

Hitachi Maxell (6810, JP)

Exchange: Tokyo Stock Exchange 1

Sector: Electric Products

Market Cap: JPY106.4 billion

P/B: 1.0x (3/16 act)

Recommendation: Outperform

Share Price: JPY1,996 (12/30/2016)

Target Price: JPY2,799

P/E: 27.0x (3/17 CE)

Div. Yield: 1.8% (3/17 CE)

Highlight

Titlis maintains Outperformance although it has remained lower than target price since inception in September 2015. It more clearly would be undervalued at this time, as Hitachi Maxell finally undertook real restructure on legacy business of Magnetic Tape in this fiscal year. In addition to this measure, the earnings are expected to move higher, beating the company guidance for FY03/2017 (E) mainly led by strong growth of Car camera lenses. In fact, operating cash flow for FY03/2016 has already expanded prior to the improvement in profit margin for this fiscal year. In mid-term outlook, the market growth and competitive positioning of its growth products such as automotive related and beauty care appliance are intact for FY03/2020 (E). Therefore, it would be the time of revaluation of Hitachi Maxell on the expectation of further improvement in its business portfolio. In this point, the share price will move higher on much clearer earnings prospect, which is lower than its business value added to net cash.

Business Description

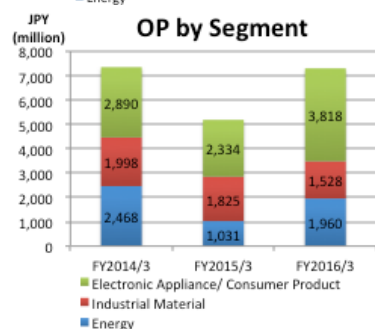
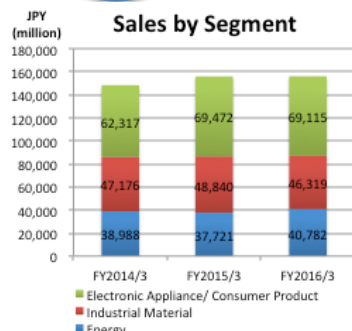
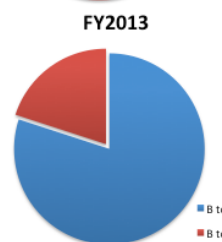
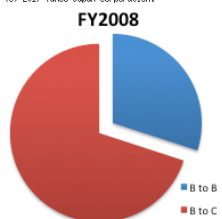
Hitachi Maxell was established in 1961 and has expanded its business from battery and magnetic tape of its core products since founded. Maxell has once become a wholly owned subsidiary of Hitachi Ltd. in 2010 and went to public again, relisted in Tokyo Stock Exchange in 2014 after strengthening its business to shift to B to B from B to C (see 2 pie charts on the left). The current business is divided to 3 segments of Energy, Industrial Material and Electronic Appliance/Consumer Product. Sales and OP by business segment are shown 2 bar charts on the left.

Energy

Energy segment consists mainly of lithium-ion rechargeable batteries for mainly smartphones, micro batteries and other battery products. Of micro-batteries, heat-resistant coin-type lithium manganese dioxide batteries are a growth driver used for tire pressure monitoring systems (TPMS). Sale and OP of this segment accounts 26% and 27% for FY03/2016.

Industrial Material

Industrial Material consists of 2 growth products that support automotive technology as high-precision lens units for car camera and LED car headlamp lenses. Other products include Adhesive tape used for packing, protection, and building, and is also combined with new functions for use in the semiconductor manufacturing process and in electronics, and Magnetic tape. Sale and OP of this segment accounts 30% and 21% for FY03/2016.



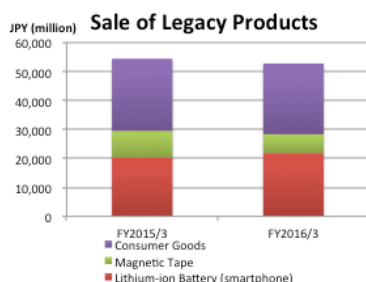
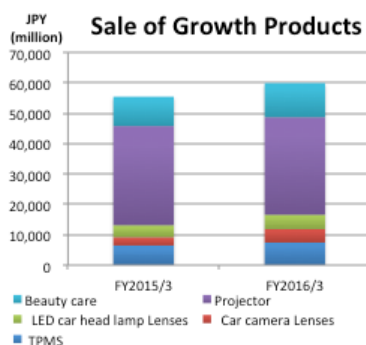
Electronic Appliance/Consumer Product

Electronic Appliance and Consumer Product sells small electrical equipment, accessories and recording media and dry batteries for consumer market. Projectors and Beauty care appliances have been driving earnings of the segment. Projectors are provided to companies and educational institutions. Sale and OP of this segment accounts 44% and 52% for FY03/2016.

Industry Overview and Competitive Positioning

Industry Overview

Maxell is shifting from B to C to B to B, but each segment is comprised of mixed portfolio of growth and legacy products. 2 bar charts on the left show sales of growth and legacy products for FY03/2015 and FY03/2016 respectively. Of growth products, heat-resistant coin-type lithium micro battery is expanding, as an increasing number of countries legislate a law for equipping TPMS (Tire Pressure Monitoring System) in a car. TPMS battery market in the world is expected to grow 11% per annum from 150 million units for 2015 to 219 million units for 2020. Car camera lenses are expected to benefit from ADAS (Advanced Driving Assistant System) that will replace from car view camera to car 'sensing' camera. For instance, more than 10 lenses are used for sensing camera in high-end car models. Car camera (view camera + sensing camera) is expected to increase from 16% per annum from 65 million units for 2014 to 160 million units for 2020. LED car headlamp lenses are also growing on increasing demand of low electricity consumption lights in addition to 'Daytime Running Light' legislated in Europe and U.S. The number of cars equipped LED car headlamp lenses are expected to grow 5% for 2014 to more than 20% for 2020 in worldwide. Projectors have grown, focusing on high-end market for mainly education institutions. Beauty Care appliances maintain upbeat due to growing sale to foreign visitors as well as increasing demand of health and beauty conscious of consumers. Conversely, Lithium-Ion Battery for smartphone has grown slower in line with soft growth of smartphone devices. Magnetic Tape has declined due to substitution by newer technology. Consumer Appliances such as audio accessory and dry battery have deteriorated profitability due to commodity products.



