price offered by the network station owners. The fare prices are negotiable between merchants and parcel collectors, and the bargaining process is neither digitalized nor open. We believe there is room for optimization in this procedure.

Alibaba's Cainiao Guoguo has attempted to standardize the parcel collection process by providing network partners an online match platform between parcel senders and parcel collector. We think this platform currently does not replace offline negotiations between parcel collectors and Taobao merchants as the cooperation between them is more like a commercial deal with private terms, especially on price. In addition, Network partners are not likely to share their bargained asking prices with competitors. However, Cainiao Guoguo is an efficient tool for personal parcels, allowing individuals to compare shipping fees and find the nearest parcel collector to mail parcels.

Exhibit 20. Cainiao Guoguo Service



Source: CSRHK, Cainiao Guoguo app

The other tool to improve parcel collection efficiency is Cainiao's sales forecast based on big data including analysis of historical sales performance, etc. Pre-selling activities and pre-issuing coupons are also effective methods to increase prediction accuracy. Big data sales forecasts would help Cainiao to grasp customers' demands in advance and coordinate network partners to cut collector's workloads. For example, currently, collectors only take a weekly run rather than daily runs to pick up parcels, if Cainiao is able to forecast sales volume for a week. However, sales forecasts are easy for every category. It is a lot more difficult to provide sales forecast for non-standard categories, e.g. apparel than for standard categories, e.g. 3C and home appliances.

Line-haul and sorting: technology and automation

Currently, most adopted methods by express companies to improve operating efficiency are automatic sorting lines that replace labor, and large trucks that replace small load ones. For example, ZTO is able to reduce the number of laborers per automated sorting line from 110 laborers to 60-80 laborers at a cost savings to the company of RMB4m. We discuss other methods here.

1) Automatic sorting lines

Exhibit 21. Automated Sorting Line

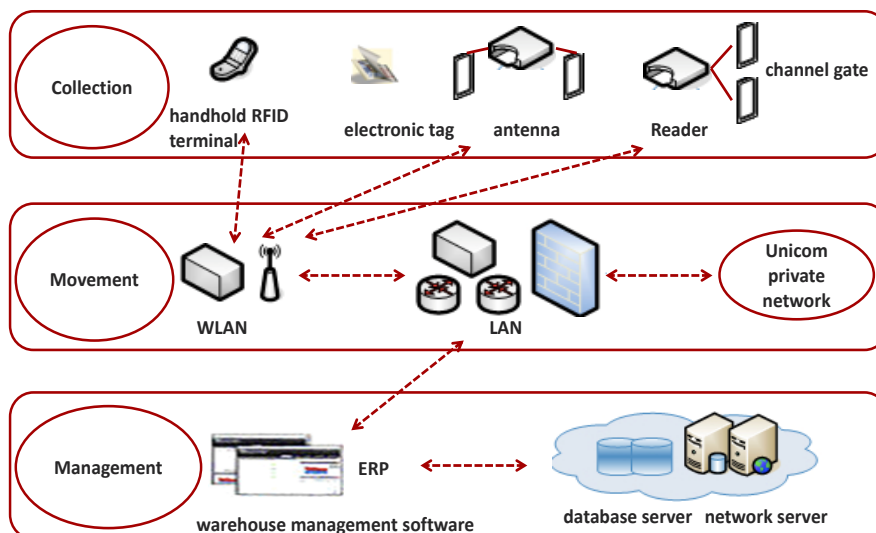


Source: CSRHK, Company reports, news release

2) Intelligent technology like RFID (NFC), also can be used for network stations

Traditionally, a warehouse depends on a non-automatic and paper-based system to record and track a parcel with manual power to control the whole process, which consequently leads to inefficiency. With the popularization of computer and intelligent technology, RFID (Radio Frequency Identification) based technology NFC (Near Field Communication) is mostly applied in store pick-proof security. NFC will greatly increase a warehouse's working efficiency and supply chain function capacity.

Exhibit 22. The RFID System Composition Exhibition

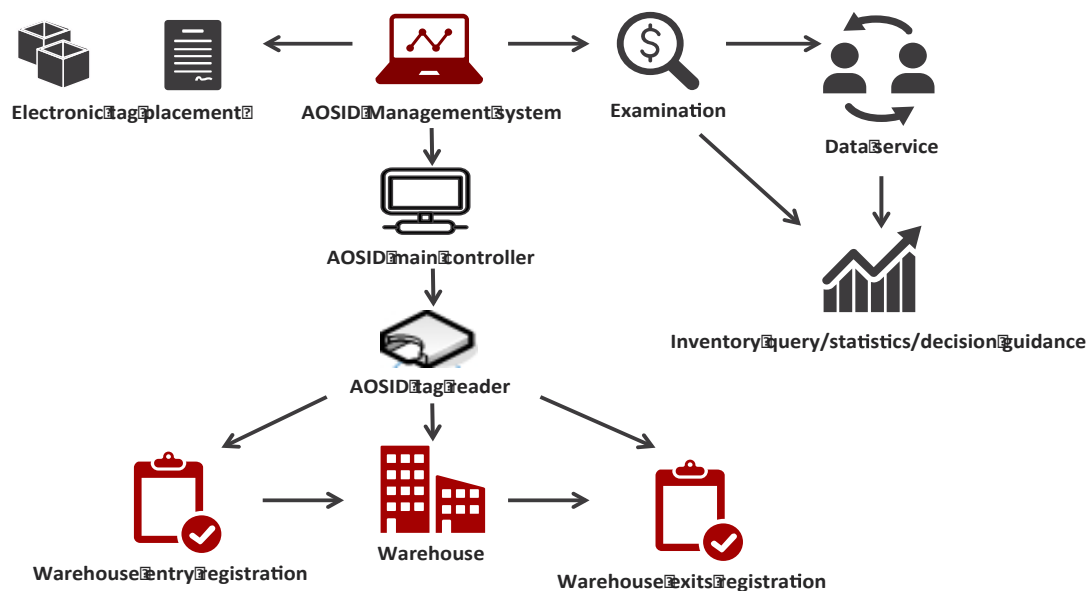


Source: CRSJK

RFID is a wireless communication technology, which could identify a target and record related data by radio signal without real contact with the product. Generally, a RFID system is comprised of 3 parts: electronic tag, reader and antenna. The normal process is as follows,

- Warehouse entry: when a parcel with an electronic tag goes through the entrance, the information will be recorded by readers and automatically saved into the warehouse database, then the parcel will be delivered to its position by conveyor belt or forklift.
- Warehouse exit: when a parcel leaves the warehouse by conveyor belt or forklift, information will be grasped by readers again, and its data will be automatically called out by a RFID chip and transmitted for real-time tracking.

Exhibit 23. The Standard RFID System Function Process



Source: CRSHK

As we can see from the chart above, the traditional warehouse management working pattern has been altered based on RFID by tagging all the essential elements in every key sub-process including entry, inventory control, exit, etc., to realize a more efficient and accurate management. We think there are at least the following advantages to the RFID system:

- RFID can take the UHF electronic tag with its long lifetime and free maintenance. It can even print cargo information on the tag cover.
- RFID can take a multi-functional reader with several transportation interfaces, enabling wireless transmission, blue tooth transmission and GPRS data transmission.
- The system enables long-distance identification, and is compatible with conveyor belt dynamic read and fast read.
- The system enables remote log in, configuring and reader control, and is compatible with a large-scale network application.

From a cost perspective, we have compared the cost per tag with the cost of labor for scanning the parcel in the following table. We have ignored the equipment costs and only compared the variable costs here. Currently, manual operation is still less expensive than electronic tags. However, the gap would narrow if labor costs rise further.

Exhibit 24. RFID Electronic Tag Cost Items

Component	Price
Antenna	RMB0.07
Chip	RMB0.07-0.20
Cost per scan by electronic tag	RMB0.15-0.3

Source: CRSHK

Exhibit 25. Manual Scan Cost Calculation

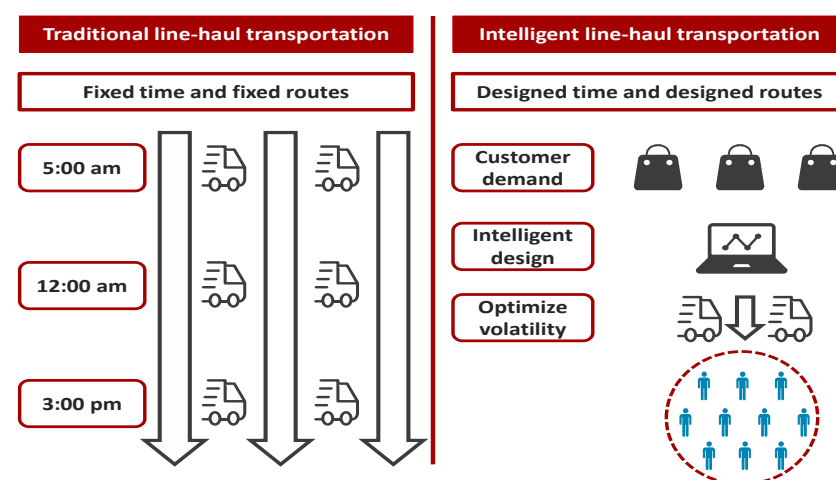
	RMB
Monthly wage (RMB)	5,000
Monthly days of work	30
Daily work hours	8
Wage per hour(RMB)	21
Number of parcels scanned per hour	360
Cost per scan by manual operation(RMB)	0.06
Number of manual scan per parcel	2-4
Cost per parcel by manual operation(RMB)	0.12-0.24

Source: CRSHK

3) Routes designed by an intelligent optimization system

Currently, express companies partially rely on an intelligent route optimization system and partially on a manual coordination of route design. Normally, sorting centers will arrange two or three line-haul rounds per day per route, e.g. 5AM, 12PM, 3PM. However, routes are not always designed intelligently by the optimization program and have weak accommodations for parcel volume volatility. Normally, a truck will only run on a fixed route but not as demand flows.

