

China / Hong Kong Company Guide

Sunny Optical Technology

Version 1 | Bloomberg: 2382 HK Equity | Reuters: 2382.HK

Refer to important disclosures at the end of this report

DBS Group Research . Equity

16 Dec 2019

BUY (Initiating Coverage)

Last Traded Price (13 Dec 2019): HK\$142.70 (HSI : 27,688)

Price Target 12-mth: HK\$180 (26.1% upside)

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Price Relative



Forecasts and Valuation

FY Dec (RMBm)	2018A	2019F	2020F	2021F
Turnover	25,932	35,259	47,229	60,659
EBITDA	3,868	5,544	7,709	10,155
Pre-tax Profit	2,851	4,070	5,558	7,523
Net Profit	2,491	3,555	4,850	6,559
Net Pft (Pre Ex) (core profit)	2,491	3,555	4,850	6,559
Net Profit Gth (Pre-ex) (%)	(14.2)	42.7	36.4	35.2
EPS (RMB)	2.28	3.25	4.44	6.00
EPS (HK\$)	2.54	3.63	4.95	6.70
EPS Gth (%)	(14.6)	42.7	36.4	35.2
Diluted EPS (HK\$)	2.54	3.62	4.94	6.68
DPS (HK\$)	0.63	0.90	1.23	1.67
BV Per Share (HK\$)	9.39	11.84	15.21	19.77
PE (X)	56.1	39.3	28.8	21.3
P/Cash Flow (X)	30.7	28.9	22.1	16.4
P/Free CF (X)	75.5	107.2	50.4	25.5
EV/EBITDA (X)	34.7	24.2	17.3	12.8
Net Div Yield (%)	0.4	0.6	0.9	1.2
P/Book Value (X)	15.2	12.1	9.4	7.2
Net Debt/Equity (X)	CASH	CASH	CASH	CASH
ROAE (%)	29.8	34.1	36.5	38.1
Earnings Rev (%):		New	New	New
Consensus EPS (RMB)		3.17	4.41	5.55
Other Broker Recs:		B:42	S:2	H:6

Source of all data on this page: Company, DBS Bank (Hong Kong) Limited ("DBS HK"), Thomson Reuters

Riding the multi-camera wave

- The world's second largest supplier of handset camera modules (HCM) and handset lens sets (HLS)
- Beneficiary of smartphone optics upgrades to tri/quad camera
- Continuous market share gains in both HCM and HLS
- Initiating coverage with BUY and TP of HK\$180

Initiating coverage with BUY and TP of HK\$180; riding the multi camera wave. We initiate coverage on Sunny Optical with a BUY call and TP of HK\$180. It is the world's second largest supplier of HCM and HLS. Driven by smartphone optics upgrades to tri/quad cameras and market share gains, we expect Sunny Optical's net profit to deliver 38% CAGR during FY18-21F.

Where we differ: Growing HCM business, fuelled by tri/quad cameras and market share gains from O Film. The market has concerns on Sunny's HCM shipments, as Huawei's overseas smartphones have been impacted by the restriction on Google Mobile Services. However, we believe this is more than compensated by increasing average number of cameras per smartphone from 2.4 in 2018 to 4 in 2021F, fuelled by rising use of tri/quad cameras. Meanwhile, we expect Sunny Optical to gain market share in HCM from competitor O Film. According to our channel checks, O Film's customers and suppliers have concerns on its poor financial status. We expect Sunny Optical's HCM revenue to expand by 35% CAGR during 2018-2021F.

Other critical factors: Rising HLS business, driven by increasing multi-camera demand and share gains in high end market. We expect Sunny Optical's HLS revenue to deliver 36% CAGR during FY18-21F, driven by the multi-camera wave as well as market share gains in HLS in high-end market. This is because competitor Largan's new factories will only come in 2023F, hence near-term capacity will face bottlenecks. Meanwhile, Sunny Optical continuously narrows its technological gap with Largan.

Valuation:

Our TP of HK\$180 is based on 37x FY20F PE, 1SD above its 5-year average, supported by smartphone optics upgrade cycle.

Key Risks to Our View:

Substitution from emerging technologies (i.e. wafer-level glass).

At A Glance

Issued Capital (m shrs)	1,097
Mkt Cap (HK\$m/US\$m)	156,520 / 20,062
Major Shareholders (%)	
Sun Xu Ltd.	35.5
Free Float (%)	64.5
3m Avg. Daily Val. (US\$m)	91.24
GICS Industry: Information Tech/ Tech Hardware & Equipment	
Bloomberg ESG disclosure score (2018) [^]	40.1
- Environmental / Social / Governance	41.9 / 28.1 / 48.2

[^] refer to back page for more information



Live more, Bank less

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Sunny Optical Technology

SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> • Integrated optical component supplier. Sunny Optical successfully moved from the low-margin handset camera module (HCM) market to high-margin handset lens set (HLS) market through the acquisition of Konica Minolta's HLS production facility in Shanghai in 2013. Sunny Optical is the only supplier in China providing both camera modules and lens sets for handsets. Sunny Optical's HCM business could help secure HLS orders, as HCM suppliers can sometime recommend HLS suppliers, especially for mid-to-low end smartphone models. • Track record in diversification. It successfully diversified its optics product applications from digital cameras to smartphones and vehicles. The company is the world's second largest supplier of HCM and HLS. The company is the world's largest supplier of vehicle lens set (VLS). 	<ul style="list-style-type: none"> • Technology in HLS lags behind Largan. Largan has first mover advantage in the HLS market. Sunny Optical's ASP is c.60% lower than Largan's as Sunny Optical's contribution from high resolution (10MP+) products is lower than Largan's by c.30%. This shows Sunny Optical's technology in HLS is lagging behind Largan.
Opportunities	Threats
<ul style="list-style-type: none"> • Volume growth driven by rapid migration to tri/quad cameras. We expect tri/quad camera penetration for global smartphones to further increase from 7%/0% in 2018 to 46%/32% in 2021F, to drive average number of cameras per smartphone to increase from 2.4 in 2018 to 4 in 2021F. We expect Sunny Optical's shipments of HCM and HLS to deliver 31% and 29% CAGR during FY18-21F. • ASP growth driven by individual camera upgrades among tri /quad cameras. Price erosion has reached 10-20% for like-for-like products. However, we expect increasing adoption of higher ASP 32MP+, periscope, wide, and ToF cameras in tri / quad cameras to lead to higher ASPs of 3% and 5% CAGR for HCM and HLS during FY18-21F. • Market share gains in HCM. We expect Sunny Optical to gain market share in HCM from 13% in FY18 to 16% in FY21F, especially from competitor O Film. According to our channel checks, O Film's customers and suppliers are concerned on the company's poor financial status. The company is thus focused on improving cash flow rather than gaining market share. • Market share gains in HLS. We expect Sunny Optical's market share in HLS to increase from 28% in FY18 to 34% in FY21F, especially in the high-end market. This is because competitor Largan's new factories will only come in 2023F, and near-term capacity will face bottlenecks; Sunny Optical narrows technological gap with Largan. 	<ul style="list-style-type: none"> • Industry M&As may intensify competition. Industry M&A, including both vertical and horizontal M&A in HCM and HLS markets, has accelerated. For example, Q Technology (1478 HK) acquired a stake in Newmax Technology (3630 TT, a Taiwan's HLS supplier) in 2017. LuxVisions (a private company owned by Luxshare family [002475 CH]) acquired Lite On (2301 TT, a Taiwanese HCM supplier) in 2018. FIT (6088 HK) invested in Kantatsu (a Japanese HLS supplier) in 2019. Acquirers could strengthen acquirers' competitiveness (i.e. extra resources for capacity and client expansion) and intensify competition in HCM and HLS markets. • Substitution from emerging technologies. While plastic lens sets remain the mainstream option for smartphones, China's flagship models will start to adopt hybrid lens sets (plastic lenses + glass lenses) in 1H20, as hybrid lenses can achieve better optical performance. Sunny Optical's moulding technology in glass lenses may be less competitive to other emerging technologies, such as AAC technologies' (2018 HK) wafer-level glass (WLG) technology which has higher scalability after optimising its yield rate. This may lead to market share loss in HLS market, especially in the high-end smartphone market.

Source: DBS HK

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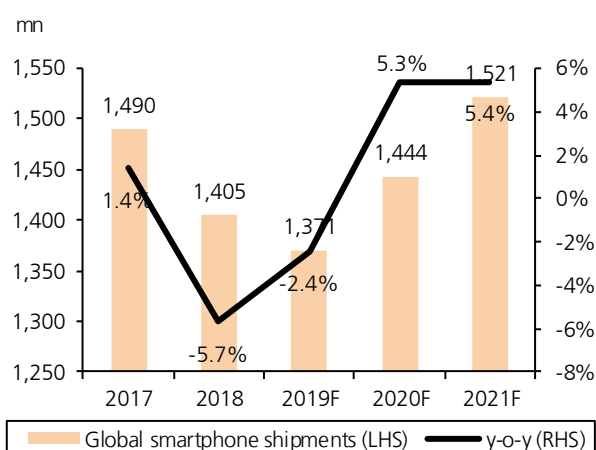
Industry overview

Optical components are widely used in customer applications, such as digital cameras, computers, smartphones, automotive, and business applications such as optical instruments. Among these applications, (1) smartphones and (2) vehicles are the highest growth segments which will deliver 21.0% and 23.4% CAGR in camera shipments in 2018-2021F respectively.

(1) Global smartphone market. We expect global smartphone shipments to decline 2.4% to 1,371m units in 2019.

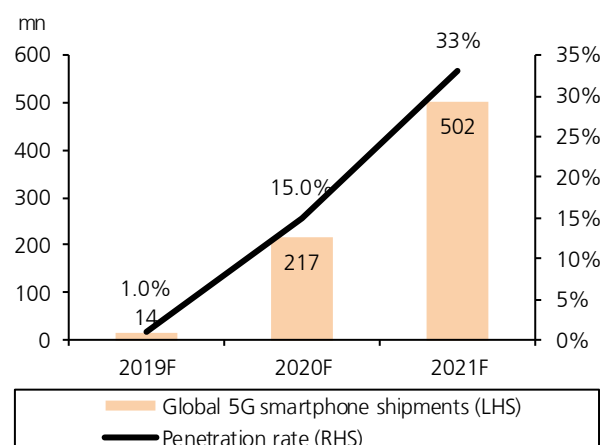
However, we expect shipments to resume growth at 5.3%/5.4% to 1,444m/1,521m in 2020/21F, driven by greater replacement cycle with 5G adoption from 2020F onwards. 5G smartphones will take off in 2020, with penetration rate increasing from 1.0% in 2019F to 15.0%/33.0% in 2020/21F.

Global smartphone shipments



Source: IDC, DBS HK

Global 5G smartphone shipments



Source: IDC, DBS HK

Global smartphone vendors. We expect big six smartphone vendors' shipments (Samsung [005930 KS], Apple [AAPL US]), Huawei, Oppo, Vivo, Xiaomi [1810 HK]) to deliver 4.0-15.7% growth in 2020F, with market share continuously consolidating from 74.9% in 2018 to 77.5% in 2020F.

Market concerns that Huawei's overseas smartphone shipments could be impacted by restrictions on GMS. We expect Huawei's overseas market share to decline from 10.0% in 2018 to 9.1%/8.3%/7.5% in 2019/20/21F. However, Huawei's domestic market share is expected to rise from 26.9% in 2018 to 40.0%/45.0%/50.0% in 2019/20/21F. Oppo, Vivo and Xiaomi (aggregated) will continue to gain overseas market share from 12.9% in 2018 to 16.1%/19.4%/22.6% in 2019/20/21F.

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Major smartphone vendors: Global shipments

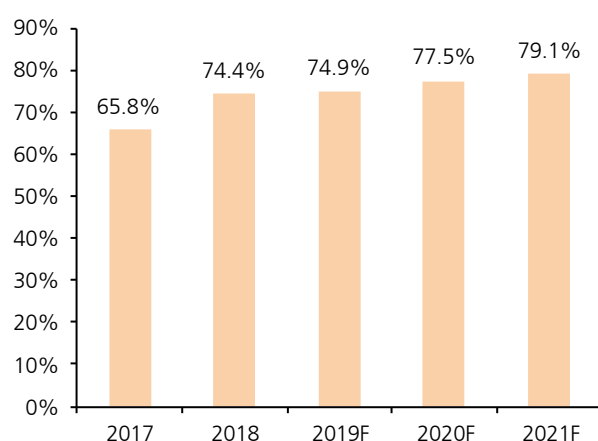
	2017	2018	2019F	2020F	2021F
Shipments (m)					
Samsung	317	292	298	315	327
Apple	216	209	196	204	213
Huawei	154	206	214	233	249
Oppo	112	113	103	119	135
Vivo	88	102	93	108	121
Xiaomi	93	123	122	139	159

y-o-y

Samsung	1.9%	-7.9%	1.9%	5.8%	3.7%
Apple	0.2%	-3.2%	-5.9%	4.0%	4.1%
Huawei	15.9%	33.6%	3.8%	9.1%	6.6%
Oppo	29.9%	1.3%	-8.8%	15.7%	13.0%
Vivo	22.2%	15.9%	-8.5%	15.6%	12.6%
Xiaomi	52.0%	32.3%	-0.7%	14.3%	14.0%

Source: IDC, DBS HK

Big six smartphone vendors: Market share



Source: IDC, DBS HK

Segmental optics component drivers (1): Volume growth driven by rapid migration to tri/quad cameras. We expect increasing adoption of multi cameras, which allow smartphone cameras to deliver image quality close to digital single-lens reflex (DSLR) cameras, to lead to volume uplift.