Competitive Positioning

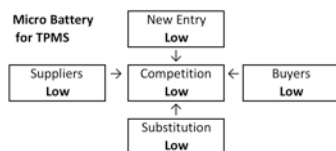
Competitive Positioning is analyzed each growth and legacy products in 5 Forces.

Growth Products

Micro Battery for TPMS

Buyers (Low risk): Maxell as a top manufacturer has close relationship with global 5 major TPMS makers through joint development, having normally long-term contract for its product shipment, although the 3rd largest customer implemented temporally in inventory adjustment in 1Q.

Suppliers (Low risk): Maxell as a top manufacturer has close relationship with suppliers globally for its plant in Ono, Japan. Commodity prices are currently relatively stable.



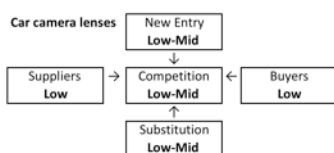
Competition (Low risk): Due to limited number of heat-resistant coin-type lithium micro battery and market expansion, competition is moderate. Competitors are Panasonic and Sony.

New Entry (Low risk): Mainly due to technology barrier that requires stable quality under -40 degrees Celsius to +125 degrees C, new entrance is limited.

Substitution (Low risk): Maxell keeps developing technology, providing battery for direct attached on tire type TPMS module that enables it to linkage with ABS system. TPMS is likely to advance in line with safe driving technology, although 'indirect' type TPMS would be a threat for 'direct' type makers such as Maxell. But it would be lower due to safety point of view at the moment.

Car camera lenses

Buyers (Low risk): Maxell as one of WW 3 manufacturer has close relationship with car camera makers on reliable high quality of products. Sensing camera requires far higher quality in wide range, resolution, heat resistance and water repellency.



Suppliers (Low risk): Maxell as a top manufacturer has close relationship with suppliers globally for its plant in Japan and Malaysia. Relatively stable commodity prices are benefit to the company.

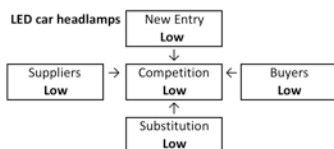
Competition (Low-Mid risk): Due to its high technology, competition would be limited. Plastic lenses are lower cost, but while sensing camera lenses are expanding, they require increasingly higher specification of aspheric hybrid lenses made of glass and plastic.

New Entry (Low-Mid risk): Due to its high technology mentioned above, threat of new entry would be limited in high-end camera lenses.

Substitution (Low-Mid risk): Due to cost of production, substitution risk by plastic lenses is likely in future. However, demand of high-specified lenses for sensing camera, glass/plastic hybrid lenses would be advantageous for the time being.

LED car headlamp lenses

Buyers (Low risk): Maxell as a top manufacturer has close relationship with car LED light makers such as Koito on reliable high quality of products.



Suppliers (Low risk): Maxell as a top manufacturer has close relationship with suppliers globally for its plants in Japan, China and Malaysia. Relatively stable commodity prices are benefit to the company.

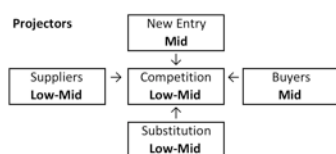
New Entry (Low risk): Due to its high technology and established production system, threat of new entry would be marginal.

Competition (Low risk): Due to limited number of LED makers, competition would be limited. Maxell has high advantages of establishing production line from metal mold to fine processing to finished products.

Substitution (Low risk): As the leading company of LED headlamp lenses, its technology is highly advanced, as LED headlamp lenses are leading in Japan to any other region in the world. LED headlamp lenses equipped in Japanese cars are approximately 40% compared with 10% in world wide as of 2016. Due to its technology and cost of production, substitution risk is low.

Projectors

Buyers (Mid risk): Maxell uses niche market strategy, focusing on high-end projectors for schools and large size theater or convention centers, and selling globally, in particular China and Asia of increasing demand market. However, due to sharp downturn in demand in China for 2H in FY03/2016, the sale receded substantially.



Suppliers (Low-Mid risk): Maxell has close relationship with suppliers globally. However, Kumamoto quake in April 2016 suspended shipment of image sensor to projectors makers, as only supplier Sony provides sensor. Projectors have been slower shipment for 1H of FY03/2017.

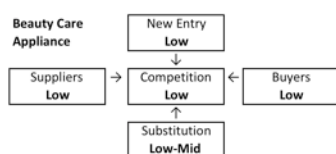
Competition (Mid risk): Seiko Epson is a strong competitor, covering all categories of projectors, whereas Maxell focuses on high-end market. High-end market is expanding but volume market is decreasing. This is a tailwind for the company. But the competition is likely to be intense, as overall market is less likely to grow (+2% per annum from 2014 to 2017).

New Entry (Mid risk): Due to its high specification such as high brightness, threat of new entry into high-end market would be relatively lower than volume market. However high technology of Maxell, competitors are likely to enter into high-end market from soft growth of volume market.

Substitution (Low-Mid risk): Currently there would be less risk of substitution of projector. However, innovation influences possible substitution in future. Maxell continues developing next generation projector as 'compact smart projector.'

Beauty Care Appliance

Buyers (Low risk): Maxell as one of the largest makers in Japan providing the consumer products to develop customer need backed by higher consciousness of beauty and health care.



Suppliers (Low risk): Maxell as a top manufacturer has close relationship with suppliers in Japan. Relatively stable commodity prices are benefit to the company.

Competition (Low-Mid risk): Reliable brand of 'Hitachi' is advantage for the company. Another top brand of 'Panasonic' is also strong. But due to developing value added on high specification, the company's products are supported by consumers.

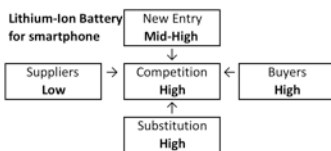
New Entry (Low risk): Due to nature of luxury goods that are used by touching his/her own body directly, reliable brand is highly advantageous in Japan.

Substitution (Low-Mid risk): Due to nature of consumer goods, substitution risk by innovation is less likely slower than industrial goods. It would take some time to spread reputation of a technology for beauty care among consumers.

Legacy Products

Lithium-Ion Battery for smartphone

Buyers (High risk): Its major customer is Samsung and the order comes average 2 month in advance of shipment based on weekly forecast. The large change in quantity of order in particularly for new-models is a big risk for the company. Maxell has implemented its fixed cost reduction for 3Q of FY03/2015. However, due to further reduction of shipment, the sale has dip under break-even.