Exhibit 26. Intelligent Line-Haul Transportation Routes



Source: CRSHK

Last mile: third-party drop-off stations, self-service cabinets and drones

We expect parcel volume to grow to 68bn in 2020, which would be more than double that of 2016. The labor shortage problem and, thus, the rising cost of labor will likely become increasingly critical for China's express industry. We expect a widening gap between parcel delivery demand and the labor supply going forward, while the third-party drop-off/pickup stations, e.g. Cainiao's stations, appear to be currently the cost-effective solution to fill the gap, while drones and self-pickup cabinets are at a high variable cost per parcel.

Exhibit 27. Cainiao Station Example



Source: CRSHK

Exhibit 28. Self-pick-up/drop-off Cabinets Example



Source: CRSHK

We believe it is vital to reduce the time needed for delivery in order to break out of the bottleneck of the current maximum of parcels delivered per day. On average, a courier can deliver 100 parcels per day, meaning one delivery every 5 minutes in 8 hours of delivery work time. We believe this has reached a capacity bottleneck. The time window mismatch between customers and couriers also costs couriers extra time for a second or even third delivery run. We believe drop-off & pick-up stations and automatic cabinets would be ideal choices for releasing the courier's timing costs. We compare the pros and cons of three solutions in the following table.

Exhibit 29. Last-Mile Labor Substitutes Comparison

	Drone	Self-service cabinet	Third-party service stations
Fee for courier per parcel (RMB)	-	0.4-0.6	0.5-1.0
Variable cost per parcel (RMB)	1.2	1.3	0.3
Installment costs (RMB)	10,000	30,000	-
Variable cost per unit (RMB/year)	4,365	12,600	9,480
Capacity per unit	5 items	72 units per set	200+
Time saving/capacity increase	80%	50%	50%
Pros	Adapt to countryside, unmanned service	Unmanned service, community access	Great capacity flexibility, region targeting
Cons	Capacity, air terrain & policy restraints	Capacity restraint, high maintenance fees	Difficulty in standardizing and monitoring service

Source: CRSHK, iResearch

1) Self-service cabinet: It is not cost-effective until the utilization rate improves

Self-service storage cabinets were launched in places like communities, schools, subway stations, etc, allowing parcel storage and pick-up in 24 hours. There are mainly four parties that provide a self-service cabinet business, including e-commerce players, third-party players, express companies and the government. Parcel storage fees and outdoor advertising are the most applied monetization.

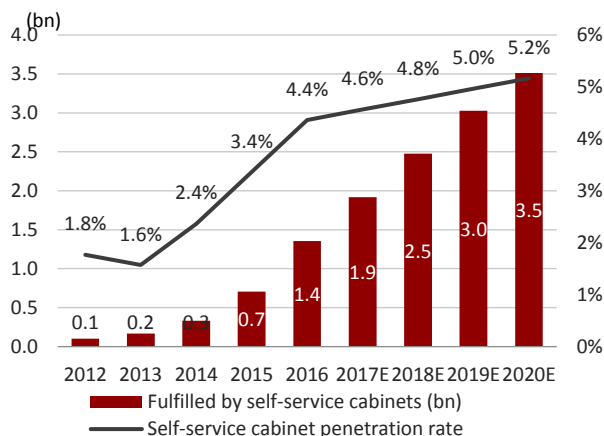
Exhibit 30. Self-Service Cabinet Providers and Monetization



Source: CRSHK, Sposter website

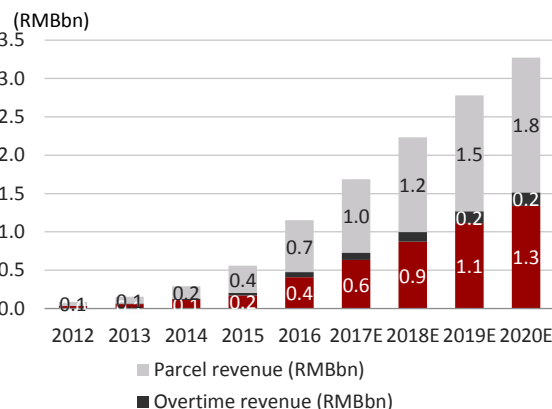
We estimate self-service cabinets to have held 1.4bn parcels in 2016, accounting for 4.4% of total parcel volume. We expect self-service penetration should reach 5.2% in 2020, on the assumption that the utilization rate reaches 50%. The low penetration growth has been due to 1) Chinese consumers would prefer door-to-door delivery, and 2) loss-making due to low utilization rates. We also expect total self-service cabinet market size should reach RMB3.3bn in 2020 including RMB2bn parcel storage fees and RMB1.3bn in outdoor advertising fees.

Exhibit 31. Self-Service Cabinet Penetration



Source: CRSHK, CHYXX

Exhibit 32. Self-Service Cabinet Market Size



Source: CRSHK, CHYXX

Our forecast is based on the following calculations.

Exhibit 33. Self-Service Cabinet Market Forecasts

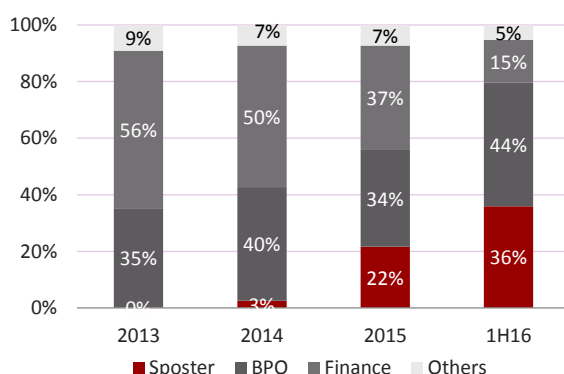
(USD:RMB=6.9)

	2012	2013	2014	2015	2016	2017E	2018E	2019E	2020E
Penetration forecast									
Total parcel volume (bn)	5.7	10.7	14	21	31	42	52	61	68
Fulfilled by self-service cabinets (bn)	0.1	0.2	0.3	0.7	1.4	1.9	2.5	3.0	3.5
Self-service cabinet penetration rate	1.8%	1.6%	2.4%	3.4%	4.4%	4.6%	4.8%	5.0%	5.2%
Number of cabinets per unit	72	72	72	72	72	72	72	72	72
Number of cabinet units(mn)	48	64	84	108	1712	208	236	256	267
yoy	33%	33%	31%	28%	60%	21%	13%	9%	4%
Utilization rate	8%	10%	15%	25%	30%	35%	40%	45%	50%
Market size forecast									
Self-service cabinet market size (RMBbn)	0.1	0.2	0.3	0.6	1.2	1.7	2.2	2.8	3.3
yoy		74%	93%	91%	106%	46%	32%	25%	18%
Parcel revenue (RMBbn)	0.1	0.1	0.2	0.4	0.7	1.0	1.2	1.5	1.8
Daily usage per cabinet (times)	1	1	1	1	1	1	1	1	1
Utilization rate	8%	10%	15%	25%	30%	35%	40%	45%	50%
Charge per cabinet per day (RMB)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Overtime revenue (RMBbn)	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2
Overtime fee per day (RMB)	1	1	1	1	1	1	1	1	1
Overtime rate	5%	5%	5%	5%	5%	5%	5%	5%	5%
Outdoor ads revenue (RMBbn)	0.0	0.1	0.1	0.2	0.4	0.6	0.9	1.1	1.3
Advertising fee per month (RMB)	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
Penetration rate	5%	7%	10%	12%	18%	23%	28%	33%	38%

Source: CRSHK, iResearch.

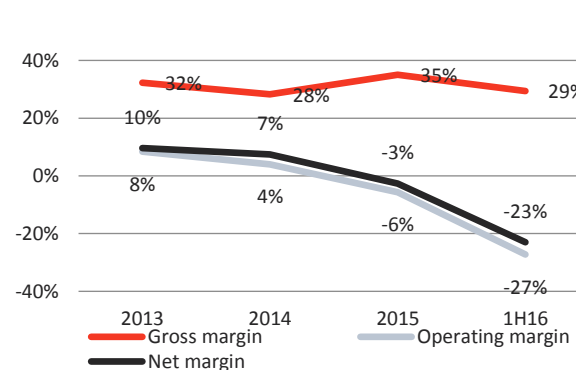
Self-service cabinets are not profitable at their current stage due to low utilization rates, in our view. We estimate the average industry cabinet utilization rate is only 30% in 2016. We provide the financials of a leading self-service cabinet player Sposter (under SANTA HOLDINGS, 002312 SZ, not covered) as an example of this in the following charts.

Exhibit 34. SANTA's Revenue Mix



Source: CRSHK, Company reports

Exhibit 35. SANTA's Margin Performance



Source: CRSHK, Company reports

We do not expect the self-service cabinet business to breakeven before utilization rates improve materially. We calculate per parcel economics in the following table.

