Dien Quang Lamp JSC (DQC – HSX)

Counting on the Booming of LED Lighting in Vietnam

- Earnings plummet as no more financial income from Cuba partners
- Catching the LED lighting trend in Vietnam

Outlook and Valuation:

2017 onwards, the Cuba receivables and export markets will no longer contribute to DQC's earnings. This negative effect, however, will be partially offset thanks to the booming of LED lighting in Vietnam. Having products with realiable quality and a 44-year-old national brand, DQC should be able to utilize this trend and enjoy strong growth in LED business in coming years, despite fierce competition from small enterprises and imported products from China.

Due to two reasons aboved, it would take a long time for DQC's earnings to climb back to the level of 2013-2016 period. This, combines with the negative effects from the investigation on DQC's former chairwoman, has caused DQC's price to plummet over 40% from its peak in July 2016. Yet, the stock is still trading at an all-time high P/E forward of 15.6x, yielding a chance to decrease further. However, we think P/E valuation does not fully reflect the potential earning generated in the future when LED lighting become more and more common. Accordingly, we choose DCF method instead and estimate DQC's fair value at **VND49,400/share**, assuming the 2016-2021 CAGR of DQC's LED revenue to be 36%. If DQC price fall to an attractive level, investors still need to choose appropriate time to buy, as we have not seen any short-term catalyst for the stock price.

(*) We would like to inform that DQC has not disclosed detailed about its sale of each type of lamp and each market segment, as well as its estimation about the market share of the lighting sector. The figure in this report, therefore, is based on our estimation and reference from independent third parties.

Key financials

Y/E Dec (VND bn)	FY2015	FY2016	FY2017E	FY2018F
Net Revenues	1,083	1,035	1,022	1,191
% chg	-11.5	-4.4	-1.3	16.6
PAT	207	203	115	134
% chg	-13.3	-1.7	-43.6	16.7
EBIT margin (%)	19.1	19.6	11.2	11.2
ROA (%)	13.7	12.8	7.4	7.9
ROE (%)	19.2	17.8	9.9	11.2
EPS (VND)	6,573	5,915	3,001	3,501
Adjusted EPS	6,018	5,915	3,001	3,501
Book value (VND)	34,314	33,316	33,817	34,818
Cash dividend (VND)	2,500	4,000	2,500	2,500
P/E (x)	8.7	10.5	15.6	13.4
P/BV (x)	1.6	1.8	1.4	1.3

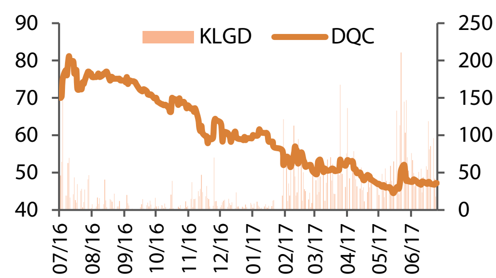
*Sources: VJC, RongViet Research estimated. * Accounted for welfare provision expense and computed based on total share number on 13 July 2017*

NEUTRAL

CMP (VND)	46,800
Target Price (VND)	49,400
Investment Period	Long-term

Thông tin cổ phiếu

Sector	Household Appliance
Market Cap (VND Bil)	1,494
Current Shares O/S	31,917,000
Beta	0.41
Free float (%)	50.5
52 Week High	79,795
52 Week Low	44,545
Avg. Daily Volume (20 sessions)	109,245



Performance (%)

	3T	1N	3N
DQC	-8	-41	105
VNIndex	6	16	30
VN30 Index	9	16	19

Major Shareholders (%)

Nguyen Thai Nga	12.93
Amersham Industries Limited	11.76
Ho Quynh Hung	7.33
Nguyen Thai Quynh Le	6.99
Tran Thi Linh	6.98
Giới hạn sở hữu NĐTNN (%)	*49.00*

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One of the two leading lighting manufacturers in Vietnam

Dien Quang Lamp JSC (DQC) is one of the two leading lighting manufacturers in Vietnam (Rang Dong - RAL is the other). As a 44-year-old national brand, DQC's products, ranging from LED types, compact fluorescent lamps, tube fluorescent lamps, and fixtures & luminaires, are widely known in the country, especially in South Vietnam.