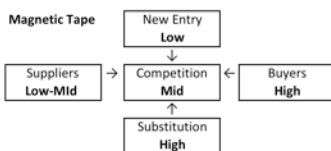


Suppliers (Low risk): Maxell as a large manufacturer has close relationship with suppliers globally for its plant in Kyoto and China. Relatively stable commodity prices are benefit to the company.

Competition (High risk): Maxell mainly ship the Korean company mainly square-type battery that is used for volume-zone. Hence, the company's products are more likely to come under downward pressure on prices than smartphones rather than laminated type battery for high-end devices. In case of appreciation of JPY rates, its profitability is deteriorating.

New Entry (Mid-High risk): Due to its commodity type of products mentioned above, threat of new entry is likely.

Substitution (High risk): In line with technology development and shifting to high-specified devices, laminated battery is replaced from square-type battery.



Magnetic Tape

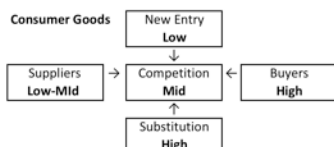
Buyers (High risk): In line with decrease of demand as well as market size, bargaining power of buyers is increasing, as consumer market has already decreased.

Suppliers (Low-Mid risk): Magnetic tape was Maxell's core business in 70s and 80s, but due to declining production volume, it would be more difficult to maintain procurement at lower cost.

Competition (Mid risk): Despite limited number of magnetic makers, competition has not been eased and Maxell finally decided to leave the market. Fuji Film would have survivorship benefit.

New Entry (Low risk): Due to declined market, no one enters into the market.

Substitution (High risk): Information storage point of view, magnetic tape has some advantages but has been already replaced to newer technology.



Consumer Goods

Buyers (High risk): Due to commodity nature of products, the prices come under downward pressure.

Suppliers (Mid-High risk): Maxell is selling the consumer goods as EMS. Current depreciation of JPY would deteriorate its profitability of imports into Japan.

Competition (High risk): Maxell finally decided to focusing more on high-end products, and plans to improve close to break-even in 2H of FY03/2017. Optical disk benefits from decline market as a survivor.

New Entry (High risk): Due to its commodity type of products mentioned above, threat of new entry is very likely.

Substitution (High risk): The products are matured and declining volume. In line with technology development, production cost of newer products is getting lower on the increase of volume.

Investment Summary

Business Outlook

Titlis expects OP margin to increase to hit over 5% for FY03/2017 (E) led by strong growth of LED headlamp lenses and lower loss of legacy products despite of lower sale than FY03/2016 due to negative effect by quake in April 2016. In mid-term view, the earnings are expected to accelerate on solid growth of TPM battery, Car camera lenses, LED car headlamp lenses and Projectors and Beauty care appliances (see more detail below 'Business Outlook' and tables in Appendix).

Competitive Positioning and Risks

Hitachi Maxell's competitive positioning should be examined each product basis as its business portfolio is mixed by growth and legacy products. Growth products are mostly expected low-to-mid risk based on its high technology and reliable quality of products. For instance, TPMS battery, Car camera lenses and LED car headlamp lenses require stable quality on safety driving technology. Consumers buying Beauty care appliances also want to buy reliable brand and quality as they use them touching their body directly. Conversely, legacy products are in high risk. They are reliable on declining

market and many of them have been mostly replaced by newer technology. Maxell undertaken cost reduction of Lithium-ion battery for smartphone in 2015 and Consumer goods like audio accessory and dry battery in 2016, and finally will implement restructure of Magnetic tape in 2016. Overall business portfolio is getting stronger and will be seen different picture in near future.

Valuation

Titlis tries to assess valuation, analyzing each business value in 3 business segment and net cash. The Sum-of-the-Parts value (SOTP NAV) is estimated JPY2,799 a share for FY03/2017 (E) and JPY3,051 a share for FY03/2020 (E). Even though excluding long-term investment and land, SOTP NAV for FY03/17 (E) is JPY2,262 and JPY2,450 for FY03/2020 (E). EV/EBITDA is also support lower valuation than closing price as of December 30th 2016.

Financial Stability

Maxell has strong balance sheet and positive net cash and net working capital backed by stable free cash flow. As strengthening business portfolio through restructure, profitability and ROE will move higher soon. In fact, OP margin is very likely to increase more than 5% for the first time since relisting in 2014, and operating cash flow has already expanded for 03/2016 (see cash flow statement on Appendix).

Business Outlook

2Q FY03/2017

Total sale was down 16.0% YoY to JPY65,95 million, OP down 20.3% YoY to JPY2,915 million, RP down 37.2% YoY to JPY2,356 million and NP down 40.8% YoY to JPY1,695 million. For the 6-month period, Lithium-Ion battery for smartphone declined on volume and currency effect on stronger JPY rates and Projectors decreased sale led by earthquake, while automotive use camera lenses, LED headlamp lenses and TPMS grew at solid rate and Beauty Care Appliance maintained favorable sale.

Full Year FY03/2017 Outlook by Company

Maxell kept its previous outlook and dividend on hold for full year FY03/2017. Sale is expected to decrease 10.4% YoY to JPY140,000 million, OP down 16.4% YoY to JPY600,000 million, RP down 16.4% YoY to JPY5,600 million and NP down 0.8% YoY to JPY3,900 respectively. Dividend will be paid JPY18 a share for semiannually (annually JPY36 a share).

Full Year FY03/2017 by Titlis

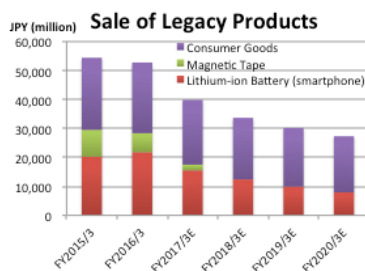
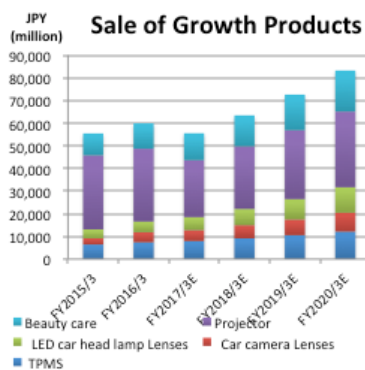
Titlis expects sale to slightly miss but profits to beat its guidance led by strong growth of LED headlamp lenses and lower loss of legacy products. Sale is expected to decrease 12.3% YoY to JPY136,967 million, OP down 1.0% YoY to JPY7,234 million, but RP up 27.8% YoY to JPY6,675 million and NP up 25.8% YoY to JPY4,945 respectively (see tables below of By Products Analysis and financial statements in Appendix).