Exhibit 36. Self-service Cabinet Economic Calculation

(USD:RMB=6.9)

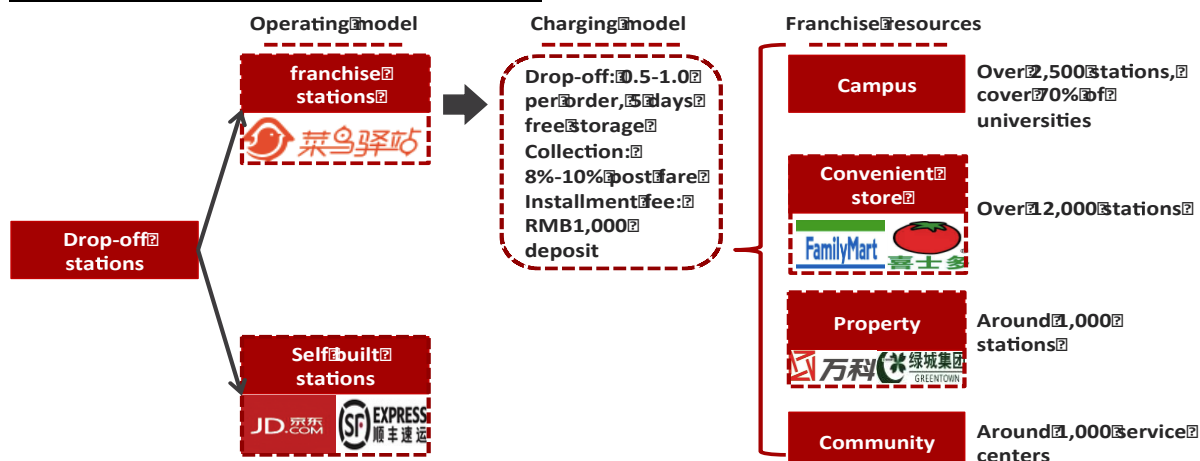
	2012	2013	2014	2015	2016	2017E	2018E	2019E	2020E
Revenue per parcel incl ads rev. (RMB)	0.86	0.90	0.88	0.79	0.85	0.88	0.90	0.92	0.93
Revenue per parcel excl ads rev. (RMB)	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55	0.55
Maintenance unit cost per year(RMB)	10,366	10,884	11,429	12,000	12,600	13,230	13,892	14,586	15,315
yoy		5%	5%	5%	5%	5%	5%	5%	5%
Net profit per parcel (excl ads revenue)	-4.07	-3.24	-2.01	-1.04	-0.75	-0.56	-0.42	-0.32	-0.23
Net profit per parcel (incl ads revenue)	-3.75	-2.89	-1.68	-0.79	-0.45	-0.23	-0.07	0.05	0.15

Source: CRSHK, iResearch.

2) Drop-off Station: Cainiao station is an applicable and economic solution

Drop-off stations are similar to self-service cabinets in function. There are two models in drop-off stations, e.g. the Cainiao station in terms of the franchise model and the JD/SF express in the direct model. The franchise drop-off stations usually act as a platform by leveraging third-party local facilities to provide parcel drop-offs and collection services, rather than building up facilities by the platform.

Exhibit 37. The Drop-Off Station Business Model



Source: CRSHK, Company reports

As a third party that associates with express companies, Cainiao station has an integrated approach to the disorder of fierce competition, and adjusts the decentralized offline delivery stations' distribution into a single platform from which it could then provide various services for different companies and cover a certain area near its location, especially when the rent in core areas is rising rapidly, e.g. the business zones in top-tier cities.

Cainiao station has a very low requirement for franchisees to join the platform, e.g. a RMB1,000 deposit. Almost all standard convenience stores, even some individuals, are capable of running a Cainiao station. Cainiao stations have grown rapidly from 1,500 in 2013 to over 40,000 in 2016. One advantage for the

Cainiao station is that there is less restriction in storage capacity, especially compared with the limited space of self-service cabinets.

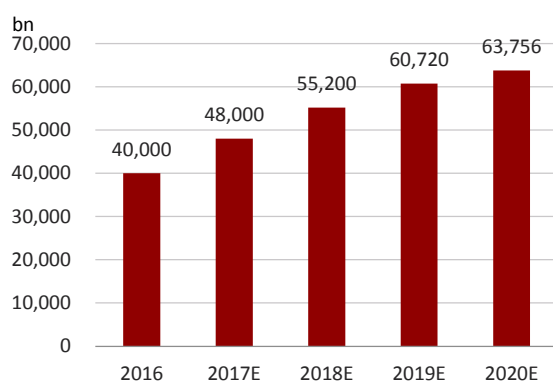
Exhibit 38. Cainiao Station's Franchise Standard

Qualifications	Individuals	Campus	Convenience stores
Coverage area	Communities	Inside campus	Regional/nationwide
Installment	Networked computer/smartphone	Networked computer, WIFI, scanner, goods shelves	Technical employees
Operating space (m2)	>2	>20	>1
Operating period	Normal operating time	Normal operating time	Normal operating time
Functions	Community parcel disposal	Cooperate with over 2 express companies, deal with over 400 parcels/day	3 rd -party parcel collection and picking up

Source: Company reports, CRSHK

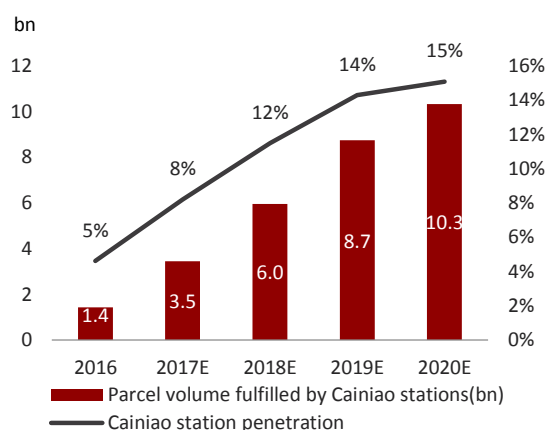
We estimate parcel volume fulfilled by Cainiao to reach 1.4bn in 2016 at a penetration rate of 5%, and believe this volume should rise to 10bn in 2020, accounting for 15% of total express parcels.

Exhibit 39. Number of Cainiao Stations Projection



Source: CRSHK, Company reports

Exhibit 40. Cainiao Parcel Volume Projection



Source: CRSHK

Our forecasts are based on the following calculations. The daily average parcels fulfilled per station varies largely among different providers. The campus station has the highest daily volume, around 2,000 per day, which peaked at 5,700 on the last Double 11 (China's Black Friday in terms of shopping).

Exhibit 41. Cainiao Station Market Size Forecasts

	2016	2017E	2018E	2019E	2020E
China express parcel volume (bn)	31.2	42.1	51.8	61.1	68.5
Parcel volume fulfilled by Cainiao stations (bn)	1.4	3.5	6.0	8.7	10.3
Cainiao station penetration	5%	8%	12%	14%	15%
Averaged daily parcel fulfilled per station	100	200	300	400	450
Number of stations	40,000	48,000	55,200	60,720	63,756
yoy		20%	15%	10%	5%

Source: CRSHK, Cainiao website, USD:RMB=6.9

We further breakdown variable costs for Cainiao stations below. As most Cainiao stations are social resources, the actual costs would likely be lower than our estimates.

Exhibit 42. Cainiao Station Economic Calculation

(USD:RMB=6.9)

	2016	2017E	2018E	2019E	2020E
Annual variable cost per station (RMB)	9,480	19,908	31,355	43,897	51,853
Annual parcel volume fulfilled per station	36,000	72,000	108,000	144,000	162,000
Labor cost (RMB)	8,750	18,375	28,941	40,517	47,861
Time needed for parcels (hours)	1.7	3.3	5.0	6.7	7.5
Wage per labor per month (RMB)	3,500	3,675	3,859	4,052	4,254
yoy		5%	5%	5%	5%
Rent cost (RMB)	730	1,533	2,414	3,380	3,993
Rent per square meter per day	2.0	2.1	2.2	2.3	2.4
yoy		5%	5%	5%	5%
Area for parcels	1	2	3	4	4.5
Variable cost per parcel	0.28	0.30	0.31	0.32	0.34
Charge per parcel	0.50	0.50	0.50	0.50	0.50
Net profit per parcel	0.22	0.20	0.19	0.18	0.16

Source: CRSHK, Cainiao website.

3) Drones: not ready for urban areas yet

Due to rising labor costs, many express giants, like FedEx, DHL, JD, have started to use drones as a substitute. Domestically, for example, SF tested drone delivery for the first time in 2013, it even invested in a drone company to support its technical development. With the gradual maturity of the technology, we think using drones as a delivery solution has already become a possibility in certain situations.

However, due to the flying limitation of low altitude areas implemented by the government, and the complex sky environment in cities, it is still hard to realize how drone delivery would work in urban areas. Nevertheless, we think drones may be more appropriate in rural regions where ground transportation is not yet optimal and timely. We think it possible drones could be a successful delivery system for rural areas if there were dedicated drone platforms that would support and maintain drone operations. Should that time come, we believe that the drone delivery service should be viewed as a supplement to the traditional rural delivery system instead of as the main delivery solution.

Cainiao facilitates industry development

We can use Cainiao to better understand the potentially symbiotic relationship between the e-commerce express delivery system and the customers it serves. The express network is strategically essential for BABA's retailing business, especially important to compete with e-commerce peers. Without direct control over express firms, Cainiao is one way for BABA to better engage in the express market. Cainiao has built up not only an information network, but also a ground warehousing and logistics park network. Cainiao has penetrated each procedure of express delivery.

According to Cainiao's official website, along with Cainiao's partners including logistic companies, and warehouse service providers, Cainiao has covered 70% of total parcel volume. We think Cainiao is not only a service provider and platform for express companies, but also is trying to monetize its business and strengthen its controlling power in the express industry. We expect Cainiao to further penetrate into express market by the following measures.

- Electronic bill and its address database, which should largely save paper billing costs of RMB1 and improve express operating efficiency by saving on labor. Cainiao owns the address contact database of destination users from its retailing platforms. In the future, there is the possibility that user destination addresses and telephone numbers may not be completely displayed on the parcel label in order to provide user privacy. Express companies will need to scan the bar code on the label and check the address database Cainiao provided to find the parcel's destination.
- IT optimization and the big data system, which can realize sales volume forecasts e.g. Double 11, truck dispatch optimization and, thus, improve express operation efficiency. According to our channel checks, half of line-haul truck dispatches are manually operated. We believe line-haul routes optimization will become more complex in the future with parcel volume growth and further express penetration into rural areas.
- Warehousing storage capacity expansion, which should partially take the responsibility of parcel collection, the most profitable business for network partners. Warehousing storage is not widely provided by franchised express players, leaving opportunity for Cainiao to cater to B2C merchants' needs.
- Cainiao stations. According to our analysis, Cainiao stations are effective in labor saving for last-mile delivery. We expect further adoption and dependence on Cainiao stations should help network stations to reduce their labor demand.