(i) Dual cameras: In 2016, Apple's (AAPL US) iPhone 7 Plus and China's high-end smartphones (ASP of Rmb3,000+) started to adopt dual cameras; (1) "higher resolution main camera" + "higher resolution telephoto camera" for optical zoom and, (2) "higher resolution colour camera" + "higher resolution mono camera" for enhanced image details. The additional camera was either "telephoto camera" or "mono camera". In 2018, China's mid-to-low end smartphones adopted lower-

spec dual cameras; (3) "higher resolution camera" + "lower resolution camera". The additional camera was typically a "lower resolution camera".

(ii) Tri cameras: In 2018, China's smartphone vendors and Samsung started to adopt tri cameras in high-to-mid end models (ASP of Rmb2,000+): "higher resolution main camera" + "higher resolution telephoto camera" + "higher resolution wide camera" for optical zoom. The additional camera is typically a "wide camera". In 2019, Apple adopted tri cameras in iPhone 11 Pro and iPhone 11 Pro Max. China's flagship smartphones started to upgrade "telephoto camera" to "periscope camera".

(iii) Quad cameras: In 2019, China's smartphone vendors and Samsung has adopted quad cameras in high-to-mid end models with ASP of Rmb2,000+: "higher resolution main camera" + "higher resolution telephoto camera" + "higher resolution wide camera" + "3D sensing (Time of Flight, ToF) camera". The additional camera is "3D sensing (Time of Flight, ToF) camera".

Global smartphone camera shipments

	2017	2018	2019F	2020F	2021F
Global smartphone shipments (mn)	1,490	1,405	1,371	1,444	1,521
y-o-y	1.4%	-5.7%	-2.4%	5.3%	5.4%
Multi camera penetration rate					
Single cameras	84.1%	65.2%	33.6%	17.7%	15.3%
Dual cameras	15.9%	28.0%	38.5%	27.8%	6.8%
3 cameras	0.0%	6.8%	21.4%	34.3%	45.6%
4 cameras	0.0%	0.0%	6.5%	20.2%	32.3%
Global smartphone camera shipments (mn)	3,217	3,394	4,123	5,153	6,006
y-o-y	6.4%	5.5%	21.5%	25.0%	16.6%

Source: IDC, DBS HK

We expect tri/quad camera penetration for global smartphones to further increase from 6.8%/0.0% in 2018 to 45.6%/32.3% in 2021F. We expect average number of cameras per smartphone to increase from 2.4 in 2018 to 4.0 in 2021F. We expect global smartphone camera shipments to deliver 21.0% CAGR during 2018-2021F.

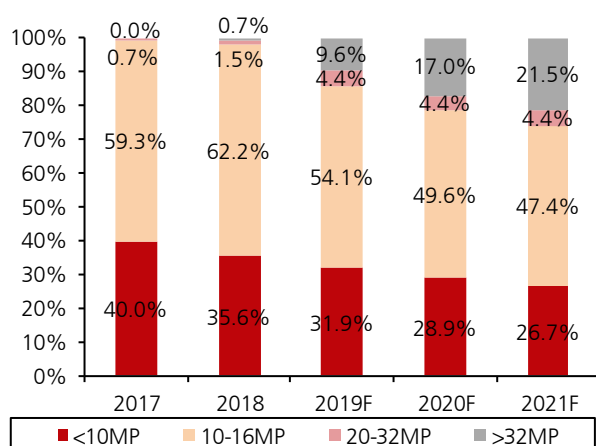
Segmental optics component drivers (2): ASP growth driven by individual camera upgrades among tri/quad cameras. We expect higher resolution 32MP+, as well as the increasing adoption of periscope, wide and 3D sensing (ToF, time of flight) cameras in tri/quad cameras to lead to ASP uplift.

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(i) Main cameras: Increasing share of higher resolution 32MP+.

Smartphone cameras continue to be upgraded for higher resolution. 5MP upgrade was in 2007-2010; 8MP upgrade was in 2011-2013; 10-16MP upgrade was in 2014-2017; 20-32MP upgrade started since 2017. Flagship smartphones started to adopt 20-32MP main cameras in 2017 and jumped to 32MP+ (i.e. 48MP, 64MP) main cameras in 2018, driven by Sony's (6758 JP) introduction of quadra sensors (larger size sensor) in 2018. 32MP+ smartphone rear camera share is expected to increase from 0.7% in 2018 to 21.5% in 2021F.

Smartphone cameras: Megapixel mix

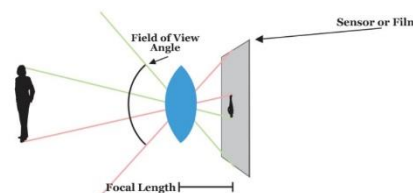


Source: TSR, DBS HK

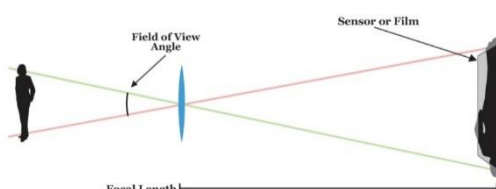
(ii) Telephoto cameras: Upgrades to periscope cameras. One of the key gaps between smartphones and DSLR is optical zoom. Optical zoom in traditional smartphone camera modules is limited to 3x. Focal length, the distance between lenses and image sensors, is constrained by the thickness of smartphones. Higher optical zoom requires longer focal length.

Short vs long focal length

Short focal length – A smartphone camera with shorter focal length will capture more of the scene, but with smaller subject.



Long focal length – A smartphone camera with longer focal length will capture less of the scene, but with larger subject.



Source: DBS HK

Some flagship models (e.g. Huawei P30 Pro) started to adopt periscope cameras in 2019, which allow smartphone cameras to achieve 5x+ optical zoom. Given the vertical height limit, periscope camera modules arrange optical components (i.e. lenses, VCMs [moving the lens part toward or away from the image sensor], sensors and PCBs) horizontally across the top of smartphones. This enables longer focal length for a higher degree of optical zoom. We expect global periscope camera penetration rate to increase from 1.0% in 2019 to 4.5% in 2021F.

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Traditional (vertical) vs periscope camera module (horizontal)

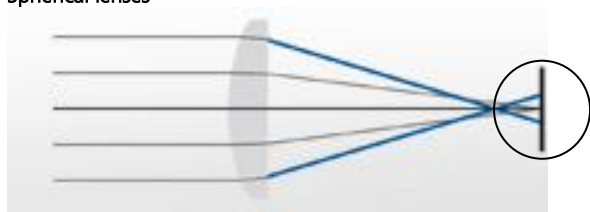


Source: Company, DBS HK

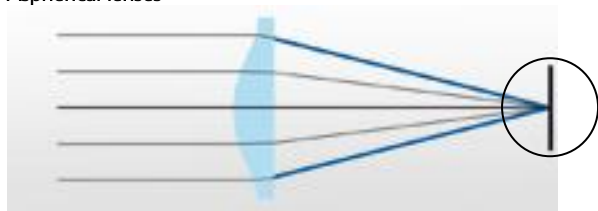
(iii) Wide cameras: Adoption to wide cameras. Another key gap between smartphones and DSLR is the wide angle function. Flagship models have started to adopt wide cameras since 2018. In addition to spherical lenses, wide cameras need aspherical lenses, which have more than one curvature to reduce the light path distortion of subjects at edges of the frame. This requires higher design & manufacturing capability of lens set suppliers and leads to higher ASP. We expect global wide camera penetration rate to increase from 6.8% in 2018 to 51.9% in 2021F.

Spherical versus aspherical lenses

Spherical lenses



Aspherical lenses



Source: ARRI Rental, HK

(iv) 3D sensing cameras: Adoption of time-of-flight (ToF) cameras. Another key gap between smartphones and DSLR is depth of field. Depth of field of smartphone camera modules is restricted by smaller sensor sizes.

Some flagship smartphones (e.g. Samsung Galaxy Note 10+, Huawei P30 Pro, OPPO R17Pro, Vivo Nex Dual Screen) have started to adopt time-of-flight (ToF, one of the major 3D sensing technologies). First, depth measurement could be achieved through ToF cameras. After dot projectors project infrared beam onto subjects, ToF cameras could capture the image and measure the time it takes to return to estimate the distance. Depth of field could be achieved through algorithm, which de-focuses the scene outside of focused subjects, with blur increasing with the distance from focused subjects.

We believe ToF is an important way to realise augmented reality (AR - overlaying digital imagery onto the real world) functions in smartphones in the 5G era. This could enable killer AR applications (e.g. AR online games and shopping applications) with high-speed data transmission.

We expect global ToF camera penetration rate to increase from 4.5% in 2019 to 27.4% in 2021F.

Major 3D sensing technologies

Type	Mechanism	Applications
Structured light (SL)	The dot projector projects an infrared dot pattern onto the object. The SL camera then captures it and measures the size of the dots to estimate the distance.	Front cameras for facial recognition (i.e. unlocking smartphones).
Time-of-Flight (ToF)	The dot projector projects an infrared beam onto the object. The ToF camera then captures it and measures the time it takes to return to estimate the distance.	Rear cameras for sensing depth of field for photo taking, and realise augmented reality's (AR, overlaying digital imagery onto the real world) functions on smartphones

Source: Company, DBS HK

Currently, mid-range smartphones adopt; (1) "main + wide + macro lens / portrait" tri camera solution, which costs c.US\$30. High-end smartphones upgrade from; (2) "main + wide + telephoto" tri camera solution, which costs c.US\$40 to (3) "main + wide + telephoto (periscope)" tri camera solution, (4) "main + wide + telephoto (periscope) + 3D sensing (ToF)" quad camera solution, which costs c.US\$60, and c.US\$70. Therefore, the adoption of periscope, wide and ToF camera in tri /quad cameras will lead to ASP uplift.

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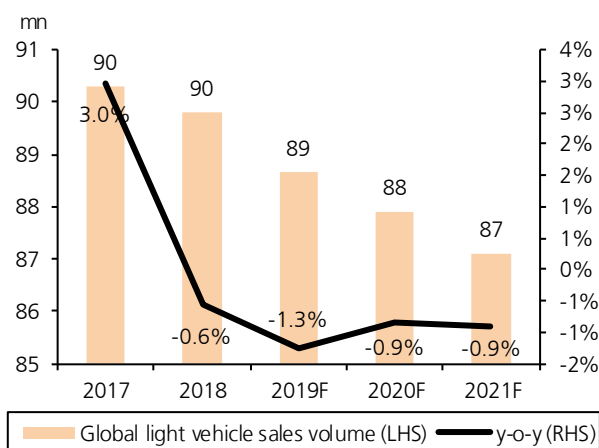
Key tri/quad camera solutions: Comparison

Solutions	Advantages	Costs
Color + Mono + telephoto	- Enhancing image details - 3x optical zoom	US\$30
Main + wide + telephoto	- Ultra view angle - 5x optical zoom	US\$40
Main + wide + telephoto (periscope)	- Ultra view angle - 10x optical zoom	US\$60
Main + wide + telephoto (periscope) + 3D sensing (ToF)	- Ultra view angle - 10x optical zoom - Sensing depth of scenery	US\$70

Source: Company, DBS HK

(2) Global light vehicle market. We expect global light vehicle shipments to decline 1.3%/1.9% to 89m/88m units in 2019/20F, with a lower replacement rate amid macro headwind.

Global light vehicles: Sales volume



Source: IHS, DBS HK

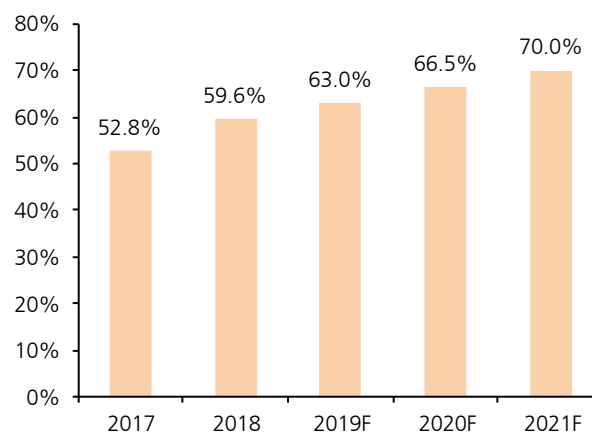
Vehicle component opportunities. Just as phones got smarter, so will cars. Cars are being equipped with infotainment features and advanced driver assistance systems (ADAS), for safety and eventually autonomous driving. This will benefit related component suppliers via increased volumes and/or ASPs.