DQC has commercialized its LED products since 2013. DQC and other companies in Vietnam position in the mid and the downstream of the LED's value chain, in which they combine the semiconductor packages with other components to make complete LED fixtures. DQC's localization rate is up to 90%, except for LED packages that have to be imported. The quality of LED package is a decisive factor when it comes to the quality of the product.

Table 1: LED value chain

	Upstream			Midstream		Downstream
	Wafer	**Die**	**LED package**	**Carrier**	**LED lamp and module**	**LED fixture**
Description	Thin layer of semiconductor materials	Small chips of semiconductor materials enclosed in metal contacts	Package of one or more LED chips glued or soldered to a frame and excapsulated in plastic	One or more LED packages mounted on a circuit board with electrical and mechanical fixing	LED lamp: equivalent of a conventional lamp, including LED carrier, heat sink and driver LED module (for integrated LED luminaire): carrier with optics and heat sink to form the light-producing element	Complete luminare/product in which lamp is assembling with frame and fixtures
Key market characteristics	Capital intensive because of high R&D and capacity requirements			Low-scale, assembly business		
Entry barriers	High entry barriers			Low entry barriers		
Key clients	OEMs (including ligting manufactures)			Wholesalers, professional clients		
Key players	Semiconductor and LED manufactures (for example, Cree, Nichia)			Traditional lamp manufactures, Asian entrants, private label (for example, Phillips, Osram)		

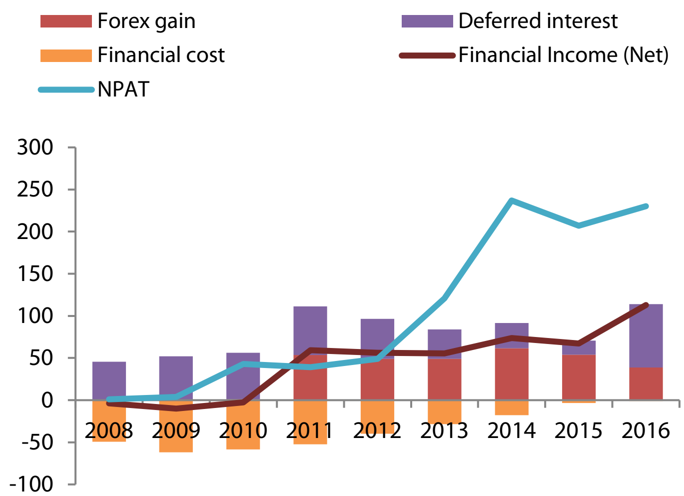
Source: BCG, RongViet Research

Starting 2017, there are major changes in DQC's business situation, both positively and negatively:

Earnings drop significantly as no more financial income from Cuba partner recorded

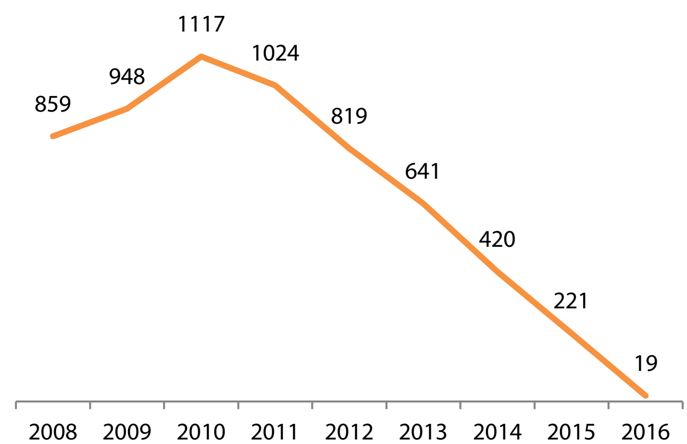
In 2007, DQC recorded a large amount of receivables with Consumimport partner (Cuba), of which the possibility to claim remained uncertain. The receivable put the company in short of working capital, and DQC had to borrow money from BIDV to finance its business activities. On one hand, the Cuba incident has caused bad consequences for DQC until today as lack of capital to expand at critical time result in DQC losing its market share to its rival RAL. On the other hand, as this receivable was paid gradually in USD during 2008-2016, DQC not only received the money but also enjoy financial income from forex difference and interest for deferred payment. Overall, the incident bring in a financial income of VND50-70 billion per year for DQC during that period, with a peak of VND100 billion in 2016. However, as Consumimport has almost completed the payment, it will no longer contribute to DQC's earnings 2017 onwards.