We think Cainiao aims to balance its strategic reliance on express companies by its service portfolio across the whole express process. Cainiao aims to impact the margins of express companies in the following ways.

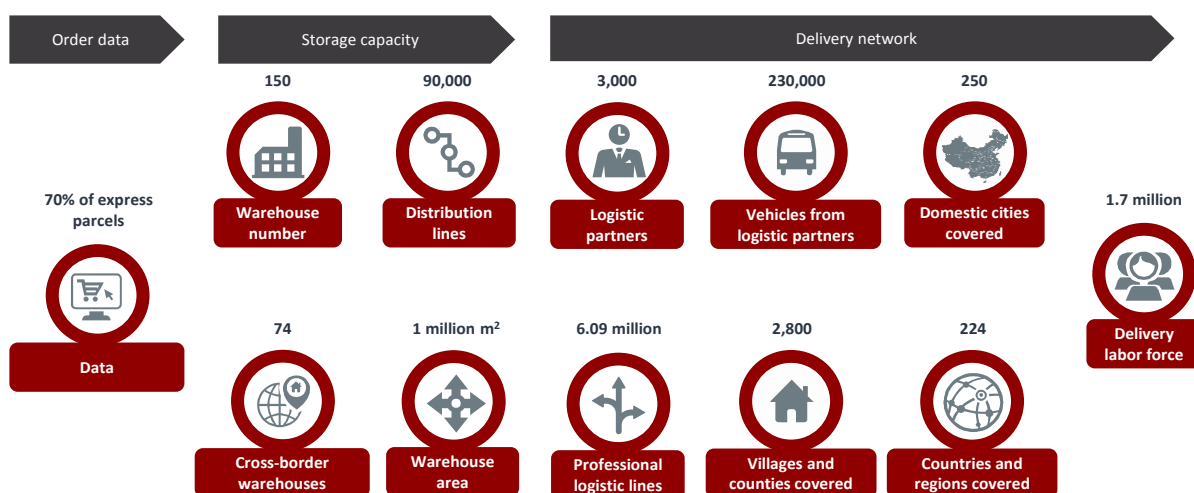
- Cainiao could facilitate express players to improve service quality and provide differentiated express services so as to compete with e-commerce peers, which might require extra express capacity to realize. Express companies would likely take the cost burden off providing new services, despite that they may charge users for the VAS.
- Cainiao could monetize its address database system, truck dispatch optimization system and also sales forecast system.
- Cainiao could monetize its last-mile stations for solving the labor shortage problem for network stations.

Exhibit 43. Cainiao's Business Scope



Source: CRSHK, Cainiao Network

Exhibit 44. Cainiao's Operating Metrics



Source: CRSHK, Cainiao Network

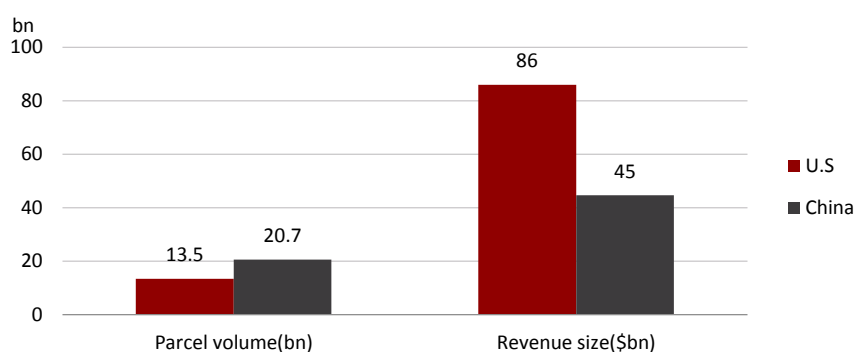
Industry Consolidation and Service Differentiation Bring China's Express to the Next Level

Benchmarking toward successful companies: service variety and business integration make giants

Although the Chinese express market has surpassed the U.S market in terms of parcel volume, compared with the world's developed markets, China's express market is still in an immature stage awaiting market consolidation and business development. Service diversification and upstream and downstream industry consolidation are rising opportunities for express firms to stand out from the crowd. We compared China's express market with its global peers in the metrics of market size, products revenue mix and margin.

- 1) Market size.** China's express market is only half the size of the US market, while its parcel volume surpassed the US in 2015.

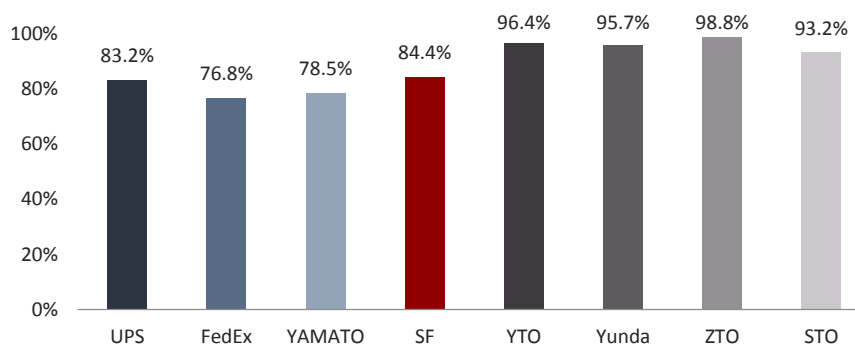
Exhibit 45. Market Size Comparison of U.S. and China (2015)



Source: CRSHK, State Post Bureau of China, IBIS world

Product comparison: express only takes up around 80% of total revenues for international peers yet is almost the single most important revenue source for Chinese companies.

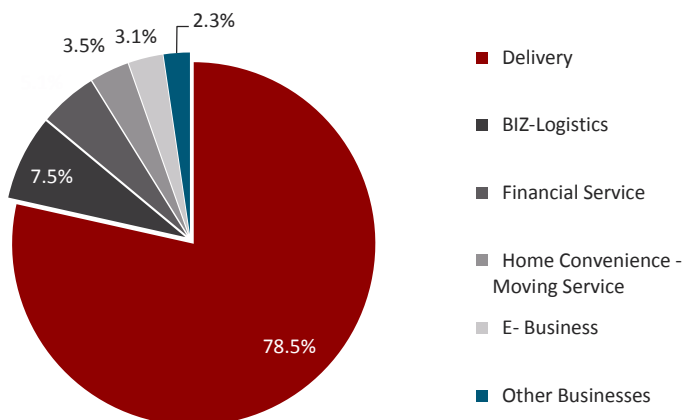
Exhibit 46. Express Revenue as Percentage of Total Revenue (2016)



Source: Company reports, CRSHK

When we look at YAMATO (1967 JP, not covered) as representative of players in the global market, we see it has abundant revenue arms. We believe this sort of service diversification and differentiation is key to implementing China's express market consolidation.

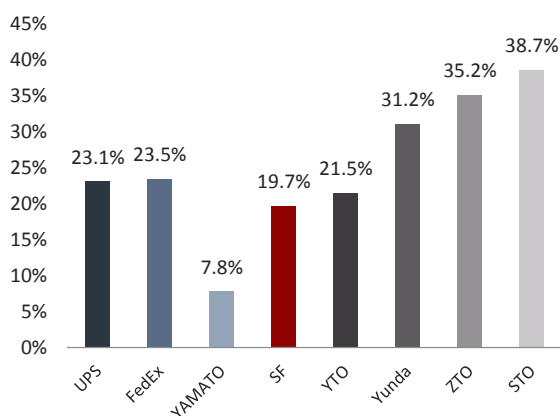
Exhibit 47. YAMATO's Revenue Coverage (2016)



Source: Company data, CRSHK

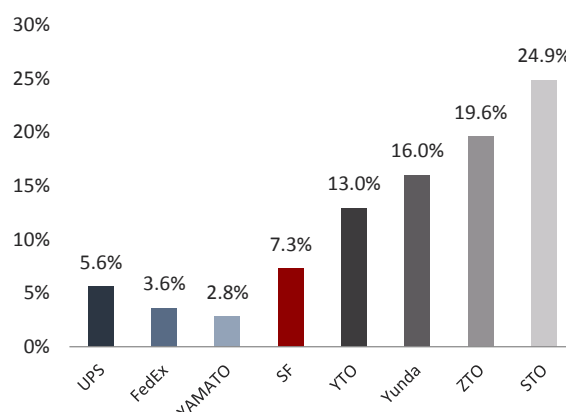
- 2) **Margin comparison:** The franchised model generally has better margins than direct-owned express companies as franchised headquarters only capture the line-haul and sorting procedures, which is the most profitable part.