Titlis Group

corporate governance, investment research & solutions

Growth Products	FY2015/3		FY2016/3		1Q		2Q		FY2017/3E		3Q		4Q		Full Year	
	Sales	OP	Sales	OP	Sales	OP	Sales	OP	Sales	OP	Sales	OP	Sales	OP	Sales	OP
Energy																
Lithium ion battery (LB)					8,381	193	8,997	441								
Lithium-ion Rechargeable Battery (smartphone)	20,270	-237	21,850	-33	3,543	-142	4,434	-25	4,163	-17	3,420	-17	15,559	-201		
Laminated LB Rechargeable (automobile)	200	4	159	3	45	0	50	2	24	0	23	0	142	3		
Coin Type LB Rechargeable (multiple use)	1,640	25	1,900	38	430	4	424	17	418	13	616	18	1,888	52		
HEMS (newly developed)	680	20	165	-107	72	-1	50	0	15	0	3	0	140	-1		
sub total	22,790	-187	24,074	-98	4,090	-138	4,958	-7	4,620	-4	4,061	2	17,729	-147		
Micro battery																
TPMS	6,465	1,104	7,440	1,453	1,955	209	1,614	226	2,215	310	2,215	310	7,999	1,055		
Total	37,721	1,031	40,781	1,960	8,381	193	8,997	441	9,095	480	8,626	464	35,098	1,578		
Industrial Material																
Adhesive Tape					10,649	635	10,409	787								
Medical & Construction	6,080	447	6,510	391	1,570	102	1,520	99	1,790	116	1,790	116	6,669	434		
Other tapes	5,850	29	4,447	22	1,300	13	1,133	6	733	4	700	4	3,866	26		
sub total	17,020	523	16,387	473	4,103	143	4,085	134	3,940	152	3,856	150	15,985	578		
Optical																
Camera Lenses	8,130	123	7,350	74	1,400	14	1,166	12	1,400	14	1,120	11	5,086	51		
Car camera Lenses	2,740	548	4,450	890	891	151	1,079	194	1,356	244	1,488	268	4,814	858		
LED car head lamp Lenses	3,960	642	4,720	944	1,300	325	1,353	419	1,571	487	1,547	464	5,771	1,695		
Others	4,090	20	2,595	26	620	6	946	9	392	4	864	9	2,822	28		
sub total	9,910	1,333	19,115	1,933	4,211	497	4,544	635	4,718	749	5,019	752	18,492	2,632		
Magnetic Tape	9,280	-66	6,550	-937	1,194	-11	480	10	176	4	120	-6	1,970	-4		
Total	48,840	1,826	46,319	1,528	10,649	635	10,409	787	10,035	908	10,624	904	41,717	3,235		
Electronic Appliance/ Consumer Product																
Consumer					13,668	285	13,891	574								
Optical Disk	8,270	83	8,560	482	2,595	221	1,903	190	2,700	216	2,400	192	9,598	819		
Dry cell battery	7,190	96	5,800	45	1,050	5	1,080	5	1,600	8	1,120	6	4,850	24		
Other Consumer products	9,440	-430	10,032	-472	2,179	-109	2,475	-38	1,847	-28	1,430	-14	7,931	-189		
sub total	24,900	-257	24,392	54	5,824	117	5,458	158	6,147	196	4,950	183	22,379	654		
Projector	32,660	1,939	32,120	2,514	4,984	-125	5,788	104	7,581	213	6,745	190	25,099	382		
Beauty care	9,680	606	11,240	1,209	2,856	293	2,600	312	3,393	407	3,048	366	11,896	1,378		
Others	2,232	39	1,363	14	3	0	45	0	382	4	348	3	778	8		
Total	69,472	2,334	69,115	3,790	13,668	285	13,891	574	17,503	820	15,091	742	60,152	2,422		
Grand Total	156,033	5,191	156,215	7,279	32,698	1,113	33,297	1,803	36,632	2,208	34,340	2,110	136,967	7,235		

(Source) Estimated Titlis



Mid-term Projection FY03/2020 by Titlis

Titlis expects growth products to maintain solid expansion for FY03/2020, as TPMS, Car sensing camera and LED car headlamp lenses are very likely to keep strong demand (see bar chart on the left). These products are also expected to maintain profit margins due to the strong competitive position. On the other hand, legacy products are expected to decrease sale (see bar chart on the left). Assuming currency rate such as USD/JPY staying at current rate, weaker JPY is expected to help Lithium-Ion battery for smartphones positively, but import of consumer goods such as AV accessory are affected negatively. Lithium-Ion battery for smartphone decreases faster than company projection and additional cost reduction would be needed soon. Also, dry battery that is Maxell's core products since its foundation would need further solution to pick up the profit margin, although the earnings are projected to recover to break-even for FY03/2017.

Valuation

Maxell share price has been staying at discount all the time since I issued Buy recommendation in September 2015. The background of undervalued price would be difficult to see its earnings only a glance at the income statement, as total sale has stayed around JPY140 billion since relisting in 2014 and OP margin has not hit 5% of FY03/2014 due to mixed business portfolio with growth and legacy. However, things are doing better. OPM will go up over 5% and drastic solution has been finally implemented on Magnetic Tape for this fiscal year, although additional measure would need for Consumer Goods and Lithium-Ion for smartphone in near future. Somehow issue on all 3-legacy

products have been implemented and the losses would no longer affect its overall earnings significantly and going forward growth products will accelerate the earnings going forward. In this point, the share price should positively appreciate and move higher to its real value.