Figure 1: Financial income contributes greatly to DQC's earnings 2008-2016 (VND bn)



Source: DQC

Figure 2: No more receivable from Cuba 2017 onward (VND bn)



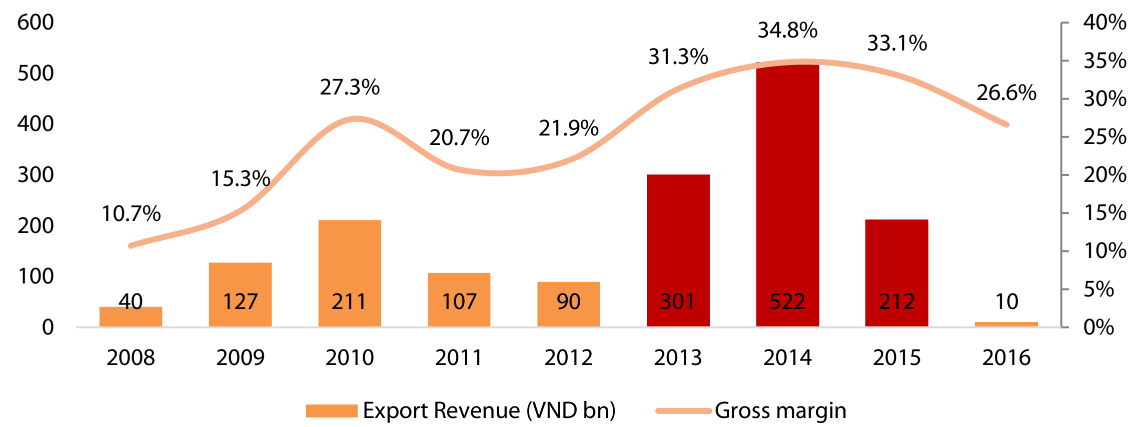
Source: DQC

Export market faces great chanllenges

DQC's export market has actually shown signs of difficulty in recent years. Although export revenue has increased sharply over 2013-2015, most of that comes from the liquidation of 2007's compact packages (about VND200 billion in 2013, VND400 billion in 2014 and the majority of export revenue in 2015). The low COGS of those packages is one of the main reasons for the surging of DQC's gross margin during this period.

Starting 2016, without contribution of these packages, the difficulties in the export market has materialied. DQC was unable to compete with Chinese enterprises, whose products have price advantage thanks to their large-scale and highly specialized production. China is currently the largest LED manufacturing country in the world, and oversupply in domestic has forced Chinese manufacturers to find solution for their output ouside of China border. As this situation persists, we do not expect export market to contribute to DQC's earnings.

Figure 3: High export revenue helped to boost margin in 2013-2015



Source: DQC, RongViet Research

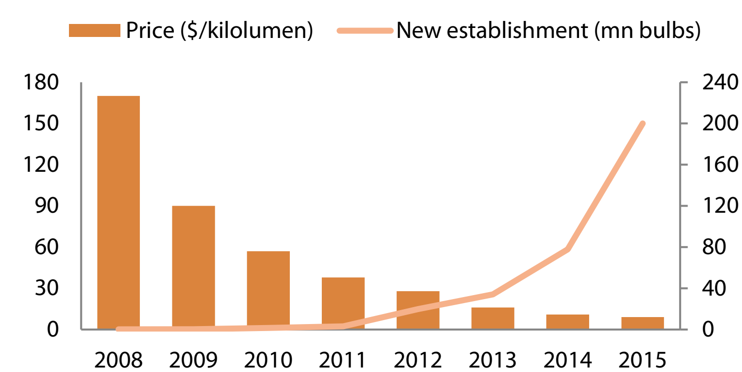
New growth engine from LED market

As difficulties in the export market remains, it is likely that DQC's sales 2017 onwards will mostly come from domestic market. Based on our assessment of the Vietnam LED market, we believe this will be the new growth engine for DQC over the next few years, and will partially offset the shortfall in financial income.