Exhibit 48. Gross Margin Comparison (2016)



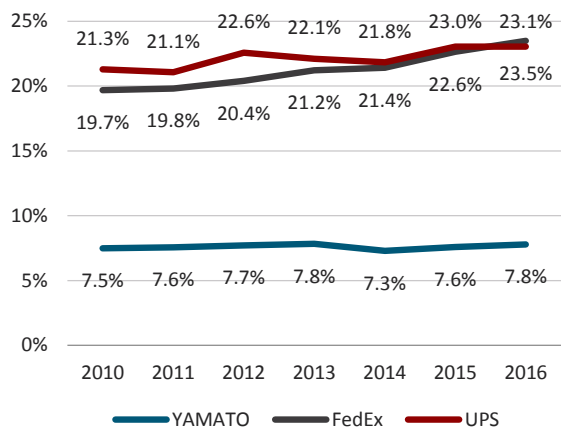
Source: CRSHK, Company reports

Exhibit 49. Profit Margin Comparison (2016)



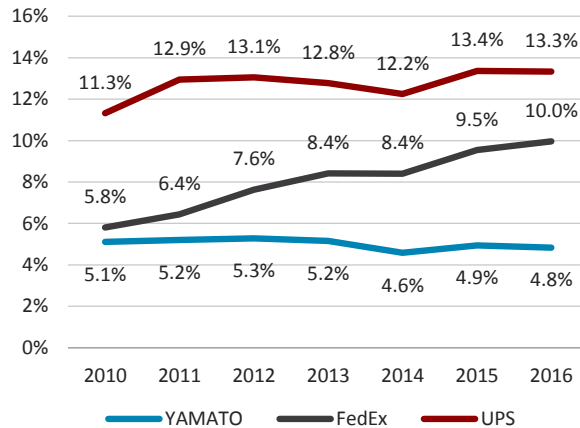
Source: CRSHK, Company reports

Exhibit 50. Gross Margin Trend of International Players



Source: CRSHK, Company reports

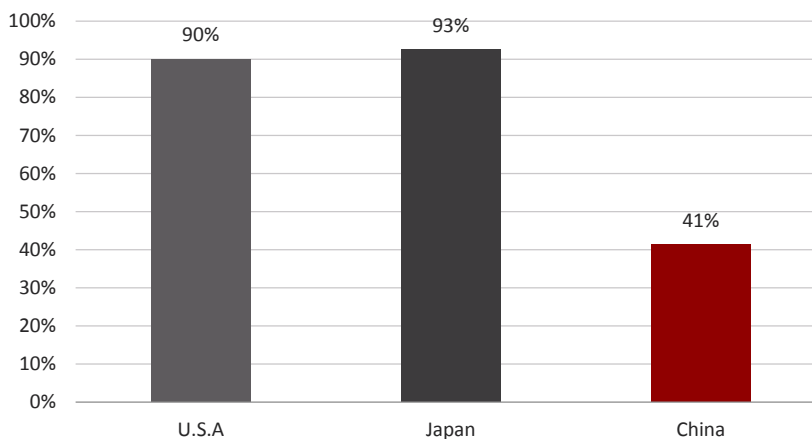
Exhibit 51. OP Trend of International Players



Source: CRSHK, Company reports

As we have discussed before, compared to developed countries where the majority portion of the market is held by few players, China's express market is quite decentralized with CR3 only at 41%. Service differentiation and network stability is the key. In this regard, we consider ZTO notable in terms of network stability and service quality. (Please see our initiation [ZTO, logistics leader stands out from the crowd, initiate with Buy with a US\\$21 target, published on Nov 16, 2016](#)).

Exhibit 52. CR3 Comparison



Source: State Post Bureau of China, DOC, MILT, CRSHK

M&A is a key theme along with express development

Despite its e-commerce gene, China's express development still relies on scalability and business expansion in a traditional transportation industry. We believe Chinese express companies not only need peer M&A consolidation, but also require further business integration along with the express industry in order to achieve efficiency.

Taking UPS' (UPS US, not covered) path for example, during 2001 to 2005, it

merged many firms to create synergy with its original business. After 2012, it undertook horizontal mergers to expand its global business. In its business expansion history, UPS also expanded to the upstream and downstream industry chains. In the stage of global expansion, UPS selectively expanded its business in Europe, Asia and emerging markets, constantly improving and consolidating market share, so as to enhance its international market position.

Exhibit 53. UPS M&A Path

UPS		
Timeline	Acquired Company	Significance
1988	Alimondo	Stepped into international market with its 9-small business at air delivery
2001	Mall Boxer Etc. Companies	Expanded offline retailers to embrace e-commerce demand
2001	Fritz Companies	Enhanced freight forwarding , broaden its home-based customers
2004	Menlo Worldwide Forwarding	Reinforced supply chain solutions to global commerce
2005	Stollica/DHL China	Marched into European and Asia market, mainly China and Germany
2005	UPS-KEN/Trans Courier Service	Expanded into Korea and Romania market
2009	Unsped Paket Servisi	Broadened air, road transport service in Turkey
2012	Kiala SA	Allowed e-commerce retailers to offer consumers the option of having goods delivered to a convenient retail location
2014	I-parcel LLC	International e-commerce enabler and logistics company operating in the US and the UK
2015	Insured Parcel Service	Targeted to add customers looking for high-value jewelry, watches, and collectibles shipments
2016	Marken	Provided of supply chain solutions to the life sciences industry, and healthcare logistics
2017	UK's freightex	Provided truckload, LTL service

Source: CRSHK, company reports, UPS website

Focusing on air transportation, Fedex also followed a global M&A path.

Exhibit 54. FedEx M&A Path

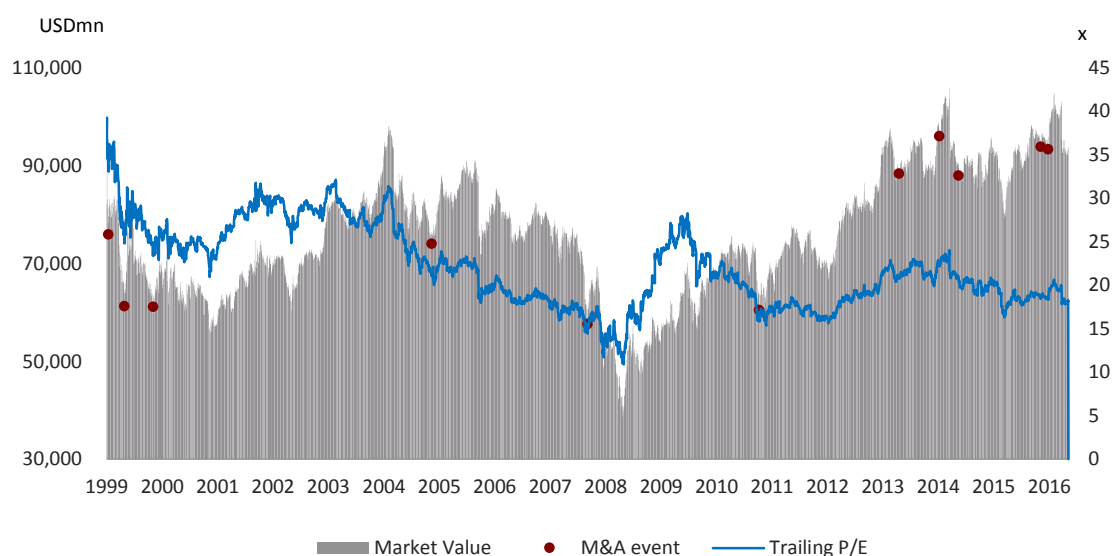
FedEx		
Timeline	Acquired Company	Significance
1984	Gelco Express	Launched operations in Asia Pacific
1989	Flying Tigers	Expanded international presence in air transport
2001	American Freightways	Dedication in domestic LTL service in 40 eastern states
2004	Kinko	Expanded access to 1200 stores and enter fast-printing market

2006	Watkins Motor lines	Rebranded its FedEx national LTL/freight Canada business
2007	Flying-Cargo Hungary Kft	Expanded into Eastern Europe's dynamic markets
2007	ANC	Expanded into UK domestic express market
2011	MultiPack	Acquired pickup and delivery network, warehouse in Mexico
2011	AFL Pvt. Ltd.	Provided FedEx more robust domestic transportation and added capabilities in India
2011	FedEx Freight East and West	Offered two levels of service across all lengths of haul in a single network
2012	TATEX	A leading French business-to-business express transportation company
2012	Rapidão Cometa	One of the largest transportation and logistics companies in Brazil
2014	Bongo International	Expanded the FedEx global e-commerce portfolio with all capabilities
2014	Supaswift	Provided access to an established regional ground network of the Southern Africa
2015	GENCO	The acquisition expands FedEx retail and e-commerce service offerings
2016	TNT Express	Enhanced the FedEx network in Europe, the Middle East and Africa, Asia-Pacific

Source: CRSHK, company reports, FedEx website

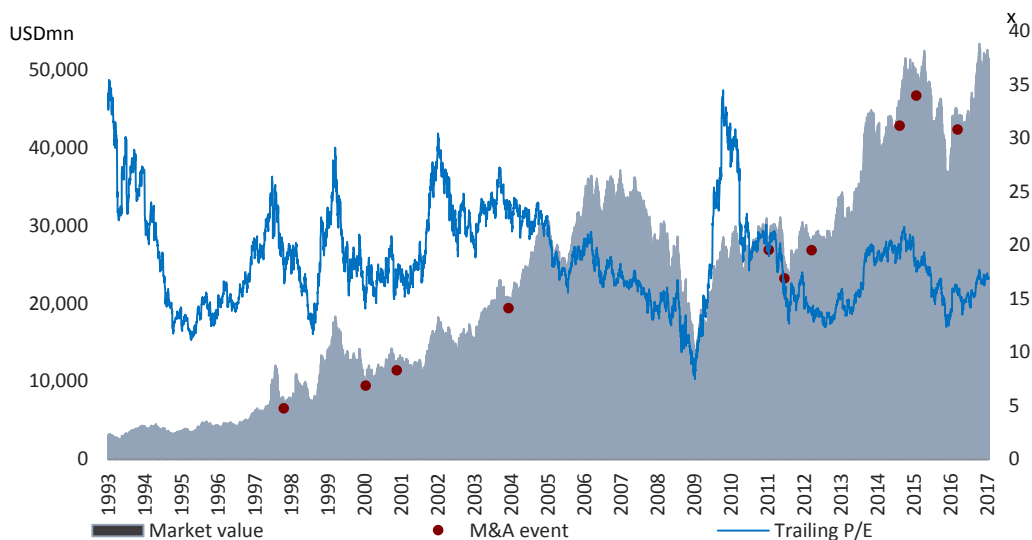
We believe domestic courier companies should focus more on market opportunities in the supply chain or horizontal field, such as warehouse distribution, O2O, terminal integration and other business sectors and their related standards of the business, and also tap into the overseas market development.

Exhibit 55. UPS Market Cap vs. M&A



Source: CRSHK, Company reports, Bloomberg

Exhibit 56. FedEx Market Cap vs. M&A



Source: CRSHK, Company reports, Bloomberg

Further development requires service differentiation

In our view, service differentiation and dedicated operation are essential to distinguish a company after integration in such a homogeneous industry. After benchmarking to the overseas mature market, we expect Chinese players to develop their specialties in different angles, e.g. delivery time, regions, value-added services, COD, etc.