Sum-of-the Parts Value

Sum-of-the-Parts (SOTP) value is business value of each business segment that is normalized EBIT, EBITDA and FCF from FY03/2014 to FY03/2017(E) by multiples, added to net cash and long-term investment securities and land. SOTP value for FY03/2017(E) is estimated to be JPY2,799 a share (28% discount of closing price of December 30th 2016). SOTP value for FY03/2020(E) is estimated to be JPY3,051 a share (34% discount of closing price of December 30th 2016), as shown table below. Even though subtracting LT investment and land, the NAV is JPY2,262 for FY03/2017 (E) and JPY2,450 a share for FY03/2020 (E). The share price as of December 30th 2016 is lower than both values above. Additionally, net cash is expected to be JPY741 a share for FY03/2017 (E) and JPY816 a share for FY03/2020 (E). If Maxell uses cash on hand for future growth successfully, the earnings and value will move further higher.

NAVs:			NAVs:		
Sum of the parts NAV FY2017/3 (E):			Future NAV 2020/3 (E):		
Energy	365	5x EBITDA	Energy	373	5x EBITDA
Industrial Material	526	15x FCF	Industrial Material	593	15x FCF
Electronic Appliance/ Consum	662	15x FCF	Electronic Appliance/ Consumer Pr	700	15x FCF
Cash	869	1x Book	Cash	944	1x Book
Investment Securities	64	0.75x Book	Investment Securities	128	0.75x Book
Land	474	0.75x Book	Land	474	0.75x Book
Debt	(128)	1x Book	Debt	(128)	1x Book
Minority Interest	(32)	1x Book	Minority Interest	(32)	1x Book
Total SOTP NAV	JPY 2,799	71.3%	Total Future NAV	JPY 3,051	65.4%

EV/EBITDA

EV/EBITDA for FY03/2017(E) is estimated to be 5.5x and will decline to 3.0x for FY03/2020 (E). Adjusted EV/EBITDA will go down to 2.4x for FY03/2017(E) and 0.9x for FY03/2020 (E) if LT investment is included.

	Mar-14	Mar-15	Mar-16	Mar-17(E)	Mar-18(E)	Mar-19(E)	Mar-20(E)
Avg. Mkt. Cap	JPY 114,811	JPY 99,818	JPY 96,779	JPY 105,472	JPY 105,472	JPY 105,472	JPY 105,472
EV	JPY 107,094	JPY 69,202	JPY 63,330	JPY 67,683	JPY 63,696	JPY 59,282	JPY 53,986
EV/EBITDA	8.91	6.74	5.28	5.53	4.23	3.58	2.95
*EV (+LT Investment)	JPY 61,885	JPY 32,770	JPY 25,102	JPY 29,455	JPY 25,468	JPY 21,054	JPY 15,758
*EV/EBITDA	5.15	3.19	2.09	2.41	1.69	1.27	0.86
EV/EBIT	14.56	13.33	8.67	9.36	6.40	5.16	4.08
EV/FCF	124.38	197.16	6.00	10.84	10.82	9.39	7.50

Financial Analysis

As shown key financial ratios in table below and financial statements summary in Appendix, Maxell has strong balance sheet, as net cash and net working capital are positive backed by relatively stable free cash flow over years. On the other hand, profitability is not high enough. Lower ROE is caused by lower financial leverage and in particular lower profit margin. Moreover, OP margin has not increased sufficiently, but Operating Cash flow generated JPY14 billion for 03/2016 and is expected to maintain solid going forward (see cash flow statement on Appendix).

Financial Ratios:	Mar-13	Mar-14	Mar-15	Mar-16	Mar-17(E)	Mar-18(E)	Mar-19(E)	Mar-20(E)
ROE		6.30%	5.90%	3.38%	4.31%	6.37%	7.06%	7.76%
Gross Margin	20.16%	22.10%	20.33%	21.25%	21.96%	23.87%	24.60%	25.26%
EBITDA Margin	3.82%	8.09%	6.58%	7.67%	8.93%	10.88%	11.46%	11.89%
EBIT Margin	1.65%	4.95%	3.33%	4.68%	5.28%	7.20%	7.93%	8.58%
Return on Assets	0.31%	4.79%	4.25%	2.55%	3.24%	4.77%	5.29%	5.80%
Return on Fixed Assets	2.36%	26.92%	29.24%	18.30%	23.02%	34.89%	40.22%	46.34%
Revenue / Assets	69.49%	95.66%	97.25%	101.21%	89.82%	88.17%	88.57%	89.73%
Depreciation / Capex	42.58%	78.11%	91.00%	123.26%	76.92%	78.46%	78.46%	78.46%
Depn / Sales	2.17%	3.14%	3.25%	3.00%	3.65%	3.69%	3.52%	3.31%
Capex / Sales	5.10%	4.02%	3.57%	2.43%	4.75%	4.70%	4.49%	4.22%
Depn / Net FA	11.41%	16.88%	21.75%	21.78%	23.28%	23.74%	23.74%	23.74%
Asset / Equity	1.27	1.38	1.35	1.36	1.32	1.31	1.31	1.30
Equity / Asset	78.75%	72.33%	74.01%	73.74%	75.82%	76.33%	76.53%	76.63%
Total Debt / EBITDA	1.29	0.59	0.61	0.57	0.56	0.45	0.41	0.37

Investment Risks

Global economic downturn (Likely, Mid Risk)

In case of global recession, the business will be soft as the earnings slowed for 2H of FY03/2016 due to decline in business confidence led by China's economy. Projectors suffered from the slowdown temporarily at that time, but in mid-term view 3 growth products are expected to continue expanding in automotive area, as ADAS and safety driving technology will be accelerating.

Softened market of smartphone (Likely, Mid Risk)

Lithium-ion battery for smartphone is decelerating. Currently the earnings are under break-even and further drastic solution is required, as the product is used for low-to-middle zone devices.

Strong JPY rate (Likely, Low-Mid Risk)

Currency risk is mostly on export to Lithium-ion battery for smartphone. But the sale is getting smaller by 10%-20% per annum and the impact will be smaller year-by-year. Additional cost-reduction in this product would be inevitable soon in any case.

Ownership of Hitachi (Less-likely, Mid-High Risk)

Hitachi Ltd. reduced its ownership 1,546,800 shares to 15,597,100 shares (29.52%) from 17,143,900 shares (32.44%). Maxell has been collaborating with Hitachi Ltd. in basic research and using 'Hitachi' brand name for consumer products. Management of Maxell stated the current ownership would be comfortable as the company has more free hands for business decision-making while using resources of Hitachi. We should closely watch how Hitachi is going and the shareholders of Nichia Chemical, Nippon Zeon and Ube Industrial are doing going forward if collaboration between Hitachi and Maxell continues and the shares transferred works effectively on business.