The Booming Phase of LED Lighting in Vietnam is coming

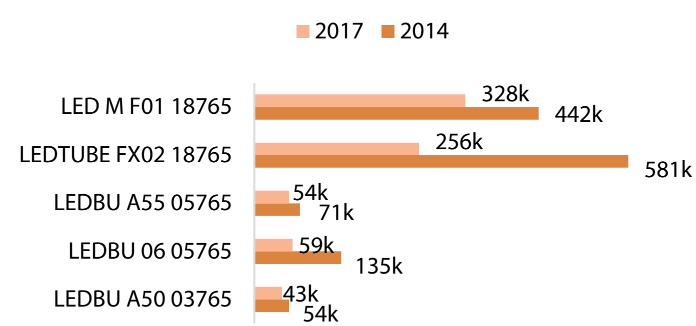
"LED bulb prices could fall by as much as 50 percent by 2017", said Phillips Lighting chief executive Zia Eftekhar in 2011. At that time, the only barrier for LED to win the market is the high price of the product because in terms of brightness, power savings, and life expectancy, LED have superior advantages compared to fluorescent and compact lamps. Indeed, thanks to the modern technology and large-scale production, LED price has fallen sharply. For example, the price of LED A-type bulb, the most common products, in the United States has fallen by 90% compared to 2008 when it first appeared. The price of LED products of DQC has also fallen by 30-40% compared to that in three years ago, following the inevitable trend of the industry. Many industry experts predict that the downward trend of LED will continue over the next few years, and this will boost the penetration rate of LED, as there is still a gap between the price of the LED and traditional lamp.

Figure 4: Declined LED A-type price boosted consumption



Source: US Department of Energy

Figure 5: LED price of DQC followed the decline trend

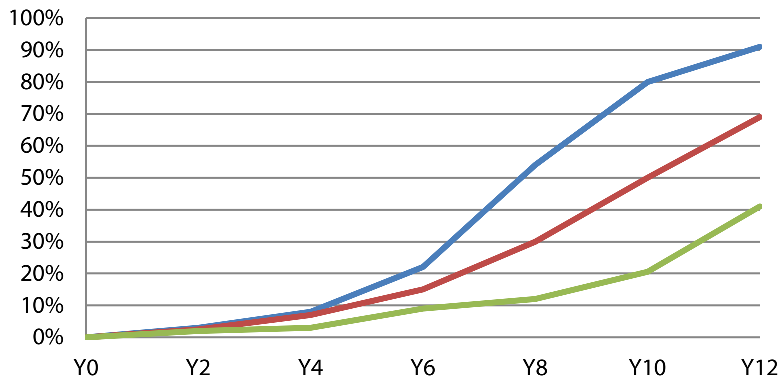


Source: DQC, RongViet Research

McKinsey's research shows that during the life cycle of a new technology such as flat television or digital camera, these products need 5-7 years to reach the 10% penetration level. Then, it only takes another 1-

3 years for this rate to increase to 20%, and even shorter time to surge to high level. The estimated global LED penetration rate by Statista also shows a similar pattern: the penetration rate of the LEDs reached 10% in 5 years, but it jumped to 26% in the next two years.