Exhibit 57. Express Service Offering

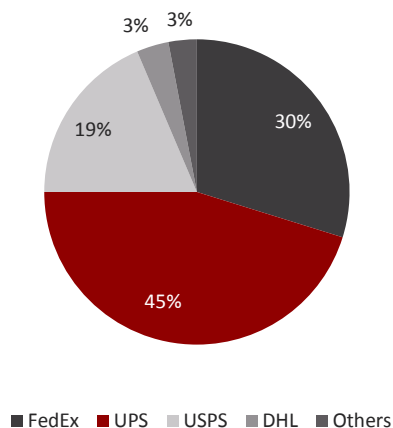
Service Type	Delivery Time	City Range	Region Range	Country Range	Global Range
Periodic	Same day	Ground	Flight		
Customized	Same day		Special Flight		
Periodic / Customized	Next morning				
Periodic / Customized	Next day				
Periodic	Deferred	Integrated Ground	Integrated Flight		

Source: CRSHK

Given that the developed international markets follow oligopoly market competition, we do not expect a monopoly market in China’s express industry as

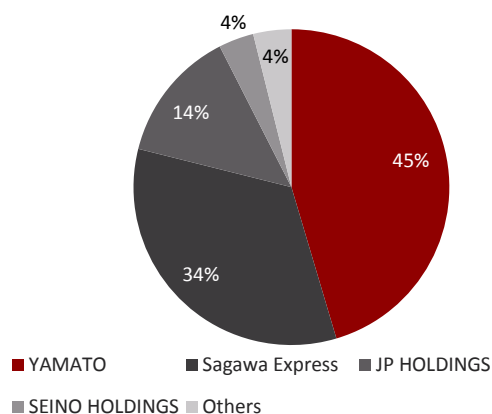
well. Instead, we think express service diversification and dedicated service supply requires multiple players to fulfill the demand. Benchmarking toward Japan, the Japanese express market is mainly controlled by 3 players whose specialty lay in their own fields. YAMATO (1967.T Not covered) is strong at individual small package delivery; Sagawa Express (privately owned) is strong at large parcels, while JP HOLDINGS (privately owned) is specialized in letter mail. It is essentially the same case for the U.S. market, e.g. UPS and USPS focus on ground express service, while FedEx specializes in the air express market. We expect China's express market to consolidate on one side in the e-commerce parcel market and stratify on the other with specialties in different services.

Exhibit 58. Express Market Share in U.S.(2015)



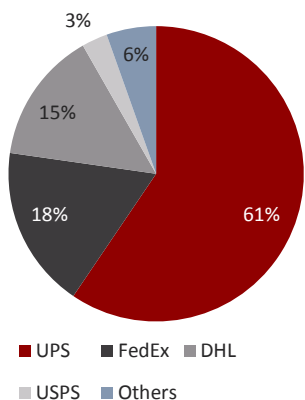
Source: CRSHK, company reports, IBIS world

Exhibit 59. Express Market Share in Japan (2015)



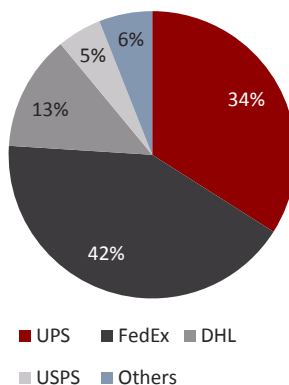
Source: CRSHK, company reports

Exhibit 60. US Ground Delivery volume market share(2015)



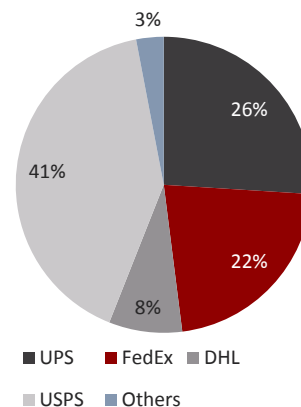
Source: CRSHK, Company reports

Exhibit 61. US Overnight Air volume market share (2015)



Source: CRSHK, Company reports

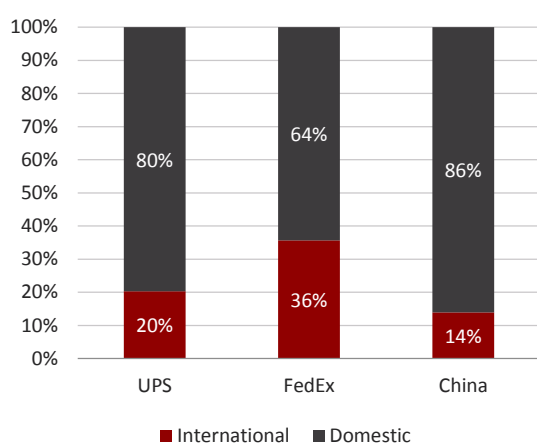
Exhibit 62. US Deferred Air volume market share (2015)



Source: CRSHK Company reports

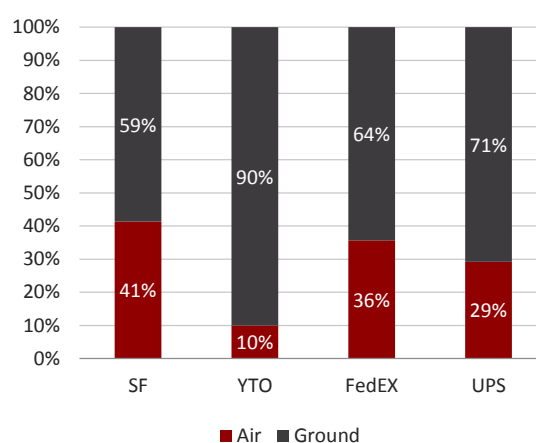
Taking UPS and FedEx for example, they strictly and accurately control their delivery times and focus into one vertical express pattern to reach scalability. As we can see from Exhibit 60-62, UPS takes up 61% in ground transportation volume while FedEx has more presence in air express. When we take a closer look at the FedEx business in Exhibit 63, we find that international package revenue is at 36%, compared to 20% for UPS and 14% in 2016 for China express market.

Exhibit 63. Parcel Revenue Mix by Region (2016)



Source: CRSHK, Company reports, Statistics Bureau of China

Exhibit 64. Parcel Volume Mix Comparison (2016)



Source: Company reports, SF Air website, CRSHK

In China, user express demand has started to stratify as well, as shown below. There is rising demand in more accurate delivery times and shorter delivery times in short distances.

Exhibit 65. Delivery Time Demand from Chinese Customers

Delivery distance	Same Day	+1 day	+2 days	+3 days	+4 days	+5 days
<100km	39.2%	42.9%				
<300km	28.6%	53.6%	3.6%			
<500km	14.3%	64.3%	14.3%			
<1,000km	10.7%	46.4%	35.7%	7.1%		
<2,000km	10.7%	28.6%	57.1%	7.1%	3.6%	7.1%
<3,000km		17.9%	21.4%	35.7%	3.6%	7.1%
<4,000km		10.7%	14.3%	32.1%	7.1%	3.6%

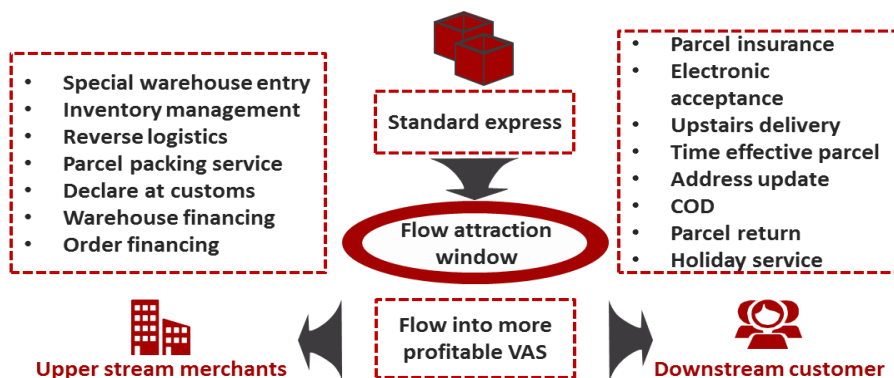
Source: SF research, CRSHK

Service variety and value added services should aid margin improvement

We think diversified integrated services and more value-added services (VAS) could allow express companies to improve their operating efficiency and margins,

leveraging the infrastructure built on basic services. VAS includes services for both customers and merchants.