Segmental optics component drivers (1): Increasing adoption of ADAS driven by inclusion of ADAS technology in safety rating. Demand for vehicle cameras is being driven by increasing adoption of advanced driver assistance systems (ADAS), which helps drivers with monitoring, warning, braking and steering tasks. ADAS is being increasingly adopted by automakers after its inclusion in safety rating.

Euro New Car Assessment Program (Euro NCAP), which is a European car safety performance assessment programme, has required one or more ADAS technology such as autonomous emergency braking (AEB, which needs 1 front camera to detect obstacles) on a vehicle for a five-star safety rating since 2014. NCAP in other developed markets such as Japan, Korea and U.S. have integrated ADAS technologies into their ratings since 2016, 2017 and 2018 respectively.

We expect ADAS penetration for global light vehicles to increase from 59.6% in 2018 to 70.0% in 2021F.

ADAS penetration: Global light vehicles



Source: IHS, DBS HK

Segmental optics component drivers (2): Increasing vehicle cameras per ADAS car, driven by autonomous driving. The increasing level of autonomous driving is also increasing the number of cameras per car. National Highway Traffic Safety Administration (NHTSA) defines five levels of autonomous driving, from increasing safety (i.e. collision warning and automatic emergency braking in; level 1 removing driver supervision; in traffic jams in level 2; in highways in level 3; in all circumstances in level 4/5).

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Five levels of autonomous driving

	Human driver	System monitoring	Technology requirements	Number of cameras per car
Level 0	100%	0%	N.A.	N.A.
Level 1	System over-ride only in emergency	Partially	<ul style="list-style-type: none"> - Blind spot detection - Forward collision warning - Automatic emergency braking - Rear collision warning - Lane departure warning 	1
Level 2	System over-ride under certain conditions (parking, highway driving, etc.)	Mostly	<ul style="list-style-type: none"> - Parking assist - Adaptive cruise control - Traffic cam assist 	4+
Level 3	Human driver over-ride only in an emergency	Mostly	<ul style="list-style-type: none"> - Highway automated driving - City road driving - Country road driving 	4+
Level 4	0%	100%	<ul style="list-style-type: none"> - Real-time updates to maps, vehicle-to-vehicle communication (V2V), and vehicle-to-infrastructure (V2I) communication 	6+
Level 5	No human driver	100%	<ul style="list-style-type: none"> - Real-time updates to maps, vehicle-to-vehicle communication (V2V), and vehicle-to-infrastructure (V2I) communication 	6+

Source: NHTSA, DBS HK

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Many automakers (i.e. Mercedes, Audi, Volvo, BMW, Tesla, Toyota, and Lexus) started to deploy level 2 of autonomous driving since 2014. Some of them (i.e. Mercedes, Nissan, Audi, and BMW) plans to deploy level 3 by 2020F.

Major automakers with plans for autonomous driving



Source: IHS, DBS HK

Average cameras per vehicle could increase from 0 to 1+ in level 1 (1 rear camera), 4+ in level 2 and level 3 (1 front, 2 side, and 1 rear cameras), and 6+ in level 4 and 5 (1 front, 2 side, 2 corner and 1 rear mirror cameras). There may be 1 interior camera for driver monitoring systems, which ensures a safe transition between autonomous -driving and driver-controlled operations. With increasing adoption of level 2 and even level 3, 4, and 5, we expect global automotive camera shipments to deliver 24.2% CAGR during 2018-2021F.

Global automotive: Camera shipments

	2017	2018	2019F	2020F	2021F
Global light vehicle shipment (mn)	90	90	89	88	87

ADAS

penetration rate

Level 1	47.8%	49.6%	47.6%	45.8%	44.0%
Level 2 & 3	5.0%	10.0%	15.0%	20.0%	25.0%
Level 4 & 5	0.0%	0.0%	0.3%	0.7%	1.0%
Total	52.8%	59.6%	63.0%	66.5%	70.0%

Number of

cameras per car

Level 1	2.0	2.5	3.0	3.5	4.0
Level 2 & 3	4.0	4.5	5.0	5.5	6.0
Level 4 & 5	6.0	6.5	7.0	7.5	8.0
Total	1.3	1.5	1.7	2.0	2.1

Global

automotive

camera shipments

(mn)					
Level 1	86	111	127	141	153
Level 2 & 3	18	40	67	97	131
Level 4 & 5	0	0	2	4	7
Total	104	152	195	242	291
y-o-y		45.2%	28.7%	23.9%	20.2%

Source: IHS, DBS HK

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Company overview

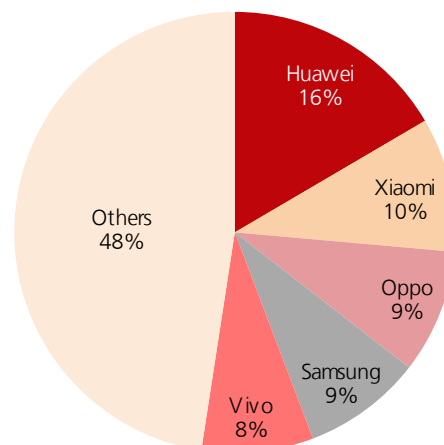
Company background. Established in 1984 and listed in 2007, Sunny Optical is the world's leading integrated optical component supplier mainly for smartphones, vehicles and digital cameras. The company started with digital camera lens sets and expanded into lens sets for smartphones / vehicles and camera modules for smartphones / vehicles. Its major customers include China's smartphone vendors (i.e. Huawei, Oppo, Vivo, and Xiaomi) and Samsung.

Milestones

Year	Milestones
1984	The company was founded and entered into optical industry
2003	Commenced production of handset camera modules
2004	Commenced production of handset lens sets Commenced production of vehicle lens sets
2007	Listed on Hong Kong Stock Exchange
2013	Acquired Konica Minolta's handset lens set production facility in Shanghai for Rmb12m, and entered into Strategic Cooperation Agreements with Konica Minolta
2018	Commenced production of vehicle camera modules

Source: Company, DBS HK

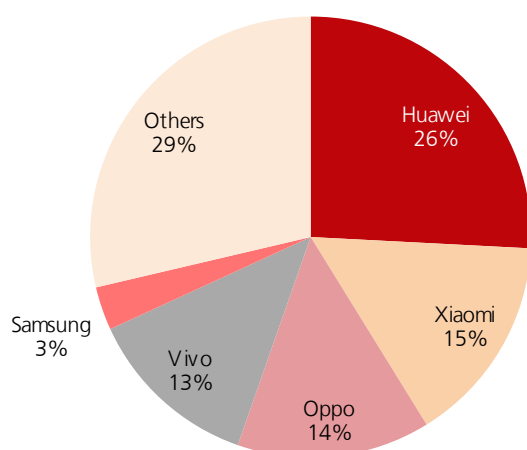
Customer mix (FY18 gross profit)



Source: Company, DBS HK

Sunny Optical is headquartered in Yuyao, Zhejiang province, China. Sunny Optical currently has a total of six production bases - one each in Xinyang, Shanghai, Yangming, Lanjiang, Zhongshan, Chengxi. The company has research and development (R&D) centres in China, Singapore, South Korea and USA.

Customer mix (FY18 revenue)



Source: Company, DBS HK

Major production facilities

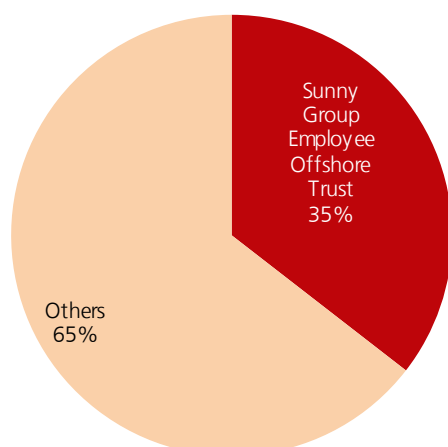


Source: Company, DBS HK

Liaoning Ye (葉遼寧) is the Chairman and founder of the company. Mr. Ye is responsible for formulating the company's policies and decision making. Yang Sun (孫洪) is Chief Executive Officer (CEO) of the company. Mr. Sun is responsible for overall operations and management of the company. Mr. Ye and Mr. Sun holds 7.9% and 1.5% stakes in the company respectively through Sunny Group Employee Offshore Trust, which is a substantial shareholder of the company with a 35.5% stake.

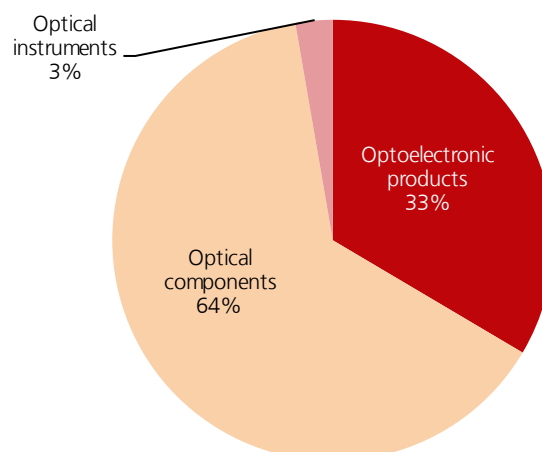
Sunny Optical Technology

Shareholders structure



Source: Company, DBS HK

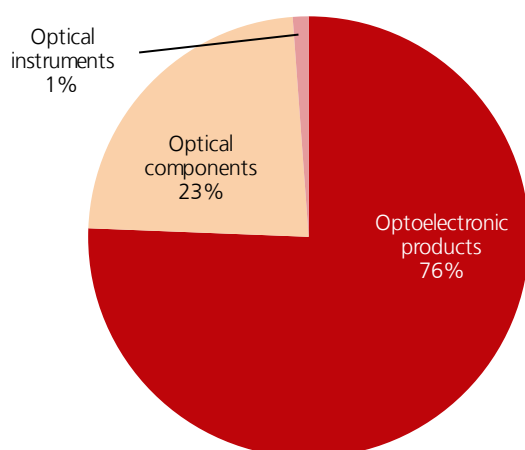
Gross profit mix (FY18)



Source: Company, DBS HK

Product mix. (1) Optoelectronic products (i.e. handset camera modules [HCM]), (2) optical components (i.e. handset lens sets [HLS], vehicle lens sets [VLS], digital camera lens sets), and (3) optical instruments accounted for 75.6%, 23.2% and 1.2% of Sunny Optical's FY18 revenue respectively.

Revenue mix (FY18)



Source: Company, DBS HK

(1) Optoelectronic products (75.6% of FY18 revenue). Sunny Optical is the world's second largest supplier of handset camera modules (HCM), with c.12% global market share.

Customers: China's smartphone vendors (i.e. Huawei, Oppo, Vivo, and Xiaomi) and Samsung.

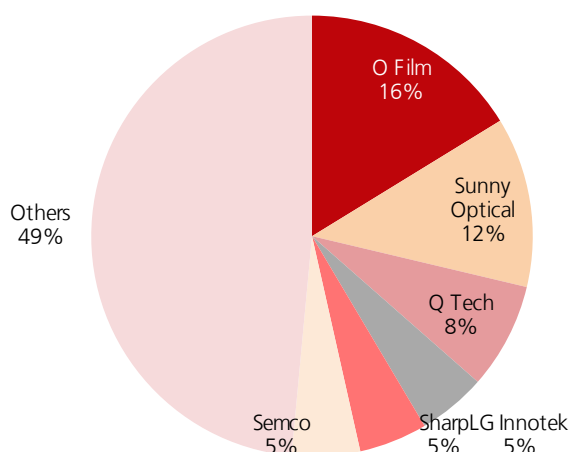
Competitors: LG Innotek (011070 KS, market share of c.5%) and Sharp (6753 JP, c.5%) are technology leaders and Apple's (AAPL US) major HCM suppliers. Semco (009150 KS, c.5%) is Samsung's (005930 KS) major HCM supplier.

Chinese suppliers are focused on China's smartphone vendors: Sunny Optical (2382 HK, c.12%) is a technology leader, focusing on high/mid-end products of China's smartphone vendors. Sunny Optical has started to provide HCM to Samsung, starting with mid/low-end models in 2019. O Film (002456 CH, c.16%) and Q Tech (1478 HK, c.8%) rapidly expanded with Oppo's and Vivo's strong growth during 2015-2018.

We expect Sunny Optical and Q Tech to gain market share from O Film in the short-to-mid term, given O Film's poor financial status with net gearing ratio of 175% and free cash flow of -Rmb8,022m in FY18. Though Nanchang Industrial has invested in O Film as its largest shareholder, Nanchang Industrial's state-owned enterprise (SOE) background might not help O Film obtain financing and improve its financial status given that it has only 16% stake in O Film. O Film is focused on improving free cash flow generation and profitability rather than market share gains through competitive pricing and prudent capacity expansion.