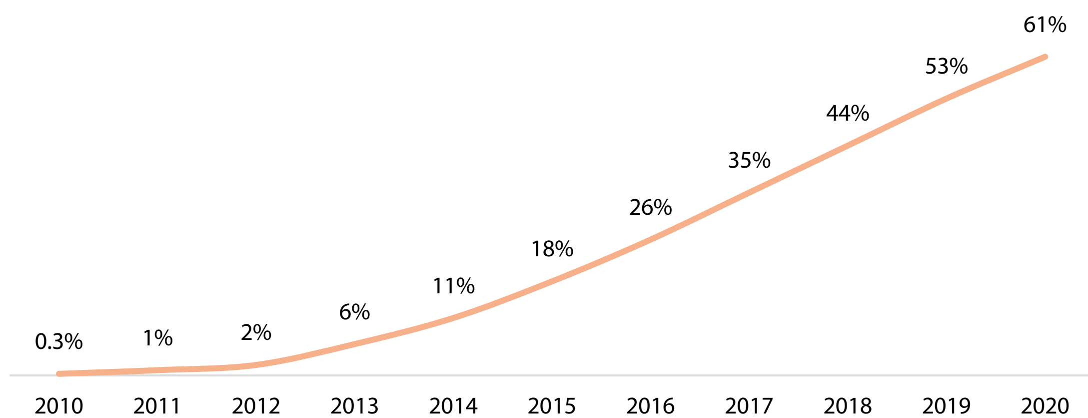
Figure 6: Penetration rate of new technology overtime



	Year to reach 10%	Year to reach 20%
Flat TV	5 years	1 years
Camera	5 years	2 years
Smartphone	7 years	3 years

Source: McKinsey

Figure 7: Estimation of the global LED penetration rate



Source: Statista

In Vietnam, the LED is introduced 2-3 years later than in the global market. It was not until 2013 when local ligting companies, DQC and RAL, start commercialize LED products. Therefore, the LED penetration rate in Vietnam is also 2-3 years behind that of global lighting market. Based on these studies of product life cycle, as well as the estimated LED sales of DQC and RAL in recent years, **we believe that the LED penetration rate in Vietnam is only around 10%. Thus, the lighting market in Vietnam in the next 3-4 years promises a booming of LED products.**

To prepare for the increasing demand, DQC is constructing a new LED factory in Ho Chi Minh with a capital investment of VND600 billion, of which about VND330 billion to be disburse in phase 1. The factory will operate in Q1/2018, increasing DQC's capacity to 40 million LED bulbs per year. It will also enjoy a tax incentive of 0% in the first 4 years and 10% in the next 9 years.

The transition pace from traditional to LED lamps varies from segment to segment

The lighting market can be divided into four main segments:

- **Residential:**

A light bulb in a household usually operates less than 2 hours per day. The power consumption is thus lower than that in other segments in which light bulbs operate over 10 hours per day. In addition, there is still a price gap between LED and traditional lamps, and the awareness of LED's superiority is low. Therefore, the transition pace is slow despite high potential of increasing adoption rate.

- **Commercial:**

This segment includes lighting in office, restaurants, shops, etc. A large number of newly build ones and fast renovate circle (about once per 1.5-2 years) result in a high adoption rate of LED at fast pace.

- **Industrial:**

High adoption rate with fast pace, mostly in manufacturing enterprise whose electricity cost can be reduced significantly by switching the lighting system.

- **Road and Street:**

Sodium vapour lights still dominate public places in Vietnam cities. For example, they account for 52% of public lighting systems in Hanoi, 65% in Bac Giang, 83% in Ben Tre, and 100% in Tuyen Quang. According to the Energy Conservation Center HCMC, electricity for lighting in Vietnam accounts for 35% of the total power consumption, much higher than the 16%-17% of the world average. Thus, when the government promotes energy-saving policy, there is ample room for LED to grow at this segment. In particular, DQC estimates the cost of changing all the lights in the city could be as high as USD 100-200 million. However, the transition pace will be very slow due to the shortage of state budget.

In order to take advantage of the growth in each segment, DQC is curently selling its products through five channels:

- **Traditional channel (with more than 150 distributors and 15,000 retail outlets) and modern channel (such as electrical centers, supermarkets, and convenience stores):**

This is an integral part of the distribution system of a business. However, competition in these channels is very high among RAL, Manh Phuong, small domestic manufatures, and imported Chinese products. It is also worth to note that DQC does not apply good consignments in its sales policy, thus losing a portion of revenue potential generated from this sale method.