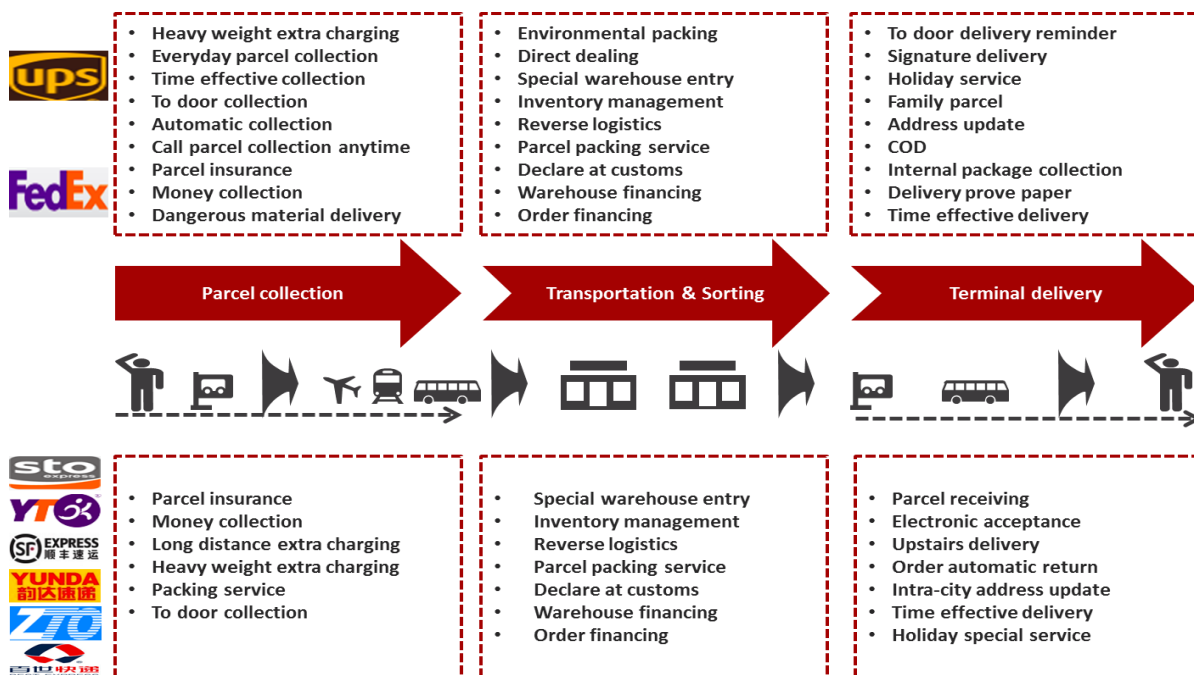
Exhibit 66. Monetizing Express Infrastructure



Source: CRSHK

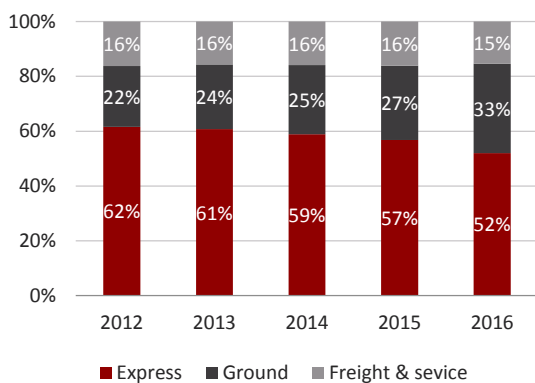
We compare FedEx and UPS's service structure. Their services cover almost the whole industry line including package, freight and return shipments along with many VAS targeting special goods like dangerous or hazardous materials. We think if Chinese companies are able to offer more VAS to bring out customers' value, they would be able to increase their pricing power and revenue capacity.

Exhibit 67. Express Value-added Service Comparison



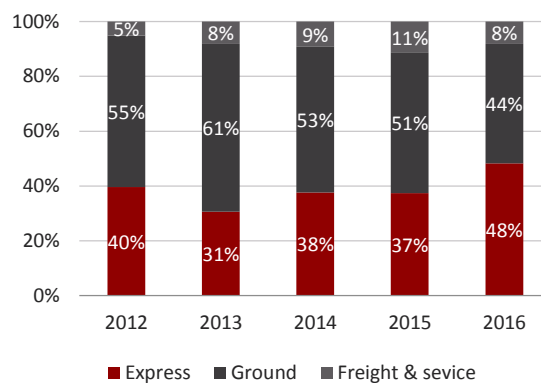
Source: CRSHK, SF/UPS/FedEx websites

Exhibit 68. FedEx Revenue Mix



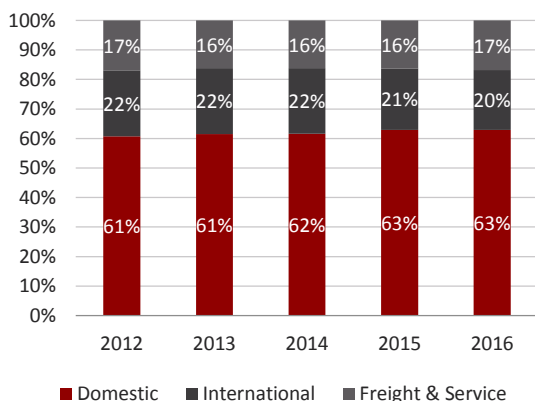
Source: CRSHK, Company reports

Exhibit 69. FedEx Operating Income Breakdown



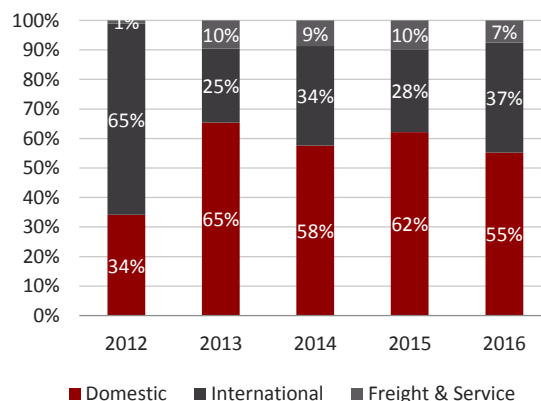
Source: CRSHK, Company reports

Exhibit 70. UPS Revenue Mix



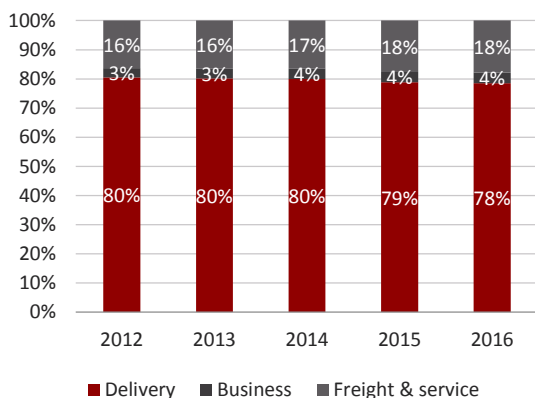
Source: CRSHK, Company reports

Exhibit 71. UPS Operating Income Breakdown



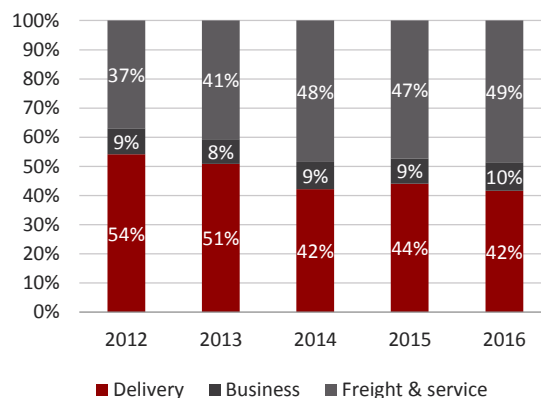
Source: CRSHK, Company reports

Exhibit 72. YAMATO Revenue Mix



Source: CRSHK, Company reports

Exhibit 73. YAMATO Operating Income Breakdown



Source: CRSHK, Company reports

The Best Timing for ZTO Market Share Gain Speeding Up

Network stations are on the survival threshold

We believe network stations are on the threshold of survival. We recently held a network station reality check tour in Shanghai and visited several network stations from Tongda express. We found network stations in top-tier cities are generally earning thin margins or even suffering losses if their locations are not optimal. Headquarter subsidies have been essential for network stations in top-tier cities. The difficulties network stations are facing include:

- **Price war.** Although the price war for the most part has decreased, it is not over. It is forcing, for example, network stations from different Tongda express firms in the same block to form an alliance in order to avoid a price war.
- **Increasing rent and operating costs.** As top-tier cities are renewing or developing urban areas, store capacity for express operation in urban areas is growing limited. Many network stations are forced to move to suburban areas with lower rent, but that has caused a different set of problems in their delivery of parcels.
- **Shortage of labor.** The blue-collar labor force is flowing out of top-tier cities, e.g. Shanghai. Thus, network station owners have to compete with take-out platforms for delivery labor. We believe the reality is that network station owners may need to provide housing for their laborers, the cost of which is also rising as housing prices in top-tier cities are ramping up.
- **Strong KPI requirements or fines.** Tongda headquarters usually has KPI requirements (certain parcel volume growth over last year) for each network partner. If they cannot meet Tongda's target, network partners may not receive their full allotment of governmental subsidies.
- **High user complaint fines.** Users in top-tier cities like to complain, which causes heavy fines over network stations, e.g. RMB500-10,000 per complaint if the users call the China Post Bureau Compliant direct line. To avoid complaints, delivery persons usually have to make extra runs to make sure parcels are delivered in the case that a user would not be at home during office hours.
- **Revenue deferral.** Most express clients pay network stations on a monthly basis. However, some large clients with bargaining power may defer their payments to the quarter end or even longer, which has caused cash cycling problems for network partners in some instances.
- **Lack of funding.** It is almost impossible for network stations to get loans from banks, due to their weak creditability records. Therefore, they are forced to pay a higher interest rate to fund their operations, e.g. 20-40% annual interest rate.

- **High Taobao merchant turnover rate.** Most Taobao merchants are SMEs, which have a high client turnover rate. The network's performance is very volatile due to this client churn.

Expecting ZTO to expand its position

ZTO reached 14.4% market share in the express market by volume in 2016 (shown below in Exhibit 74), slightly beating YTO with its 14.3% market share. We believe 2017 would be the best opportunity for ZTO to further gain market share for its more balanced profit sharing mechanism and operating efficiency, despite that ZTO's margin might be impacted in the short term. We believe Tongda peers may face more challenges from network station stability than ZTO. For example, news reported one of YTO's network stations went on strike in February and caused a malfunction of YTO's network temporarily. (<http://tech.sina.com.cn/i/2017-02-16/doc-ifyarrqs9852932.shtml>)

As shown in the table below, ZTO impresses us with its gross profit per parcel, leveraging what we consider to be its fine operation and efficiency improvement. Replacement of small trucks (9.6m ones) with large trucks (17m long) and automatic sorting lines should continue to improve ZTO's GM. We believe ZTO's network management and operating efficiency should also continue to aid in ZTO's effort to gain market share.