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Appendix

FY2014/3	JPY million	Sales	COGS	COGS/S	Gross Profit	SGA	SGA/S	OP	OPM	RP	EBT	Tax	Minority	Net Profit	EPS	P/E
1Q (act)		29,403	-23,074	-78.5%	6,329	-5,901	-20.1%	428	1.5%	789	1,112	-182	-7	923		
2Q (act)		39,946	-31,397	-78.6%	8,549	-6,919	-17.3%	1,630	4.1%	1,611	1,477	-379	-47	1,051		
3Q (act)		40,788	-31,274	-76.7%	9,514	-6,254	-15.3%	3,260	8.0%	3,807	4,460	-948	-88	3,424		
4Q (act)		38,344	-29,926	-78.0%	8,418	-6,380	-16.6%	2,038	5.3%	1,859	1,648	394	-8	2,034		
Full Year		148,481	-115,671	-77.9%	32,810	-25,454	-17.1%	7,356	5.0%	8,066	8,697	-1,115	-150	7,432	118.20	
FY2015/3	JPY million	Sales	COGS	COGS/S	Gross Profit	SGA	SGA/S	OP	OPM	RP	EBT	Tax	Minority	Net Profit	EPS	P/E
1Q (act)		35,870	-28,652	-79.9%	7,218	-6,459	-18.0%	759	2.1%	573	577	-102	-24	451		
2Q (act)		39,652	-31,714	-80.0%	7,938	-6,632	-16.7%	1,306	3.3%	1,813	1,817	-443	-67	1,307		
3Q (act)		42,072	-32,672	-77.7%	9,400	-6,864	-16.3%	2,536	6.0%	2,887	-1,609	-609	-100	-2,318		
4Q (act)		38,439	-31,272	-81.4%	7,167	-6,578	-17.1%	589	1.5%	197	8,038	-630	-28	7,380		
Full Year		156,033	-124,310	-79.7%	31,723	-26,533	-17.0%	5,190	3.3%	5,470	8,823	-1,784	-219	6,820	129.07	
FY2016/3	JPY million	Sales	COGS	COGS/S	Gross Profit	SGA	SGA/S	OP	OPM	RP	EBT	Tax	Minority	Net Profit	EPS	P/E
1Q (act)		37,335	-29,486	-79.0%	7,849	-6,573	-17.6%	1,276	3.4%	1,450	1,486	-292	-61	1,133		
2Q (act)		41,231	-32,237	-78.2%	8,994	-6,613	-16.0%	2,381	5.8%	2,346	2,310	-452	-130	1,728		
3Q (act)		40,598	-32,017	-78.9%	8,581	-6,396	-15.8%	2,185	5.4%	1,903	1,903	-1,158	145	890		
4Q (act)		37,052	-29,283	-79.0%	7,769	-6,305	-17.0%	1,464	4.0%	-476	-476	673	-17	180		
Full Year (act)		156,216	-123,023	-78.8%	33,193	-25,887	-16.6%	7,306	4.7%	5,223	5,223	-1,229	-63	3,931	74.4	26.8
Full Year (CE)		157,000	-124,310	-79.2%	33,193	-25,887	-16.6%	6,500	4.1%	6,100	5,223	-1,229	-63	4,000	122.1	
FY2017/3 (E)	JPY million	Sales	COGS	COGS/S	Gross Profit	SGA	SGA/S	OP	OPM	RP	EBT	Tax	Minority	Net Profit	EPS	P/E
1Q (act)		32,698	-25,866	-79.1%	6,832	-5,719	-17.5%	1,113	3.4%	689	496	-104	-14	378		
2Q (act)		33,297	-25,983	-78.0%	7,314	-5,512	-16.6%	1,802	5.4%	1,667	1,659	-324	-18	1,317		
3Q (act)		36,632	-28,652	-78.2%	7,980	-5,771	-15.8%	2,208	6.0%	2,209	2,208	-456	-91	1,662		
4Q (E)		34,340	-26,387	-76.8%	7,954	-5,844	-17.0%	2,110	6.1%	2,110	2,110	-435	-87	1,588		
Full Year (E)		136,967	-106,888	-78.0%	30,079	-22,846	-16.7%	7,234	5.3%	6,675	6,474	-1,319	-209	4,945	93.6	21.3
Full Year (CE)		140,000	-106,888	-76.3%	30,079	-22,846	-16.7%	6,000	4.3%	5,600	6,474	-1,319	-209	3,900	73.8	27.0
FY2018/3 (E)	JPY million	Sales	COGS	COGS/S	Gross Profit	SGA	SGA/S	OP	OPM	RP	EBT	Tax	Minority	Net Profit	EPS	P/E
1Q (E)		32,020	-24,175	-75.5%	7,845	-5,600	-17.5%	2,244	7.0%	2,245	2,244	-463	-92	1,689		
2Q (E)		33,302	-25,525	-76.6%	7,777	-5,513	-16.6%	2,264	6.8%	2,264	2,264	-467	-93	1,704		
3Q (E)		37,514	-28,835	-76.9%	8,679	-5,910	-15.8%	2,768	7.4%	2,769	2,768	-571	-114	2,084		
4Q (E)		35,539	-26,812	-75.4%	8,727	-6,048	-17.0%	2,679	7.5%	2,680	2,679	-553	-110	2,017		
Full Year (E)		138,376	-105,348	-76.1%	33,027	-23,071	-16.7%	9,956	7.2%	9,957	9,956	-2,054	-409	7,493	141.8	14.1
Full Year (CE)		170,000	-105,348	-61.9%	33,027	-23,071	-16.7%	12,000	7.1%	11,480	9,956	-2,054	-409	9,900		
FY2019/3 (E)	JPY million	Sales	COGS	COGS/S	Gross Profit	SGA	SGA/S	OP	OPM	RP	EBT	Tax	Minority	Net Profit	EPS	P/E
1Q (E)		33,251	-24,834	-74.7%	8,417	-5,816	-17.5%	2,601	7.8%	2,601	2,601	-537	-107	1,958		
2Q (E)		34,535	-26,208	-75.9%	8,327	-5,717	-16.6%	2,610	7.6%	2,610	2,610	-539	-107	1,964		
3Q (E)		39,350	-29,967	-76.2%	9,383	-6,199	-15.8%	3,183	8.1%	3,184	3,183	-657	-131	2,396		
4Q (E)		37,593	-28,112	-74.8%	9,482	-6,397	-17.0%	3,085	8.2%	3,085	3,085	-636	-127	2,322		
Full Year (E)		144,729	-109,121	-75.4%	35,608	-24,129	-16.7%	11,479	7.9%	11,480	11,479	-2,368	-471	8,640	163.5	651.2
Full Year (CE)		144,729	-109,121	-75.4%	35,608	-24,129	-16.7%	11,479	7.9%	11,480	11,479	-2,368	-471	8,640	163.5	651.2
FY2020/3 (E)	JPY million	Sales	COGS	COGS/S	Gross Profit	SGA	SGA/S	OP	OPM	RP	EBT	Tax	Minority	Net Profit	EPS	P/E
1Q (E)		35,181	-26,039	-74.0%	9,142	-6,153	-17.5%	2,989	8.5%	2,989	2,989	-617	-123	2,250		
2Q (E)		36,501	-27,449	-75.2%	9,052	-6,042	-16.6%	3,009	8.2%	3,009	3,009	-621	-124	2,265		
3Q (E)		41,972	-31,693	-75.5%	10,279	-6,612	-15.8%	3,667	8.7%	3,667	3,667	-757	-151	2,760		
4Q (E)		40,403	-29,968	-74.2%	10,435	-6,875	-17.0%	3,560	8.8%	3,560	3,560	-734	-146	2,679		
Full Year (E)		154,056	-115,148	-74.7%	38,908	-25,683	-16.7%	13,225	8.6%	13,226	13,225	-2,728	-543	9,953	188.4	0.0
Full Year (CE)		154,056	-115,148	-74.7%	38,908	-25,683	-16.7%	13,225	8.6%	13,226	13,225	-2,728	-543	9,953	188.4	0.0