- **Direct sales for construction projects and industrial customers:**

Due to high competition in traditional channel, DQC has been promoting the direct sale channel in recent times. DQC is not a strong player in the real estate projects segment but focuses on industrial segment, in which there are high demand to change lighting systems to save on electricity costs. Unlike traditional channels, competition in the industrial segment is only among big names like RAL, Duhal, and Paragon.

In 2016, DQC's revenue generated from this channel grew by 68%. Its customers are mainly textile and footwear companies.

- **Online channel and showroom channel:**

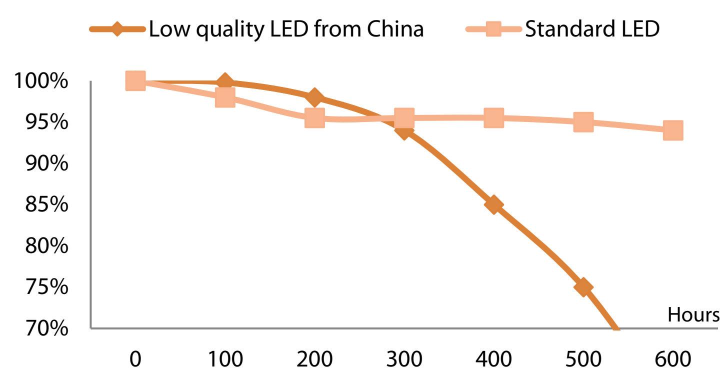
Sales through these two channels, combined with a consultant team, is DQC's solution to make a difference and provide value-added services to customers.

Because of the fragment market, well-branded companies faces trouble in shorterm, but will rise in the long-term

The LED market has not only strong grow but also fierce competition. Contrary to traditional lighting manufacturing, which requires a large-scale production to be profitable, the LED business favors companies at small scale. Small manufactures usually use low quality equipment and sell at a lower price, which translates to lower margins, but high sales and a quick conversion cycle. This, coupled with the flood of Chinese products, is the biggest problem for DQC at the moment.

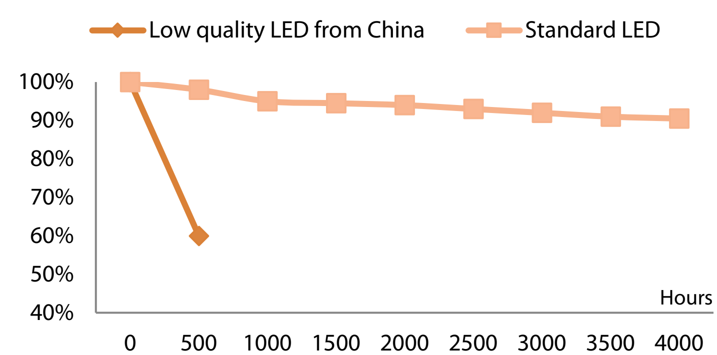
The cost of a low quality Chinese LED bulb is about half the cost of DQC's, but the actual lifespan is only 500 hours, which is 1% of the standard of 50,000 hours. Therefore, in the long term, we think consumers will gradually realize the economic benefits of quality products. We believe the history will repeat itself, as in the past DQC and RAL's compacts have gradually won the market despite being overwhelmed by Chinese compacts at first.

Figure 8: Luminious flux of LED at Ts 105 °C



Source: RAL research

Figure 9: Luminious flux of LED at Ts 60 °C



Source: RAL research

In addition, **the presence of LED marks a customer shift from standardized lamp of which bulb, ballast and fixture can be sold separately to customized lighting system** with chip, driver, and optic are integrated coordinate. This trend allows manufactures to differentiate themselves by providing value-added features such as mood, weather adjustment or wifi access. That is why DQC has transition from a lighting manufacturer to a lighting solution provider, developing design, consulting and customer care. This is DQC's home advantage compared to small manufacturers and Chinese enterprises.