Exhibit 74. Per Parcel Economics Comparison

2016 (in RMB)	SF	YTO	STO	Yunda	ZTO
Revenue per parcel	22.15	3.64	3.00	2.13	2.08
(Revenue net of last-mile express fee)		2.24	1.52	2.13	2.08
Unit waybill fees per parcel		0.91	0.76	0.91	0.78
Unit network transit fee per parcel		1.46	0.76	1.22	1.30
Unit last-mile express fee per parcel		1.40	1.48	0.00	0.00
COGS per parcel	17.82	3.18	2.40	1.47	1.35
(COGS net of last-mile express fee)		1.78	0.87	1.47	1.35
Gross profit per parcel	4.33	0.46	0.59	0.66	0.74
GM	20%	21%	39%	31%	36%
Operating profit per parcel	1.43	0.39	0.50	0.50	0.62
OM	6%	17%	33%	23%	29%
Net profit per parcel	1.62	0.31	0.39	0.37	0.43
NM	7%	14%	26%	17%	21%

Source: CRSHK, Company reports

Comp Table

Comparable Valuation Table

Exhibit 84 Express Company Comp Table

	Price*	Mkt Cap	Revenue Growth			EPS Growth			EBITDA Margin	P/E Multiple			PEG	
	4/5/2018	Mn	2017E	2018E	2019E	2017E	2018E	2019E	2016	2017E	2018E	2019E	2018E	2019E
China E-commerce														
Alibaba	\$116.57	\$290,874	56.0%	32.0%	27.8%	37%	25%	24%	52.3%	33.8x	27.1x	21.9x	1.1x	0.9x
JD.com	\$35.15	\$50,207	34.6%	26.0%	20.9%	NM	165%	103%	0.4%	174.4x	65.8x	32.4x	0.4x	0.3x
Vipshop	\$13.85	\$8,173	27.6%	20.7%	15.0%	21%	20%	17%	6.0%	17.0x	14.2x	12.1x	0.7x	0.7x
Baozun	\$15.78	\$841	25.3%	26.0%	23.4%	167%	58%	50%	3.8%	21.5x	13.6x	9.1x	0.2x	0.2x
ZTO	\$13.70	\$10,020	36.9%	29.4%	23.2%	38%	33%	30%	31.8%	22.1x	16.7x	12.8x	0.5x	0.4x
Suning	¥ 10.38	\$14,013	14.1%	16.0%	7.9%	3%	131%	48%	1.0%	296.6x	128.1x	86.5x	1.0x	1.8x
Ave.			32.4%	25.0%	19.7%	53%	72%	45%	15.9%	94.2x	44.2x	29.1x	0.7x	0.7x
Global Express Delivery														
FedEx	\$189.92	\$50,780	20.0%	5.0%	4.6%	10.2%	14.2%	13.6%	15.2%	16.0x	14.0x	12.4x	1.0x	0.9x
UPS	\$107.35	\$93,398	5.2%	4.8%	4.5%	2.4%	8.2%	3.8%	17.2%	18.0x	16.7x	16.1x	2.0x	4.3x
SingPost	1.38	\$2,307	25.0%	9.5%	9.0%	-26.3%	14.3%	10.9%	19.8%	24.6x	21.6x	19.4x	1.5x	1.8x
DE Post	32.25	\$44,961	3.9%	5.4%	3.7%	1.8%	7.9%	5.8%	8.7%	14.6x	13.5x	12.8x	1.7x	2.2x
Yamato	2496.50	\$10,040	3.8%	3.4%	3.6%	-17.9%	7.8%	22.6%	8.1%	31.1x	28.8x	23.5x	3.7x	1.0x
CJ Express	169000	\$3,427	13.0%	10.3%	10.3%	31.0%	30.9%	16.5%	6.1%	33.7x	25.7x	22.1x	0.8x	1.3x
Ave.			11.8%	6.4%	6.0%	0.2%	13.9%	12.2%	12.5%	23.0x	20.1x	17.7x	1.8x	1.9x
Global Logistics														
XPO	\$48.77	\$5,440	2.5%	5.8%	7.5%	84.9%	57.3%	29.7%	8.5%	27.4x	17.4x	13.5x	0.3x	0.5x
CH Robinson	\$72.78	\$10,319	8.9%	5.2%	4.4%	0.9%	6.6%	7.6%	7.0%	20.2x	19.0x	17.6x	2.9x	2.3x
Landstar														
System	\$84.65	\$3,549	8.7%	7.1%	1.2%	9.9%	12.4%	6.2%	8.2%	24.2x	21.5x	20.3x	1.7x	3.3x
Expeditors	\$54.08	\$9,772	7.8%	5.7%	3.8%	3.6%	8.4%	1.6%	11.8%	22.2x	20.5x	20.2x	2.4x	12.7x
Ave.			7.0%	6.0%	4.2%	24.8%	21.2%	11.3%	8.9%	23.5x	19.6x	17.9x	1.8x	4.7x
China Express Delivery														
SF	¥ 50.56	¥ 211,526	21.4%	19.3%	17.6%	6.28%	12.36%	21.69%	7.3%	46.9x	41.7x	34.3x	3.4x	1.6x
YTO	¥ 20.06	¥ 56,593	83.7%	27.3%	11.0%	19.85%	17.14%	16.82%	7.5%	34.0x	29.0x	24.8x	1.7x	1.5x
STO	¥ 25.81	¥ 46,627	25.3%	20.5%	18.6%	30.97%	24.52%	21.88%	12.2%	24.1x	19.3x	15.9x	0.8x	0.7x
Yunda	¥ 46.00	¥ 39,510	34.4%	28.9%	25.9%	36.17%	27.82%	29.49%	0.3%	29.8x	23.3x	18.0x	0.8x	0.6x
Ave.			41.2%	24.0%	18.3%	23.3%	20.5%	22.5%	6.8%	33.7x	28.4x	23.3x	1.7x	1.1x
	USD:RMB	6.90												
	USD:HKD	7.75												
	USD:SGD	1.36												
	USD:ERUO	0.89												
	USD:JPY	102.28												
	USD:S.Korean Won	1124.93												

Source: Bloomberg data, WIND, CRSHK, Company reports, www.go-goal.com

Appendix A

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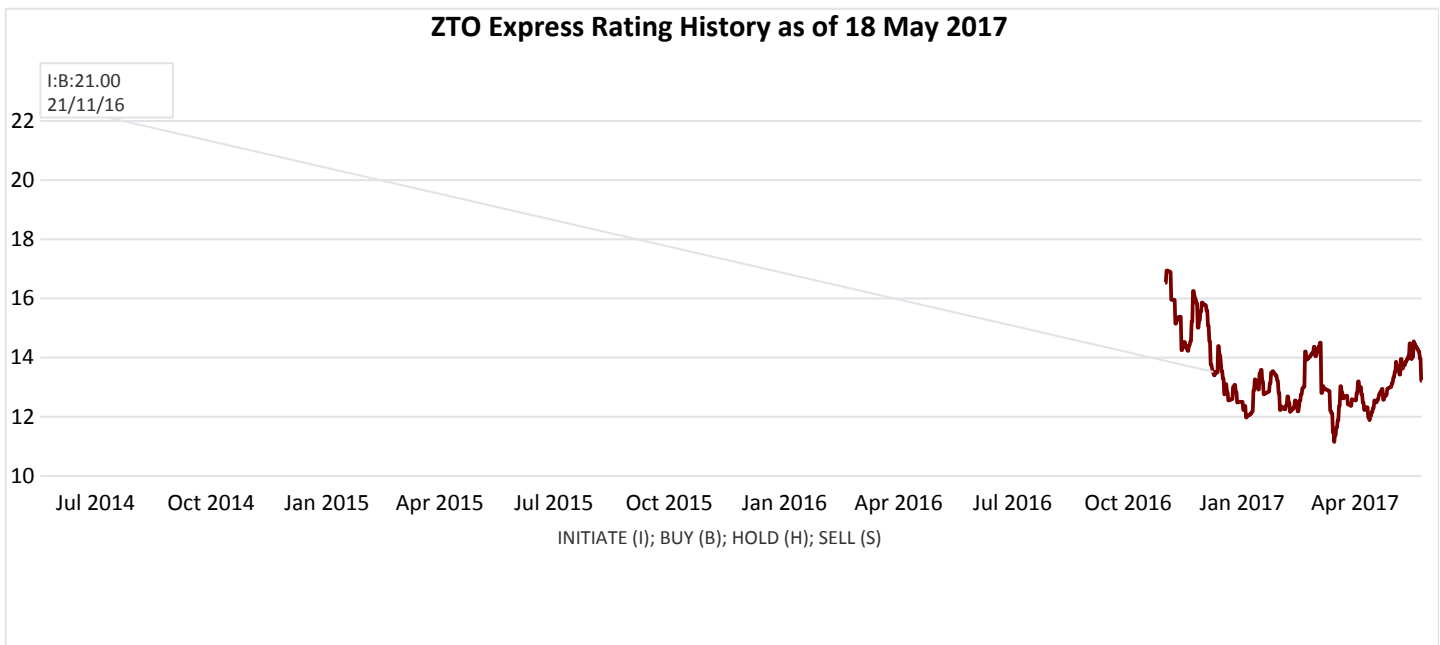
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Valuation Methodology

ZTO:

Our \$19 price target for ZTO is based on 25x our 2018 non-GAAP EPS estimate of \$0.81.

Risks:

- We think a potential price war is possible because: 1) all Tongda Operators' services and quality are largely similar to each other and the level of differentiation is low; 2) senders, especially ecommerce merchants, are price sensitive. Price is still their first consideration; 3) all of the major players are publicly listed and their future financing situations have greatly improved; 4) all of them currently earn decent margins. There is room for price reduction.
- One potential risk to ZTO's net profit growth is that Cainiao may begin charging express companies for electronic waybills and data support, which it has been providing to the express industry at very low cost. A direct charge will increase ZTO's cost and impact its profitability.
- Diesel is about 18% of ZTO's total cost of revenues. However, the diesel price tends to fluctuate and is typically out of the company's control. In the past 2 years, the diesel price has been declining, which benefitted the company's profitability.

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