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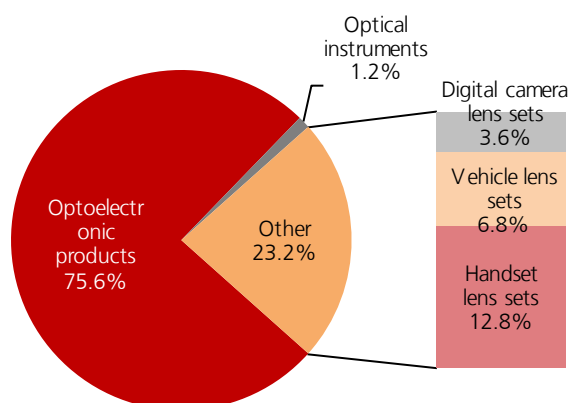
Global camera module: Market share (2018 shipments)



Source: DBS HK

(2) Optical components (23.2% of FY18 revenue). Optical components are made up of revenue from; (i) handset lens sets, (ii) vehicle lens sets and, (iii) digital camera lens sets which accounted for 12.8%, 6.8%, and 3.6% of FY18 revenue respectively.

FY18 revenue mix



Source: Company, DBS HK

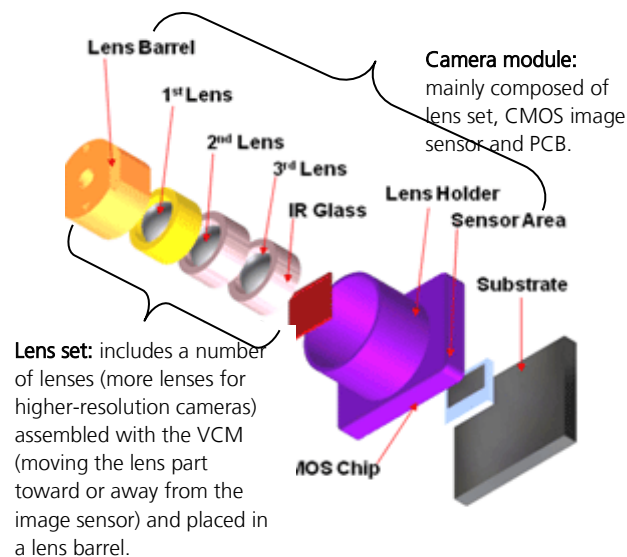
(i) Handset lens sets (12.8% of FY18 revenue). Sunny Optical is the world's second largest supplier of handset lens sets (HLS), with c.28% global market share after Largan (3008 TT, c.38%).

Sunny Optical has moved upstream from HCMs (assembling lens sets with CMOS image sensors and PCBs) to HLS (assembling lenses with VCM) in 2004.

Sunny Optical's HLS took off in December 2013. It acquired Konica Minolta's HLS production facility in Shanghai for

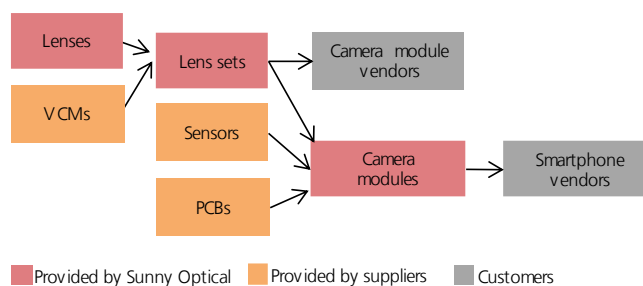
Rmb12m, and entered into strategic cooperation agreements with Konica Minolta. With Konica Minolta's patent, and handset lens design and production know-how, Sunny Optical has de-bottlenecked yield issues. We estimate that Sunny Optical's global market share in HLS increased from 3% in 2013 to 25% in 2018.

Structure of lens sets and camera modules



Source: DBS HK

Sunny Optical's supply chain



Source: Company, DBS HK

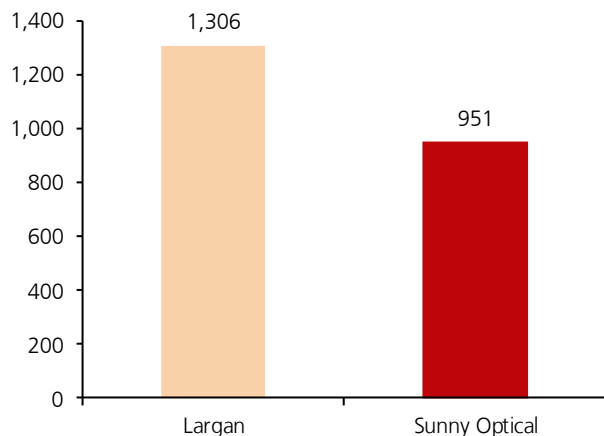
Customers: China's smartphone vendors (i.e. Huawei, Oppo, Vivo, and Xiaomi) and Samsung.

Competitors: Largan (3008 TT, market share of c.38%) is a technology leader, focusing on high-end products of almost all smartphone vendors including Apple and Android vendors. Sunny Optical's (2382 HK, c.28%) shipment caught up quickly from c.30% of Largan's in 2016 to c.70%/c.80% in 2018/19. However, Sunny's ASP is c.40% of Largan's in 2018, as Sunny Optical's high resolution (10MP+) product mix was 47% in 2018, c.30% lower than Largan. Sunny Optical focuses on mid-range products of Android vendors, but is gaining market share in mid-to-high-end products of

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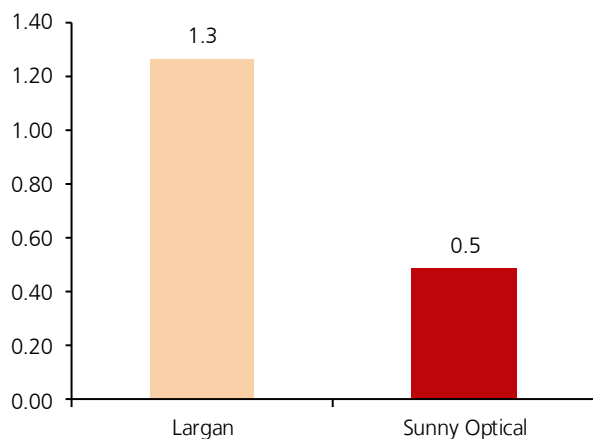
Android vendors. Sunny Optical is narrowing the technology gap between Largan in HLS.

HLS shipments: Largan vs Sunny Optical (2018, m)



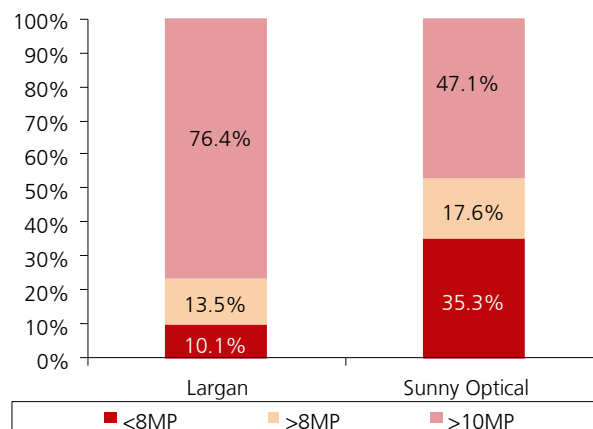
Source: Company, DBS HK

HLS ASP: Largan vs Sunny Optical (2018, US\$)



Source: Company, DBS HK

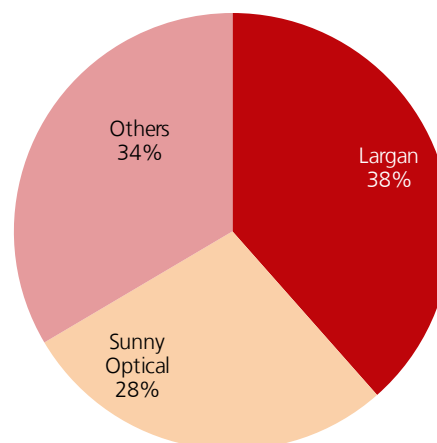
HLS shipment mix: Largan vs Sunny Optical (2018)



Source: Company, DBS HK

Other competitors such as AAC (2018 HK), Kantatsu, Sekonix (053450 KS) and Genius (3406 TT) have c.5-10% market share.

Global HLS market share: Shipments (2018)



Source: DBS HK

(ii) Vehicle lens sets (6.8% of FY18 revenue). Sunny Optical has diversified to vehicle lens sets (VLSs) in 2004. Sunny Optical is the world's largest supplier of VLSs, with c.30% global market share, followed by Fujifilm (4901 JP) and Maxell (6810 JP).

Customers: Global automotive component suppliers such as Bosch, Denso (6902 JP), Magna (MGA US) and Continental (CON GY).

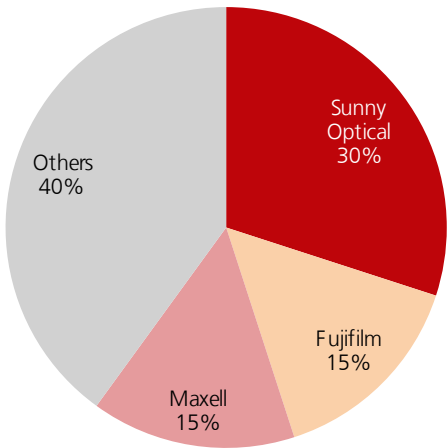
Competitors: Sunny Optical (2382 HK, market share of c.30%) focuses on optics business. Fujifilm (4901 JP, c.15%) is a supplier of photographic films and digital cameras diversifying to information solutions (i.e. healthcare and graphic systems etc) and document solutions (i.e. office products, office printer etc). Maxell (6810 JP, c.15%) is a

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supplier of barriers, diversifying to consumer and industrial electronics. Business diversification as well as slow capacity expansion greatly reduces Japanese vendors’ competitiveness.

Digital camera lens sets suppliers such as Asia Optical (3019 TT) and Kinko Optical (6209 TT) have also entered the VLS market since 2017 and 2019. However, Sunny Optical is an early mover in VLS with 15 years of experience. We believe the VLS market has high entry barriers in the near term. Compared to lenses sets for smartphones and other consumer devices, VLS faces more stringent standards which lead to customers’ lengthy product qualification (i.e. 5+ years). During the supplier selection process, vehicle product quality is more important for customers than pricing discounts. Once a VLS supplier gains qualification of a car model, the supplier relationship will last for the entire product cycle, which generally lasts for 5+ years. We believe Sunny Optical could maintain market share through early mover advantage.

Global VLS market share: Shipments (2018)



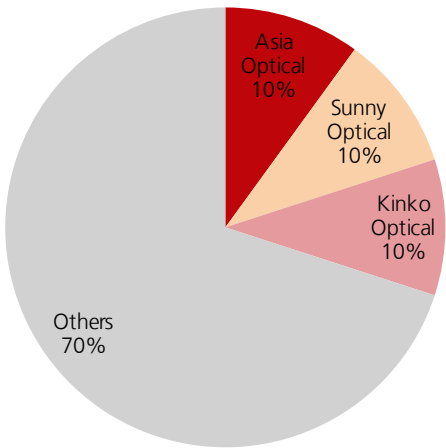
Source: DBS HK

(iii) Digital camera lens sets (3.6% of FY18 revenue). Sunny Optical is the world’s leading digital camera lens sets supplier, with c.10% global market share.

Customers: Digital camera vendors such as Samsung (005930 KS), Panasonic (6752 JP), Nikon (7731 JP) and Olympus (7733 JP).

Competitors: Sunny Optical (2382 HK), Asia Optical (3019 TT), and Kinko Optical (6209 TT) have c.10% global market share each. As the digital camera lens sets market is relatively mature, key suppliers’ market share will be relatively stable.

Global digital camera lens set: Market share (2018 shipments)



Source: DBS HK

(3) Optical instruments (1.2% of FY18 revenue). Optical instruments (mainly microscopic, analytical and surveying instruments).

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Critical Factors

(1) Handset camera module (HCM) business Sunny Optical's Handset camera modules (HCMs) contributed to 71.2% of FY18 revenue and 31.6% of FY18 gross profit. (i) HCM shipments (ii) HCM ASP, and (iii) HCM gross profit margin (GPM) are key indicators of the HCM business. We expect HCM revenue to deliver 35.3% CAGR during FY18-21F. This is driven by 31.0% CAGR of HCM shipments and 3.3% CAGR of HCM ASP.

(i) HCM shipments. (a) Global smartphone shipments, (b) global tri / quad camera adoption rate, (c) Sunny Optical's market share in HCM are key indicators of HCM shipments. We expect HCM shipments to deliver 31.0% CAGR during FY18-21F, driven by smartphone specification upgrades (i.e. migration to tri / quad cameras) and market share gains from O Film.

(a) Global smartphone shipments. We expect global smartphone shipments to resume growth and deliver 2.7% CAGR during FY18-21F, driven by greater replacement cycle with 5G adoption since 2020F.