(Source) Hitachi Maxell, titlis

Cash Flow Analysis:	Mar-13	Mar-14	Mar-15	Mar-16	Mar-17(E)	Mar-18(E)	Mar-19(E)	Mar-20(E)
Net Income	490	7,432	6,820	3,931	4,945	7,493	8,640	9,953
Dep.	2,374	4,661	5,073	4,679	5,000	5,100	5,100	5,100
Amortization	0	0	0	0	0	0	0	0
Other non-cash charges	(2,328)	(7,788)	(7,592)	(2,524)	0	0	0	0
Changes in WC	(45)	2,523	1,625	8,267	2,797	(205)	(923)	(1,355)
Op. Cash Flow	491	6,828	5,926	14,353	12,742	12,389	12,817	13,698
Per share	JPY 11.18	JPY 108.59	JPY 112.15	JPY 271.62	JPY 241.14	JPY 234.45	JPY 242.55	JPY 259.23
Capex	(5,575)	(5,967)	(5,575)	(3,796)	(6,500)	(6,500)	(6,500)	(6,500)
Free Cash Flow	(5,084)	861	351	10,557	6,242	5,889	6,317	7,198
Per share	(JPY 115.72)	JPY 13.69	JPY 6.64	JPY 199.79	JPY 118.13	JPY 111.44	JPY 119.54	JPY 136.22
Beginning Cash	21,304	26,683	28,808	38,187	42,017	46,357	50,343	54,758
Net cash used	5,379	2,125	9,379	3,830	4,340	3,987	4,414	5,296
Ending cash	26,683	28,808	38,187	42,017	46,357	50,343	54,758	60,053

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By Segment (JPY million)	Energy		Industrial Material		Electronic Appliance/		Total	
	Sales	OP	Sales	OP	Sales	OP	Sales	OP
FY2014/3								
1Q (act)	9,579	604	10,066	168	9,758	-344	29,403	428
2Q (act)	10,597	641	11,883	325	17,466	664	39,946	1,630
3Q (act)	9,969	840	12,378	731	18,441	1,689	40,788	3,260
4Q (act)	8,843	383	12,849	774	16,652	881	38,344	2,038
Full Year (act)	38,988	2,468	47,176	1,998	62,317	2,890	148,481	7,356
FY2015/3								
1Q (act)	8,055	16	11,583	417	16,232	326	35,870	759
2Q (act)	9,365	152	12,162	487	18,125	667	39,652	1,306
3Q (act)	10,383	788	12,457	383	19,232	1,365	42,072	2,536
4Q (act)	9,918	75	12,638	538	15,883	-24	38,439	589
Full Year (act)	37,721	1,031	48,840	1,825	69,472	2,334	156,033	5,190
By Segment (JPY million)								
FY2016/3								
1Q (act)	10,070	364	11,521	404	15,744	508	37,335	1,276
2Q (act)	11,203	631	11,609	534	18,419	1,216	41,231	2,381
3Q (act)	10,132	485	11,612	498	18,854	1,202	40,598	2,185
4Q (act)	9,377	480	11,577	92	16,098	892	37,052	1,464
Full Year (act)	40,782	1,960	46,319	1,528	69,115	3,818	156,216	7,306
Full Year (CE)	38,000	1,700	50,000	2,200	69,000	2,600	157,000	6,500
FY2017/3 (E)								
1Q (act)	8,381	193	10,649	635	13,668	285	32,698	1,113
2Q (act)	8,997	441	10,409	787	13,891	574	33,297	1,802
3Q (E)	9,095	480	10,035	908	17,503	820	36,632	2,208
4Q (E)	8,626	464	10,624	904	15,091	742	34,340	2,110
Full Year (F)	35,099	1,578	41,716	3,734	60,152	2,471	136,967	7,234
Full Year (CE)	34,500	1,300	41,000	1,900	64,500	2,800	140,000	6,000
FY2018/3 (E)								
1Q (E)	8,204	505	9,488	830	14,328	909	32,020	2,244
2Q (E)	8,613	469	10,115	892	14,574	903	33,302	2,264
3Q (E)	8,815	540	10,262	1,043	18,437	1,186	37,514	2,768
4Q (E)	8,526	556	11,030	1,068	15,983	1,056	35,589	2,679
Full Year (E)	34,158	2,070	40,895	3,833	63,322	4,053	138,376	9,956
Full Year (CC)	40,700	2,900	52,800	4,200	76,500	4,900	170,000	12,000
FY2019/3 (E)								
1Q (E)	8,256	584	9,863	986	15,132	1,030	33,251	2,601
2Q (E)	8,491	545	10,640	1,062	15,404	1,004	34,535	2,610
3Q (E)	8,793	625	10,993	1,246	19,565	1,312	39,350	3,183
4Q (E)	8,658	643	11,896	1,273	17,040	1,168	37,593	3,085
Full Year (E)	34,198	2,397	43,392	4,567	67,140	4,515	144,729	11,479
Full Year (CE)	40,700	2,900	52,800	4,200	76,500	4,900	170,000	12,000
FY2020/3 (F)								
1Q (E)	8,521	675	10,571	1,182	16,080	1,132	35,181	2,989
2Q (E)	8,607	631	11,503	1,273	16,391	1,106	36,501	3,009
3Q (E)	9,009	723	12,064	1,498	20,898	1,446	41,972	3,667
4Q (E)	9,007	742	13,121	1,529	18,274	1,288	40,403	3,560
Full Year (E)	35,144	2,771	47,259	5,481	71,653	4,972	154,056	13,225
Full Year (CE)	40,700	2,900	52,800	4,200	76,500	4,900	170,000	12,000