(b) Global tri/quad camera adoption rate. We expect tri / quad camera penetration for global smartphones to further increase from 6.8%/0.0% in 2018 to 45.6%/32.3% in 2021F, driven by increasing adoption of wide cameras and ToF cameras. We expect global smartphone camera shipments to deliver 21.0% CAGR during 2018-2021F.

(c) Sunny Optical's market share in HCM. We expect Sunny Optical's market share in HCM to increase from 12.5% in FY18 to 15.8% in FY21F. We expect Sunny Optical to continue to gain market share from its competitor O Film in the short-to-mid term, given O Film's poor financial status with net gearing ratio of 175% and free cash flow of - Rmb8,022m in FY18. Though Nanchang Industrial has invested in O Film as its largest shareholder, Nanchang Industrial's SOE background might not help O Film obtain financing and improve its financial status going forward, given that it only has a 16% stake in O Film. Therefore, the company is focused on improving free cash flow generation and profitability rather than market share gains through competitive pricing and prudent capacity expansion.

Sunny Optical started to provide HCM to Samsung, starting with mid/low-end models in 2019. We expect Sunny Optical's market share from Samsung to increase from 3.3% in 2019F to 10.0% in 2021F.

(ii) HCM ASP. (a) Smartphone specification upgrades (i.e. individual camera upgrades among tri / quad cameras) is key driver of HCM ASP.

We expect HCM ASP to deliver 3.3% CAGR during FY18-21F. We expect increasing higher resolution 32MP+ (c.Rmb50) cameras, as well as increasing adoption of periscope (HCM ASP of c.Rmb200), wide (c.Rmb100) and ToF cameras (c.Rmb100) in tri / quad cameras to lead to Sunny Optical's HCM ASP uplift (c.Rmb44 in FY18).

(iii) HCM GPM. (a) Smartphone specification upgrades (i.e. migration to tri / quad cameras and individual camera upgrades among tri / quad cameras), (b) industry competition are key factors to HCM GPM.

Segmental GPM declined from 13.1% in FY17 to 8.4% in FY18. This was due to optics specs downgrade from bundle dual HCMs (higher ASP & margin) to separate dual HCMs (lower ASP & margin) in 2018.

However, we expect segmental GPM to rebound from 8.4% in FY18 to 10.0% in FY21F, driven by increasing higher resolution 32MP+, as well as increasing adoption of periscope, wide and ToF cameras in tri / quad cameras. We also expect pricing competition from O Film to ease in the short-to-mid term given the O Film's weak financial status.

(2) Handset lens set (HLS) business. Sunny Optical's handset lens sets (HLSs) contributed to 12.8% of FY18 revenue and 35.3% of FY18 gross profit. (i) HLS shipments, (ii) HLS ASP, and (iii) HLS GPM are key indicators of the HLS business. We expect HLS revenue to deliver 35.7% CAGR during FY18-21F. This is driven by 29.0% CAGR of HLS shipments and 5.2% CAGR of HLS ASP.

(i) HLS shipments. (a) Global smartphone shipments, (b) global tri / quad camera adoption rate, (c) Sunny Optical's market share in HLS are key indicators of HLS shipments. We expect HLS shipments to deliver 29.0% CAGR during FY18-21F. HLS's drivers are similar to HCM, namely smartphone specification upgrades to tri / quad cameras and continuous market share gains. We expect Sunny Optical's market share in HLS to increase from 28.0% in FY18 to 34.0% in FY21F, especially for high-end products of Android vendors. This is because competitor Largan's new factories will only come in 2023F, hence its near-term capacity will face bottlenecks. Sunny Optical is also continuously narrowing its technological gap with Largan.

(ii) HLS ASP. (a) Smartphone specification upgrades (i.e. individual camera upgrades among tri / quad cameras) is key indicator of HLS ASP.

We expect HLS ASP to deliver 5.2% CAGR during FY18-21F. We expect increasing higher resolution 32MP+ (HLS ASP of

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c.Rmb10), will lead to Sunny Optical's HLS ASP uplift (c.Rmb3.5 in FY18).

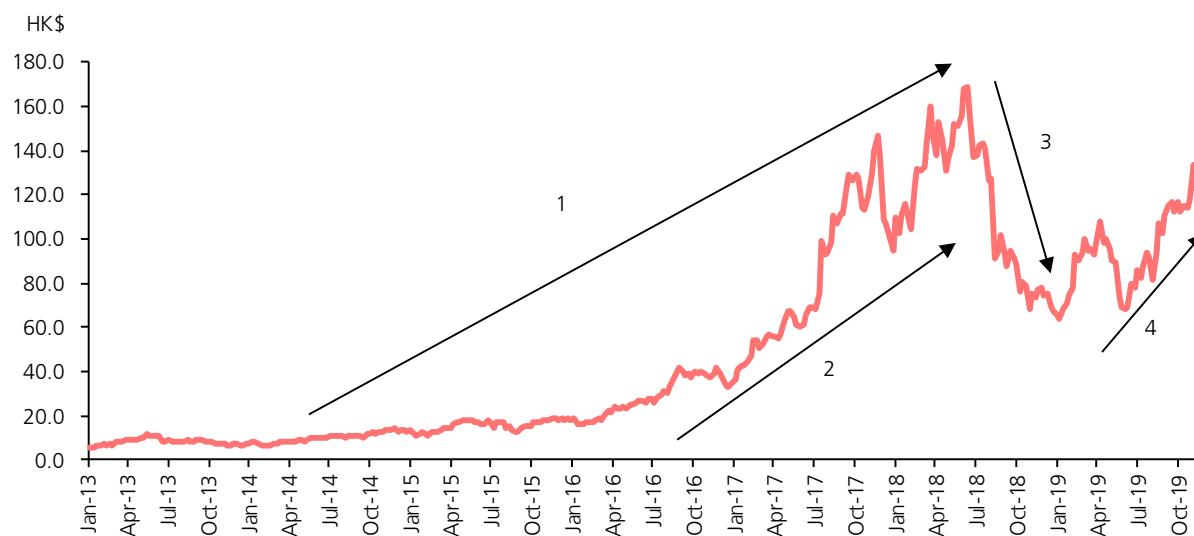
(iii) **HLS GPM.** (a) Smartphone specification upgrades (i.e. individual camera upgrades among tri / quad cameras), (b) industry competition are key factors to influence HLS GPM.

Segmental GPM declined from 54.0% in FY17 to 52.1% in FY18. It was also because optics spec downgrade from bundle

dual HCMs, with higher spec lens sets (i.e. high resolution wide camera + high resolution telephone camera), to separate dual HCMs, with lower spec lens sets (high resolution camera + low resolution camera) in 2018.

However, we expect segmental GPM to rebound from 52.1% in FY18 to 60.0% in FY21F, driven by increasing higher resolution 32MP+ cameras.

Sunny Optical's share price



Smartphone specification upgrades (i.e. adoption of dual cameras) and market share gains (i.e. take-off of of HLS) were Sunny Optical's key share price drivers during 2013-2019.

(1) + (2). Sunny Optical's share price rose 19x during 2013-2017. It delivered 59.5% earnings CAGR during 2013-2017, driven by market share gains (i.e. take-off of HLS) and smartphone specification upgrades (i.e. adoption of dual cameras). (1) Sunny Optical acquired Konica Minolta's HLS production facility in Shanghai at the end of 2013. By de-bottlenecking yield issues, Sunny Optical's HLS shipments delivered 76.7% CAGR during FY13-FY18, with global market share in HLS increasing from 3% in 2013 to 28% in 2018. Sunny Optical's high-margin HLS gross profit contribution increased from 6% in 2013 to 35% in 2018, driving blended GPM to increase from 16.6% in 2013 to 19.0% in 2018. (2) Due to adoption of dual cameras (higher ASP & margin) by China smartphones since 2016, HCM ASP increased 30.6% y-o-y in FY17, and segmental GPM increased from 10.5% in FY16 to 13.1% in FY17.

(3) Sunny Optical's share price consolidated 30.3% in 2018. Its earnings declined 14.2% y-o-y in 2018 due to optics specs downgrade from bundle dual HCMs (higher ASP & margin) to separate dual HCMs (lower ASP & margin) in 2018, leveraging vendors' algorithms, which reduced value-add for HCM suppliers. HCM ASP decreased 16.5% y-o-y in FY18, and segmental GPM decreased from 13.1% in FY17 to 8.4% in FY18.

(4) However, the worst was over in 2018. We expect Sunny Optical's net profit to deliver 38.1% CAGR during FY18-21F. Its two key segments - HCM and HLS businesses, will be driven by; (4) continuous migration to tri/quad cameras and individual camera upgrade among tri/quad cameras (i.e. 32MP+ main, periscope, wide and ToF cameras in tri/quad cameras).

Source: DBS HK

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Financials

Revenue. We forecast revenue to grow by 36.0% in FY19F and 34.0% in FY20F respectively:

Key assumptions

	FY17	FY18	FY19F	FY20F	FY21F
Revenue (Rmb m)					
Optical components	4,302	6,023	8,021	10,321	12,513
Optoelectronic products	17,771	19,609	26,924	36,563	47,766
Optical instruments	294	300	314	346	380
Total	22,366	25,932	35,259	47,229	60,659
Growth					
Optical components	45.5%	40.0%	33.2%	28.7%	21.2%
Optoelectronic products	55.8%	10.3%	37.3%	35.8%	30.6%
Optical instruments	16.0%	2.2%	4.8%	10.0%	10.0%
Total	53.1%	15.9%	36.0%	34.0%	28.4%
Gross profit margin					
Optical components	54.0%	52.1%	54.7%	57.4%	60.0%
Optoelectronic products	13.1%	8.4%	8.9%	9.5%	10.0%
Optical instruments	48.0%	44.7%	44.8%	44.9%	45.0%
Total	21.5%	19.0%	19.7%	20.2%	20.5%

Source: Company, DBS HK

(1) Optoelectronic product revenue (75.6% of FY18 revenue).

We expect optoelectronic product revenue to increase 37.9% in FY19F and 55.6% in FY20F. We expect handset camera module (HCM) revenue, which accounted for 94.2% of optoelectronic product revenue, to increase 38.4% in FY19F and 36.6% in FY20F.

We forecast HCM shipments to increase 35.7% in FY19F and 40.7% in FY20F, with continuously increasing market share from 12.5% in FY18 to 13.2% in FY19F and 14.2% in FY20F, especially from competitor O Film. According to our channel checks, O Film's customers and suppliers have raised concerns on its poor financial status. It is thus focused on improving free cash flow generation rather than market share gains. Meanwhile, Sunny Optical started to provide HCM to Samsung starting with mid/low-end models in 2019.

We also expect ASP to increase 8.0% in FY19F and 1.2% in FY20F. We expect 10MP+ HCM shipments as a percentage of HCM shipments to rise from 72.6% in FY18 to 76.7% in FY19F and 80.9% in FY20F, while 10MP+ HCM ASP will stabilise, driven by high-ASP 32MP+ (c.Rmb50+) and ToF (c.Rmb100+), and periscope HCM (Rmb200+) orders.

Optoelectronic products: Revenue

	FY17	FY18	FY19F	FY20F	FY21F
Handset camera modules					
Shipments (mn)					
<8MP	49	50	52	53	48
>8MP	67	66	75	87	95
>10MP	210	307	416	592	809
Total	325	423	543	733	952
y-o-y	20.4%	30.3%	28.2%	35.0%	29.9%
ASP (Rmb)					
<8MP	9.0	8.1	7.3	6.6	5.9
>8MP	18.0	16.2	14.6	13.1	11.8
>10MP	73.2	55.3	57.9	56.4	54.9
Total	52.2	43.6	47.1	47.7	48.1
y-o-y	30.6%	-16.5%	8.0%	1.2%	0.9%
Revenue (Rmb mn)					
<8MP	439	405	377	349	281
>8MP	1,199	1,070	1,086	1,141	1,124
>10MP	15,334	16,997	24,096	33,435	44,396
Total	16,971	18,472	25,559	34,925	45,801
y-o-y	57.2%	8.8%	38.4%	36.6%	31.1%
Other optoelectronic products					
Revenue (Rmb mn)	800	1,137	1,365	1,638	1,965
y-o-y	32.0%	42.2%	20.0%	20.0%	20.0%

Source: Company, DBS HK

(2) Optical component revenue (23.2% of FY18 revenue). We expect Sunny Optical's optical component revenue to increase 33.2% in FY19F and 28.7% in FY20F, driven by handset lens set (HLS) revenue and vehicle lens set (VLS) revenue which account for 84.7% of optical component revenue.

(i) Handset lens set revenue (12.8% of FY18 revenue). We expect handset lens set (HLS) revenue to increase 45.5% in FY19F and 37.1% in FY20F.

We forecast HLS shipments to increase 32.3% in FY19F and 30.7% in FY20F, with continuously increasing market share from 24.9% in FY18 to 34.3% in FY21F, especially high-end products by Android vendors. This is because competitor Largan's new factories will only come in 2023F, hence its near-term capacity will face bottlenecks. Sunny Optical is continuously narrowing its technological gap with Largan.