(Source) Hitachi Maxell, titlis

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	2013/3	2014/3	2015/3	2016/3	2017/3 (E)	2018/3 (E)	2019/9 (E)	2020/9 (E)
Assets								
Current Assets								
Cash and Cash Equivalents	5,163	15,297	38,770	42,017	46,357	50,343	54,758	60,053
Short-Term Investments	1,375	1,004	-	-	-	-	-	-
Notes and Accounts Receivable,	23,644	30,804	32,587	29,543	25,903	26,169	27,371	29,135
Allowance for Doubtful Receivables	(377)	(408)	(339)	(458)	(402)	(406)	(424)	(452)
Inventories	19,112	21,285	18,657	13,900	12,187	12,313	12,878	13,708
Deferred Income Taxes	869	1,057	1,714	1,702	1,492	1,508	1,577	1,678
Other Current Assets	35,201	10,415	5,310	5,617	4,925	4,976	5,204	5,539
Total Current Assets	84,987	79,454	96,699	92,321	90,462	94,902	101,363	109,662
Property, Plant and Equipment								
Land	40,616	40,908	34,146	33,678	33,678	33,678	33,678	33,678
Buildings	10,132	11,485	8,127	7,665	9,984	12,304	14,623	16,943
Machinery and Equipment	9,161	14,429	13,221	12,302	16,025	19,747	23,470	27,193
Construction in Progress	1,506	1,697	1,977	1,513	1,971	2,429	2,887	3,344
Total	61,415	68,519	57,471	55,158	61,658	68,158	74,658	81,158
Accumulated Depreciation	-	-	-	-	-	-	1	2
Net Property, Plant and Equipment	61,415	68,519	57,471	55,158	61,658	68,158	74,659	81,160
Software & Other intangible assts	570	1,288	1,025	1,047	1,047	1,047	1,047	1,047
Goodwill	-	-	-	-	-	-	-	-
	570	1,288	1,025	1,047	1,047	1,047	1,047	1,047
Other Assets								
Investments in and Advances to	-	-	-	-	-	-	-	-
Investment Securities	7,458	4,301	2,286	4,550	4,550	4,550	4,550	4,550
Software & Others	(10)	(209)	(241)	(225)	(225)	(225)	(225)	(225)
Deferred Income Taxes	443	534	535	477	477	477	477	477
Other	2,336	1,328	2,677	1,028	1,028	1,028	1,028	1,028
Total Other Assets	10,227	5,954	5,257	5,830	5,830	5,830	5,830	5,830
Total	157,199	155,215	160,452	154,356	158,997	169,937	182,899	197,699
Liabilities and Stockholders' Equity								
Current Liabilities								
Bank Loans	1,633	1,694	-	-	-	-	-	-
Notes and Accounts Payable, Trade	14,498	20,386	20,822	20,288	17,788	17,971	18,796	20,008
Accrued Expenses	6,750	6,701	6,234	6,946	6,090	6,153	6,435	6,850
Income Taxes	173	408	865	201	176	178	186	198
Other Current Liabilities	1,752	3,574	3,195	2,252	1,975	1,995	2,086	2,221
Current Portion of Long-Term Debt	-	-	-	35	35	35	35	35
Total Current Liabilities	24,806	32,763	31,116	29,722	26,064	26,332	27,539	29,312
Long-Term Debt								
Deferred Income Taxes	3,642	3,693	4,299	3,735	3,735	3,735	3,735	3,735
Termination and Retirement Benefits	3,733	5,429	5,934	6,350	6,350	6,350	6,350	6,350
Other Long-Term Liabilities	1,226	1,050	35	266	266	266	266	266
	1,633	1,700	325	492	492	492	492	492
Total Liabilities	33,407	42,941	41,709	40,530	36,872	37,140	38,347	40,120
Stockholders' Equity								
Common Stock	12,203	12,203	12,203	12,203	12,203	12,203	12,203	12,203
Additional Paid-in Capital	55,679	33,578	33,578	33,527	33,527	33,527	33,527	33,527
Legal Reserve	62,484	74,172	75,998	77,313	3,043	5,591	6,737	8,051
Retained Earnings	-	-	-	-	-	-	-	-
Treasury Stock	-	(996)	(996)	(996)	(996)	(996)	(996)	(996)
Total Stockholders' Equity	130,366	118,957	120,783	122,047	47,777	50,325	51,471	52,785
Accumulated other Comprehensive								
Income	1,512	954	529	303	72,622	80,747	91,354	103,068
Cumulative Translation Adjustments	(8,367)	(6,006)	(2,139)	(5,297)	-	-	-	-
Minimum Pension Liability	-	-	-	-	-	-	-	-
Adjustments	-	(3,086)	(2,325)	(4,953)	-	-	-	-
Net Unrealized Gain on Securities	-	-	-	-	-	-	-	-
Unrealized Gains (Losses) on	-	-	-	-	-	-	-	-
Derivative Instruments	-	-	-	-	-	-	-	-
Warrant	0	0	0	0	0	0	0	0
Minority Interests in Subsidiaries	281	1,455	1,895	1,726	1,726	1,726	1,726	1,726
Total Stockholders' Equity	123,792	112,274	118,743	113,826	122,125	132,798	144,552	157,579
Total	157,199	155,215	160,452	154,356	158,997	169,937	182,899	197,699

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