We also expect ASP to increase 10.0% in FY19F and 4.9% in FY20F. We expect 10MP+ lens sets shipments as a percentage of HCM shipments to rise from 47.1% in FY18 to 54.7% in FY19F and 62.4% in FY20F, while 10MP+ lens sets ASP will stabilise, driven by high-ASP 32MP+ (c.Rmb10) orders.

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HLS: Revenue

	FY17	FY18	FY19F	FY20F	FY21F
Shipments (mn)					
<8MP	207	336	359	358	306
>8MP	111	167	210	261	306
>10MP	289	448	688	1,025	1,429
Total	608	951	1,258	1,643	2,041
y-o-y	60.3%	56.4%	32.3%	30.7%	24.2%
ASP (Rmb)					
<8MP	1.8	1.6	1.5	1.3	1.2
>8MP	3.6	3.2	2.9	2.6	2.4
>10MP	5.4	5.0	5.4	5.4	5.1
Total	3.5	3.5	3.9	4.0	4.1
y-o-y	0.9%	0.8%	10.0%	4.9%	0.9%
Revenue (Rmb mn)					
<8MP	373	544	523	469	362
>8MP	401	542	614	684	723
>10MP	1,576	2,243	3,709	5,491	7,243
Total	2,114	3,331	4,846	6,645	8,328
y-o-y	61.7%	57.6%	45.5%	37.1%	25.3%

Source: Company, DBS HK

(ii) **Vehicle lens set revenue (6.8% of FY18 revenue).** We expect vehicle lens set (VLS) revenue to increase 26.6% in FY19F and 21.8% in FY20F.

We forecast VLS shipments to increase 26.6% in FY19F and 21.8% in FY20F. We expect global automotive camera shipments to deliver 24.2% CAGR during 2018-2021F, driven by; (a) increasing ADAS penetration for global light vehicles from 59.6% in 2018 to 63.0% in 2019F and 66.5% in 2020F, and; (b) increasing adoption from level 1 (average cameras per vehicle of 1) to level 2 (4+) and even level 3 (4+), 4 (6+) and 5 (6+). We expect Sunny Optical's market share in VLS to be stable at 25.0%+ in FY21F.

We also expect ASP to be stable in FY19F and FY20F, as product quality of VLS is more important for customers than price discounts.

VLS: Revenue

	FY17	FY18	FY19F	FY20F	FY21F
Shipments (mn)					
	32	40	51	62	73
y-o-y	41.0%	25.3%	26.6%	21.8%	18.1%
ASP (Rmb)					
	43.5	44.3	44.3	44.3	44.3
y-o-y	0.3%	1.9%	0.0%	0.0%	0.0%
Revenue (Rmb mn)					
	1,387	1,770	2,240	2,728	3,223
y-o-y	41.4%	27.6%	26.6%	21.8%	18.1%

Source: Company, DBS HK

(iii) **Digital camera lens set revenue (3.6% of FY18 revenue).** We expect digital camera lens set revenue growth to be stable at 1.4% in FY19F and 1.5% in FY20F. We forecast digital

camera lens set shipments to decline 7.8% in FY19F and 7.8% in FY20F, based on global digital camera shipment forecasts and stable market share at 10.0%. We also expect ASP to grow 10.0% in FY19F and 10.0% in FY20F, driven by high-ASP interchangeable lens orders.

Digital camera lens set: Revenue

	FY17	FY18	FY19F	FY20F	FY21F
Shipments (mn)					
	31	30	27	25	23
y-o-y	21.0%	-3.7%	-7.8%	-7.8%	-7.7%
ASP (Rmb)					
	26.0	31.1	34.2	37.6	41.3
y-o-y	-0.8%	19.5%	10.0%	10.0%	10.0%
Revenue (Rmb mn)					
	801	922	934	948	962
y-o-y	20.0%	15.1%	1.4%	1.5%	1.5%

Source: Company, DBS HK

(3) **Optical instrument revenue (2.7% of FY18 revenue).** We expect optical instrument revenue growth to be stable at 4.8% in FY19F and 10.0% in FY20F. We forecast optical instrument shipments to be stable in FY19F and FY20F. We also expect ASP to grow 10.0% in FY19F and 10.0% in FY20F, driven by high-end optical instruments in industrial, education and medical fields.

Optical instruments: Revenue

	FY17	FY18	FY19F	FY20F	FY21F
Shipments (mn)					
	0.2	0.2	0.2	0.2	0.2
y-o-y	7.0%	-9.5%	0.0%	0.0%	0.0%
ASP (Rmb)					
	1,396	1,501	1,651	1,816	1,998
y-o-y	8.4%	7.5%	10.0%	10.0%	10.0%
Revenue (Rmb m)					
	294	300	314	346	380
y-o-y	16.0%	2.2%	4.8%	10.0%	10.0%

Source: Company, DBS HK

Gross profit margin. We expect gross profit margin (GPM) to improve from 18.9% in FY18 to 19.7% in FY19F and 20.2% in FY20F, with improving segmental GPM of optical components and optoelectronic products with optics spec upgrade.

(1) **Optoelectronic product GPM.** Segmental GPM declined from 13.1% in FY17 to 8.4% in FY18. This was due to optics spec downgrades from bundle dual HCMs (higher ASP & margin) to separate dual HCMs (lower ASP & margin) in 2018.

However, we expect segmental GPM to rebound from 8.4% in FY18 to 10.0% in FY21F, driven by optics spec upgrades to tri / quad cameras, periscope and ToF cameras in tri / quad cameras, higher resolution 32MP+ cameras. We also expect pricing competition from O Film to ease in the short-to-mid term given O Film's weak financial status.

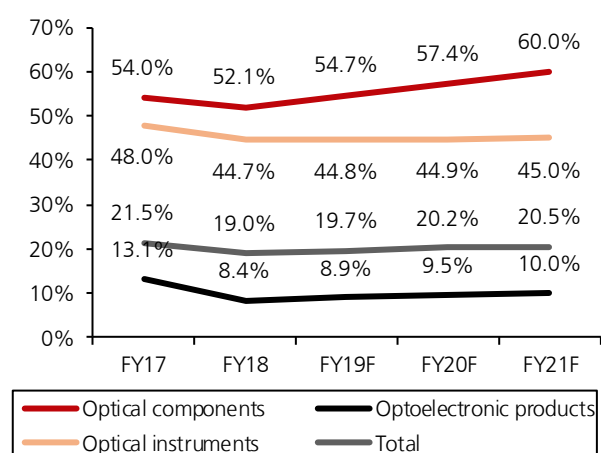
Sunny Optical Technology

(2) Optical component GPM. Segmental GPM declined from 54.0% in FY17 to 52.1% in FY18. This was also due to optics spec downgrades from bundle dual HCMs, with higher spec lens sets (i.e. high resolution wide camera + high resolution telephone camera), to separate dual HCMs, with lower spec lens sets (high resolution camera + low resolution camera) in 2018.

However, we expect segmental GPM to rebound from 52.1% in FY18 to 60.0% in FY21F, driven by optics spec upgrades to higher resolution 32MP+ cameras.

(3) Optical instrument GPM. We expect segmental GPM to be stable at 45.0% in FY21F.

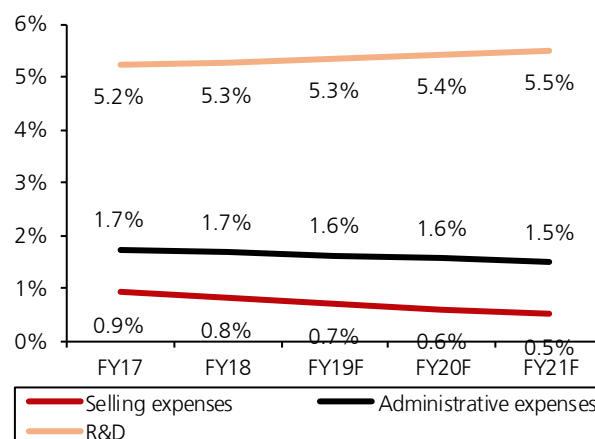
Sunny Optical: Gross profit margin



Source: Company, DBS HK

Operating expenses. We expect operating expenses as a percentage of revenue to be stable from 7.7% in FY18 to 7.7% in FY19F and 7.6% in FY20F.

Sunny Optical: Operating expenses (% of revenue)



Source: Company, DBS HK

Net profit. We expect Sunny Optical's net profit to rise 42.7% in FY19F and 36.4% in FY20F.

Sunny Optical Technology

Valuation & Peer Comparison

As per our estimates, Sunny Optical is currently trading at 29x FY20F PE.

Traded at a premium valuation to other HCM and HLS

suppliers: Sunny Optical is trading at a premium valuation to handset camera module (HCM) and handset lens set (HLS) peers. Sunny Optical has always been traded at a premium valuation to these stocks, given to its integrated optical component position and faster growth.

Compared to other HCM suppliers: Sunny Optical is trading at a premium valuation to other leading HCM suppliers, such as LG Innotek (011070 KS), Semco (009150 KS), O Film (002456 CH), and Q Technology (1478 HK), given its integrated optical component position moving to high-margin HLS. O Film even suffers weak financial standing with net gearing ratio of 175% and free cash flow of -Rmb8,022m in FY18. It is focused on profitability rather than market share gains through aggressive capacity expansion.

Compared to other HLS suppliers: Sunny Optical is trading at a premium valuation to other leading HLS suppliers, especially Largan (3008 TT). While Largan is a technology leader dominating in the high end smartphone market, Sunny dominates the mid-range market but is gaining share in high-end smartphones, with narrowing technology gap between Largan.

Trading above its 5-year average: Sunny Optical is currently trading above its 5-year average. We believe Sunny Optical

deserves to trade at one standard deviation above its historical average as it will benefit from the smartphone specification upgrade cycle and continuous market share gains.

Sunny Optical's valuation rose from 10x in 2015 to 50x in 2017 as it delivered 94.3% earnings CAGR during 2015-2017, driven by market share gains (i.e. take-off of HLS) and smartphone specification upgrades (i.e. adoption of dual cameras). After Sunny Optical acquired Konica Minolta's HLS production facility in Shanghai at the end of FY13, Sunny Optical's global market share in HLS increased from 3% in 2013 to 13% in 2016. Blended GPM increased from 16.6% in FY13 to 18.3% in FY16. With the adoption of dual cameras (higher ASP & margin) by China smartphones since 2016, blended GPM increased from 18.3% in FY16 to 21.5% in FY17.

Sunny Optical's valuation range declined to 15-30x in 2018, due to optics specs downgrade from bundle dual HCMs (higher ASP & margin) to separate dual HCMs (lower ASP & margin) in 2018. Blended GPM decreased from 21.5% in FY17 to 19.0% in FY18.

However, the worst was over in 2018. We initiate coverage on Sunny Optical with a BUY call and a target price of HK\$180, based on 37x FY20F PE, which is one standard deviation above its historical average. The valuation is justified by its FY18-21F net profit CAGR of 38.1%, driven by smartphone specification upgrade cycle (i.e. migration to tri / quad cameras and individual camera upgrades among tri / quad cameras) and continuous market share gains in both HCM and HLS.

PE chart



PB chart



Source: Thomson Reuters, DBS HK

Sunny Optical Technology

Industry peers

Company Name	Code	Currency	Target			Mkt Cap US\$m	Fiscal Yr	PE		P/Bk 19F x	P/Bk 20F x	ROE 19F %	ROE 20F %
			Price Local\$	Price Local\$	Recom			19F x	20F x				
Handset lens set suppliers													
Largan Precision	3008 TT	TWD	4840	n.a.	NR	21,474	Dec	22.4	19.2	5.2	4.4	24.8	25.4
Sunny Optical Tech.(Gp.)*	2382 HK	HKD	142.7	180.00	BUY	20,062	Dec	39.3	28.8	12.1	9.4	34.1	36.5
Sharp#	6753 JP	JPY	1676	n.a.	NR	8,156	Mar	15.2	15.3	2.8	2.5	18.6	17.5
Genius Electronic Optc.	3406 TT	TWD	497.5	n.a.	NR	1,824	Dec	22.0	16.6	5.5	4.3	25.2	30.7
Handset camera module suppliers													
O Film Tech 'A'	002456 CH	CNY	15.3	n.a.	NR	5,937	Dec	53.7	23.4	4.6	4.1	5.6	13.2
Sunny Optical Tech.(Gp.)*	2382 HK	HKD	142.7	180.00	BUY	20,062	Dec	39.3	28.8	12.1	9.4	34.1	36.5
Lg Innotek	011070 KS	KRW	133000	n.a.	NR	2,676	Dec	16.9	11.6	1.4	1.2	8.4	11.3
Hon Hai Precn.Ind.	2317 TT	TWD	91	n.a.	NR	41,727	Dec	11.0	10.1	1.0	0.9	9.0	9.4
Q Technology (Group)*	1478 HK	HKD	13.94	10.00	BUY	2,041	Dec	33.5	24.0	6.0	5.0	18.8	22.8
Samsung Elto.Mechanics	009150 KS	KRW	122500	n.a.	NR	8,081	Dec	15.7	17.2	1.7	1.6	11.6	9.5
Cowell E Holdings	1415 HK	HKD	1.29	n.a.	NR	137	Dec	4.7	6.9	0.3	0.4	9.9	4.3
Truly Intl.Hdg.	732 HK	HKD	1.05	n.a.	NR	443	Dec	8.4	4.8	0.5	0.4	5.2	8.5
Sharp#	6753 JP	JPY	1676	n.a.	NR	8,156	Mar	15.2	15.3	2.8	2.5	18.6	17.5

FY19: FY20; FY20: FY21

Source: Thomson Reuters, *DBS HK

Sunny Optical Technology

Environmental, Social & Governance (ESG)

Environmental: Environmental management. Sunny Optical is continuously improving its production process, strictly controls product yield rate and resources and energy savings. The company is also striving for substitutes for hazardous and noxious substances to meet customer requirements and the respective laws and regulations of importing countries. The materials must be equipped with green product warranty certificates and qualified testing reports issued by third party testing agencies. It is also constantly enhancing the management of pollution with various precautionary measures to reduce the impact of wasted water, exhaust gas and solid waste on the environment.

Social: Employee engagement, diversity and inclusion. Hardware companies rely on their R&D teams for technology

capability development. Sunny Optical keeps employees incentivised, empowered and compensates them based on their performance. The company has adopted a “Restricted Share Award Scheme” for the purposes of aligning interests of the company and employees to attract new talents and motivate and retain existing talents.

Governance: Board structure. Sunny Optical has separate Chairman and Chief Executive Officer positions. Liaoning Ye (葉遼寧) is Chairman and founder of the company. Mr. Ye is responsible for formulating the company’s policies and decision making. Yang Sun (孫洪) is CEO of the company. Mr. Sun is responsible for the overall operations and management of the company. Separating the Chairman and Chief Executive Officer positions protects the interests of the company's shareholders. A board led by an independent Chairman could monitor how the CEO runs the company in accordance with the mandate of the company and will of its shareholders.

Management

Board of Directors

Name	Position	Description
Liaoning Ye	Chairman of the Board of Directors	<ul style="list-style-type: none"> Liaoning Ye is one of the founders of the company. He is currently an Executive Director, Chairman of the Board and Chairman of the Strategy and Development Committee of the company. He is responsible for formulating the company's policies and making decisions. Mr. Ye obtained a diploma from Zhejiang Radio & TV University in 1999.
Yang Sun	Chief Executive Officer	<ul style="list-style-type: none"> Yang Sun currently is an Executive Director and the Chief Executive Officer of the company. He is responsible for the overall operations and management of the company. Mr. Sun graduated from Ningbo University in 1995 with a Bachelor's Degree in Economics. He then obtained a Master's Degree in Economics from Shanghai University of Finance and Economics in 2005.
Wenjie Wang	Executive Director	<ul style="list-style-type: none"> Wenjie Wang currently is an Executive Director and standing vice president of the company. He is responsible for the strategic planning, information management and Research Institute of the company. Mr. Wang graduated from Zhejiang University with a Bachelor's Degree in Engineering in 1989.
Wenjian Wang	Non-executive Director	<ul style="list-style-type: none"> Wenjian Wang, former Chairman of the Board, Executive Director and Chief Executive Officer, is one of the founders of the company. Currently, he is a Non-executive Director and the Honorary Chairman of the Board.
Yuqing Zhang	Non-executive Director	<ul style="list-style-type: none"> Yuqing Zhang is an Independent Non-executive Director and the Chairman of Audit Committee. Mr. Zhang worked in MCloud (Shenzhen) Information Technology Co., Ltd. as finance-in-charge in May 2017. Mr. Zhang worked in Shanghai Port Bureau as head of the financial division as well as the auditing division. He was also appointed as a director of Shanghai Worldbest Industry Development Co., Ltd. from 2001 to 2003 and acted as its Chief Financial Officer. Mr. Zhang graduated from Shanghai Maritime University in 1982 with a Bachelor's Degree in Economics.
Huajun Feng	Non-executive Director	<ul style="list-style-type: none"> Huajun Feng, is an Independent Non-executive Director and the Chairman of Nomination Committee. Mr. Feng has been a professor and doctoral supervisor since 1998. He has been the director of the Institute of Optical Imaging Engineering of Zhejiang University since 2015. Mr. Feng has been an Independent Non-executive Director of Phenix Optical (600071 CH) since 2015. Mr. Feng obtained a Bachelor's Degree and Master's Degree in Optical Instrument Engineering from Zhejiang University in 1983 and 1986 respectively.
YangDong Shao	Non-executive Director	<ul style="list-style-type: none"> YangDong Shao, is an Independent Non-executive Director and the Chairman of Remuneration Committee. Mr. Shao is the general partner of Yuantai Investment Partners Evergreen Fund, L.P. Mr. Shao was previously at the investment banking division of Salomon Brothers. Mr. Shao obtained a Bachelor's Degree in Economics in 1993 from Columbia University, and a Master's Degree in Business Administration from Stanford University in 2000.

Source: Company, DBS HK

Sunny Optical Technology

CRITICAL FACTORS TO WATCH

Critical Factors

(1) Handset camera module shipments and ASP

Sunny Optical's handset camera modules (HCMs) contributed to 32% of FY18 gross profit. (i) HCM shipments and (ii) HCM ASP are key indicators of HCM revenue. We expect HCM revenue to deliver 35% CAGR during FY18-21F, driven by:

(i) HCM shipments. (a) Global smartphone shipments, (b) global tri / quad camera adoption rate, (c) Sunny Optical's market share in HCM are key indicators of HCM shipments. We expect HCM shipments to deliver 31% CAGR during FY18-21F, driven by smartphones specification upgrades to tri / quad cameras and market share gains from O Film.

(ii) HCM ASP. (a) Smartphone specification upgrades, (b) industry competition are key factors of HCM ASP. We expect increasing adoption of higher ASP 32MP+, periscope, wide, and ToF cameras in tri / quad cameras, to drive Sunny Optical's HCM ASP to deliver 3% CAGR during FY18-21F.

(2) Handset lens set shipments and ASP

Sunny Optical's handset lens sets (HLSs) contributed to 32% of FY18 gross profit. (i) HLS shipments (ii) HLS ASP, and (iii) HLS GPM are key indicators of the HLS business. We expect HLS revenue to deliver 36% CAGR during FY18-21F, driven by:

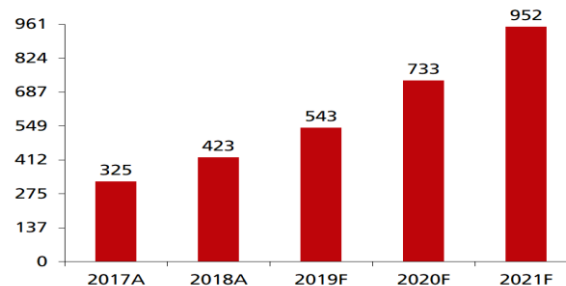
(i) HLS shipments. (a) Global smartphone shipments, (b) global tri / quad camera adoption rate, (c) Sunny Optical's market share in HLS are key indicators of HCM shipments. We expect HLS shipments to deliver 29% CAGR during FY18-21F. Its drivers are similar to HCM's - smartphones specification upgrades to tri / quad cameras and continuous market share gains in mid-to-high-end products by Android vendors.

(ii) HLS ASP. (a) Smartphone specification upgrades, (b) industry competition are key factors of HLS ASP. We expect increasing adoption of higher ASP 32MP cameras in tri / quad cameras, to drive Sunny Optical's HLS ASP to deliver 5% CAGR during FY18-21F.

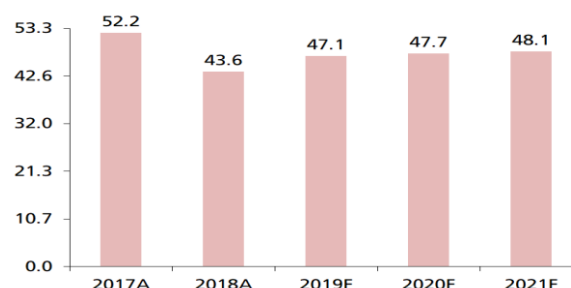
(3) Overall gross profit margin

(a) Smartphone specification upgrades, (b) industry competition are key factors of HCM ASP. We expect GPM to improve from 18.9% in FY18 to 20.5% in FY21F, driven by migration to tri / quad cameras and individual camera upgrades among tri / quad cameras.

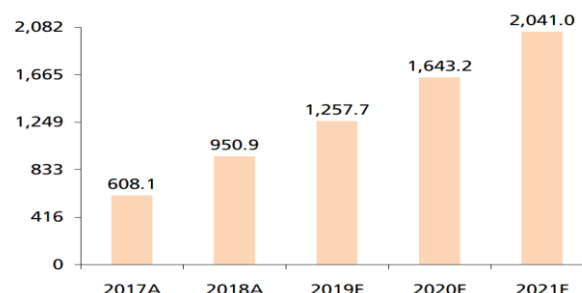
Handset camera module shipment (m)



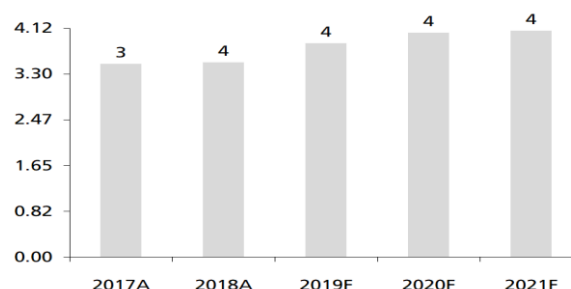
Handset camera module ASP (Rmb)



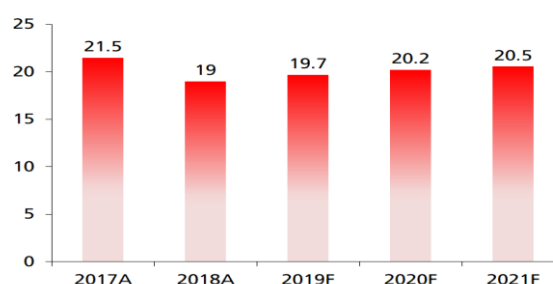
Handset lens set shipments (m)



Handset lens set ASP (Rmb)



Gross profit margin (%)



Source: Company, DBS HK

Sunny Optical Technology

Balance Sheet:

Net cash position. As of December 2018, Sunny Optical had a net cash position of Rmb676m (Rmb1,813m debt and Rmb2,489m cash). Its net capex was Rmb2,708m in FY18, which was 11% of FY18 revenue for new production base construction and automation, and we expect capex as % of revenue to normalise to 5% in FY21F. Its operating cash inflows was Rmb4,560m. Supported by free cash inflows, Sunny Optical has a stable dividend payout of c.25%.

Share Price Drivers:

Volume growth, driven by migration to tri / quad cameras. We expect tri/quad camera penetration for global smartphones to further increase from 7%/0% in 2018 to 45%/32% in 2021F, to drive Sunny Optical's shipments of HCM and HLS and deliver 31% and 29% CAGR during FY18-21F. The launch of mid-range models (ASP of Rmb2,000-3,000) with tri / quad cameras in 2020, and will be major share price catalysts.

ASP growth driven by individual camera upgrades among tri/quad cameras. Prices have eroded by 10-20% for like-for-like products. However, we expect increasing adoption of higher ASP 32MP+, periscope, wide, and ToF cameras in tri / quad cameras, to drive Sunny Optical's ASP of HCM and HLS to deliver 3% and 5% CAGR during FY18-21F. Launches of flagship smartphones (ASP of Rmb3,000+) with periscope and ToF cameras in 2020 will be major share price catalysts.

Key Risks:

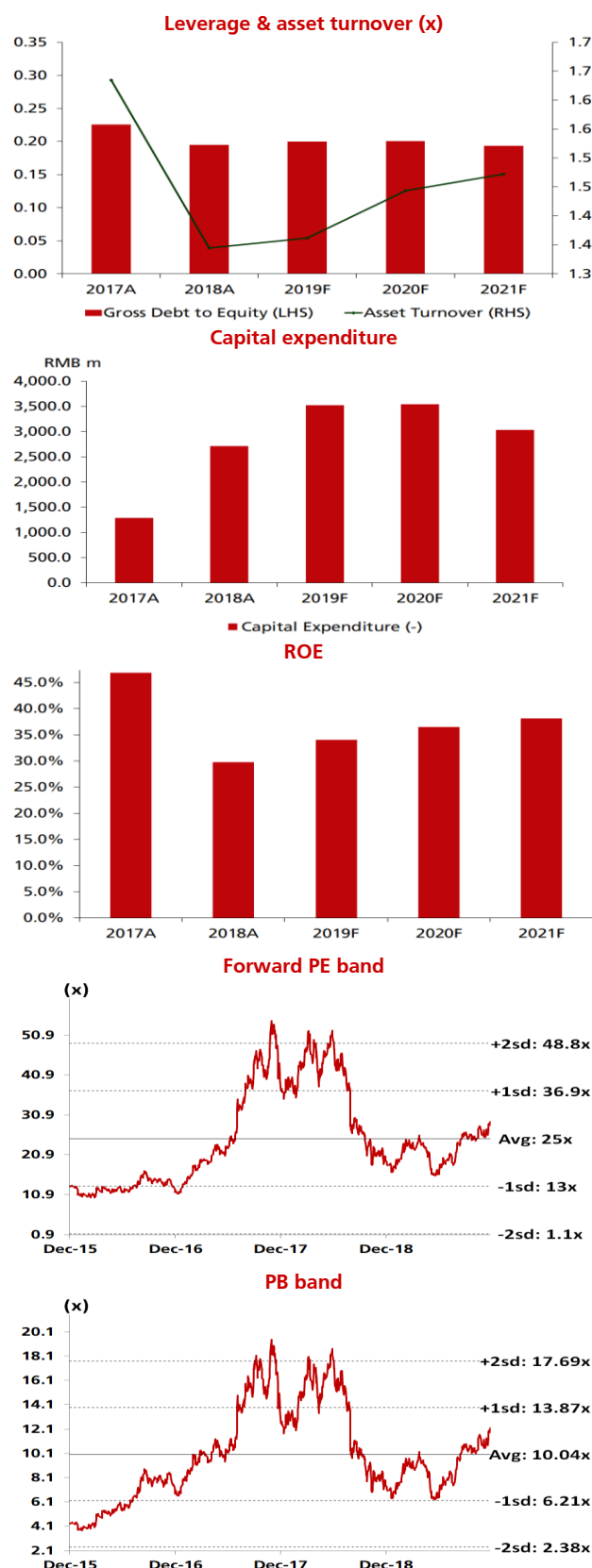
Substitution from emerging technologies. While plastic lens sets remain the mainstream option for smartphones, China's flagship models will start to adopt hybrid lens sets (plastic lenses + glass lenses) in 1H20, as hybrid lenses can achieve better optical performance vs plastic lens sets. Sunny Optical's moulding technology in glass lenses may be less competitive to other emerging technologies, such as wafer-level glass (WLG) technology which has higher scalability after optimising its yield rate. This may lead to market share loss in HLS market, especially in the high-end smartphone market.

Environmental, Social, Governance (ESG):

Hardware companies rely on their R&D teams for technology capability development. Sunny Optical keeps employees incentivised, empowered and compensates them based on their performance. The company has adopted a "Restricted Share Award Scheme" for the purposes of aligning interests of the company and employees to attract new talents as well as motivating and retaining existing talents.

Company Background

Established in 1984 and listed in 2007, Sunny Optical is the world's leading integrated optical component supplier mainly for smartphones, vehicles and digital cameras. (1) Optoelectronic products (i.e. handset camera modules), (2) optical components (i.e. handset lens sets, vehicle Lens Sets, digital camera lens sets), and (3) optical instruments accounted for 76%, 23% and 1% of its FY18 revenue respectively.



Source: Company, DBS HK

Sunny Optical Technology

Key Assumptions

FY Dec	2017A	2018A	2019F	2020F	2021F
Handset camera module shipment (m)	324.8	423.3	542.5	732.5	951.8
Handset camera module ASP (Rmb)	52.2	43.6	47.1	47.7	48.1
Handset lens set shipment (m)	608.1	950.9	1,257.7	1,643.2	2,041.0
Handset lens set ASP (Rmb)	3.5	3.5	3.9	4.0	4.1
Gross profit margin (%)	21.5	19.0	19.7	20.2	20.5

Source: Company, DBS HK

Segmental Breakdown (RMB m)

FY Dec	2017A	2018A	2019F	2020F	2021F
Revenues (RMB m)					
Optical components	4,302	6,023	8,021	10,321	12,513
Optoelectronic products	17,771	19,609	26,924	36,563	47,766
Optical instruments	294	300	314	346	380
Total	22,366	25,932	35,259	47,229	60,659
Gross profit (RMB m)					
Optical components	2,324	3,137	4,389	5,920	7,508
Optoelectronic products	2,329	1,648	2,406	3,462	4,777
Optical instruments	141	134	141	155	171
Total	4,794	4,919	6,936	9,537	12,456
Gross profit Margins (%)					
Optical components	54.0	52.1	54.7	57.4	60.0
Optoelectronic products	13.1	8.4	8.9	9.5	10.0
Optical instruments	48.0	44.7	44.8	44.9	45.0
Total	21.4	19.0	19.7	20.2	20.5

Source: Company, DBS HK

Sunny Optical Technology

Income Statement (RMB m)

FY Dec	2017A	2018A	2019F	2020F	2021F
Revenue	22,366	25,932	35,259	47,229	60,659
Cost of Goods Sold	(17,563)	(21,019)	(28,322)	(37,692)	(48,204)
Gross Profit	4,803	4,913	6,936	9,537	12,456
Other Opng (Exp)/Inc	(2,295)	(2,821)	(4,113)	(5,661)	(7,106)
Operating Profit	2,508	2,092	2,823	3,876	5,350
Other Non Opg (Exp)/Inc	875	985	1,340	1,794	2,305
Associates & JV Inc	(16)	(24)	(32)	(43)	(56)
Net Interest (Exp)/Inc	(49)	(202)	(61)	(69)	(76)
Dividend Income	0	0	0	0	0
Exceptional Gain/(Loss)	0	0	0	0	0
Pre-tax Profit	3,318	2,851	4,070	5,558	7,523
Tax	(404)	(339)	(481)	(657)	(889)
Minority Interest	(13)	(22)	(34)	(51)	(75)
Preference Dividend	0	0	0	0	0
Net Profit	2,902	2,491	3,555	4,850	6,559
Net Profit before Except.	2,902	2,491	3,555	4,850	6,559
EBITDA	3,900	3,868	5,544	7,709	10,155
Growth					
Revenue Gth (%)	53.1	15.9	36.0	34.0	28.4
EBITDA Gth (%)	119.3	(0.8)	43.3	39.1	31.7
Opg Profit Gth (%)	111.7	(16.6)	35.0	37.3	38.0
Net Profit Gth (%)	128.3	(14.2)	42.7	36.4	35.2
Margins & Ratio					
Gross Margins (%)	21.5	18.9	19.7	20.2	20.5
Opg Profit Margin (%)	11.2	8.1	8.0	8.2	8.8
Net Profit Margin (%)	13.0	9.6	10.1	10.3	10.8
ROAE (%)	46.9	29.8	34.1	36.5	38.1
ROA (%)	21.2	12.9	13.7	14.8	15.9
ROCE (%)	28.9	14.7	14.5	16.3	18.2
Div Payout Ratio (%)	25.0	25.0	25.0	25.0	25.0
Net Interest Cover (x)	51.4	10.3	46.5	55.8	70.4

Source: Company, DBS HK

Interim Income Statement (RMB m)

FY Dec	1H2017	2H2017	1H2018	2H2018	1H2019
Revenue	10,032	12,335	11,976	13,955	15,575
Cost of Goods Sold	(7,962)	(9,602)	(9,656)	(11,362)	(12,711)
Gross Profit	2,070	2,733	2,320	2,593	2,864
Other Oper. (Exp)/Inc	(822)	(940)	(824)	(1,182)	(1,215)
Operating Profit	1,248	1,793	1,496	1,411	1,649
Other Non Opg (Exp)/Inc	177	165	16	154	140
Associates & JV Inc	(5)	(11)	(9)	(15)	(2)
Net Interest (Exp)/Inc	(22)	(27)	(91)	(111)	(126)
Exceptional Gain/(Loss)	0	0	0	0	0
Pre-tax Profit	1,398	1,920	1,412	1,439	1,661
Tax	(237)	(167)	(223)	(116)	(228)
Minority Interest	(2)	(11)	(10)	(12)	(1)
Net Profit	1,159	1,742	1,180	1,311	1,431
Net profit bef Except.	1,159	1,742	1,180	1,311	1,431
Growth					
Revenue Gth (%)	69.8	41.7	19.4	13.1	30.0
Opg Profit Gth (%)	147.8	79.8	19.9	(21.3)	10.2
Net Profit Gth (%)	149.2	116.3	1.8	(24.8)	21.3
Margins					
Gross Margins (%)	20.6	22.2	19.4	18.6	18.4
Opg Profit Margins (%)	12.4	14.5	12.5	10.1	10.6
Net Profit Margins (%)	11.6	14.1	9.9	9.4	9.2

Source: Company, DBS HK

Sunny Optical Technology

Balance Sheet (RMB m)

FY Dec	2017A	2018A	2019F	2020F	2021F
Net Fixed Assets	2,586	4,523	6,697	8,234	8,797
Invts in Associates & JVs	125	101	101	101	101
Other LT Assets	1,380	1,460	1,417	1,363	1,306
Cash & ST Invts	3,341	7,288	7,919	9,772	13,877
Inventory	2,622	3,074	4,142	5,512	7,050
Debtors	5,666	6,231	8,473	11,349	14,577
Other Current Assets	7	175	175	175	175
Total Assets	15,726	22,852	28,924	36,507	45,882
ST Debt	1,348	1,482	2,016	2,700	3,468
Creditors	6,183	7,064	9,518	12,667	16,200
Other Current Liab	175	131	612	788	1,020
LT Debt	347	330	330	330	330
Other LT Liabilities	154	4,556	4,726	4,935	5,211
Shareholder's Equity	7,489	9,234	11,634	14,947	19,438
Minority Interests	31	54	88	140	215
Total Cap. & Liab.	15,726	22,852	28,924	36,507	45,882
Non-Cash Wkg. Capital	1,937	2,286	2,660	3,582	4,582
Net Cash/(Debt)	1,645	5,475	5,573	6,742	10,079
Debtors Turn (avg days)	76.6	83.7	76.1	76.6	78.0
Creditors Turn (avg days)	126.0	119.7	112.5	113.7	115.4
Inventory Turn (avg days)	58.4	51.4	48.9	49.5	50.2
Asset Turnover (x)	1.6	1.3	1.4	1.4	1.5
Current Ratio (x)	1.5	1.9	1.7	1.7	1.7
Quick Ratio (x)	1.2	1.6	1.3	1.3	1.4
Net Debt/Equity (X)	CASH	CASH	CASH	CASH	CASH
Net Debt/Equity ex MI (X)	CASH	CASH	CASH	CASH	CASH
Capex to Debt (%)	75.6	149.4	150.3	116.9	79.9
Z-Score (X)	NA	NA	NA	NA	NA

Source: Company, DBS HK

Cash Flow Statement (RMB m)

FY Dec	2017A	2018A	2019F	2020F	2021F
Pre-Tax Profit	3,318	2,851	4,070	5,558	7,523
Dep. & Amort.	533	815	1,413	2,082	2,557
Tax Paid	(404)	(339)	(481)	(657)	(889)
Assoc. & JV Inc/(loss)	16	24	32	43	56
(Pft)/ Loss on disposal of FAs	0	0	0	0	0
Chg in Wkg.Cap.	(962)	1,208	(205)	(713)	(723)
Other Operating CF	0	0	0	0	0
Net Operating CF	2,501	4,560	4,830	6,313	8,523
Capital Exp.(net)	(1,282)	(2,708)	(3,526)	(3,542)	(3,033)
Other Invts.(net)	(544)	128	0	0	0
Invts in Assoc. & JV	(41)	0	(32)	(43)	(56)
Div from Assoc & JV	0	0	0	0	0
Other Investing CF	(454)	(252)	(18)	(22)	(29)
Net Investing CF	(2,321)	(2,832)	(3,576)	(3,608)	(3,118)
Div Paid	(725)	(623)	(889)	(1,213)	(1,640)
Chg in Gross Debt	788	118	533	684	768
Capital Issues	417	(122)	(266)	(324)	(427)
Other Financing CF	0	2	0	0	0
Net Financing CF	480	(626)	(622)	(853)	(1,300)
Currency Adjustments	0	0	0	0	0
Chg in Cash	660	1,102	632	1,853	4,105
Opg CFPS (RMB)	3.18	3.07	4.61	6.43	8.46
Free CFPS (RMB)	1.12	1.69	1.19	2.54	5.02

Source: Company, DBS HK

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BUY (>15% total return over the next 12 months for small caps, >10% for large caps)

HOLD (-10% to +15% total return over the next 12 months for small caps, -10% to +10% for large caps)

FULLY VALUED (negative total return, i.e., > -10% over the next 12 months)

SELL (negative total return of > -20% over the next 3 months, with identifiable share price catalysts within this time frame)

**Share price appreciation + dividends*

Completed Date: 16 Dec 2019 15:24:02 (HKT)

Dissemination Date: 16 Dec 2019 16:15:27 (HKT)

Sources for all charts and tables are DBS HK unless otherwise specified.

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