That said, it is still required to have a quality management for LED from the regulatory authorities. For now, the process is still in the starting phase as they have been working on draft about LED labeling proposals and a roadmap for the development of LED lighting industry by 2025. **Hence, we estimate that favourable factors for DQC are likely to gather not now but in the next 2-3 years.**

Earnings Forecasts

We estimated the growth of LED revenue based on the following assumptions

- Led penetration rate in Vietnam will follow the global trend with a 2-year lag: up from 10% in 2016 to 45% in 2021.
- DQC's LED market share (estimated by sale volume) to increase from 1.8% to 7.0% in 2021
- Average sale price continue to drop due to advance technology.

Table 2: Growth estimation of DQC's LED

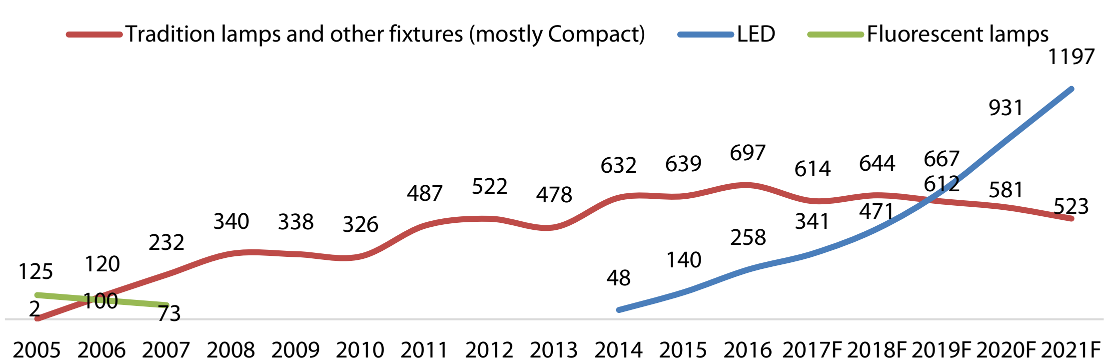
	2015	2016	2017F	2018F	2019F	2020F	2021F
1. Customer base in lighting market		**100**	**100**	**100**	**100**	**100**	**100**
2. Penetration rate of LED in lighting market		10.0%	16.5%	24.0%	31.0%	38.0%	45.0%
3. DQC's LED market share		1.8%	2.6%	3.3%	4.3%	5.6%	7.0%
4. Customer base using DQC's LED (1 x 2 x 3)		**0.18**	**0.43**	**0.79**	**1.33**	**2.13**	**3.15**
5. Increase of customer using DQC's LED			0.25	0.36	0.54	0.80	1.02
6. Volume growth of DQC's LED (calculated using 5)			39%	45%	49%	47%	29%
7. LED's average sale price			-5%	-5%	-5%	-5%	0%
8. Revenue growth of DQC's LED (6 x 7)	195%	84%	32%	38%	42%	40%	29%

Source: RongViet Research estimation

According to our calculation, DQC's LED revenue is likely to enjoy strong growth over the next 4-5 years (CAGR 2016-2021: 36%) before facing a potential slowdown. The reason is that when the penetration rate reaches a certain level, the growth of new people switching to LEDs will decrease, while the need to replace the LED of the old users is low due to LED's long life expectancy. We project LED revenue to account for 60% of DQC's revenue by 2020, compared to 25% in 2016.

The revenue projection is quite in line with the growth of Compact in the past in the domestic market. Compact lights debut on the market around 2002-2003, but DQC's sale only start to spike in 2006, with a 2006-2011 CAGR of 32%. After that, Compact growth declined to 7% in 2011-2016. With the advent of the LED, Compact will likely gradually be replaced and face negative growth, as in the case of Fluorescent lamps when Compact lamps are introduced.

Figure 10: Revenue estimation of DQC's LED, Compact, and Fluorescent lamps in domestic market (VND bn)



Source: DQC, RongViet Research estimation

We believe it is unlikely for DQC's gross margin to return to that in 2013-2015, and project it to fluctuate around 27-28% as in 2016. We estimate net sales and NPAT in 2017 to be VND1,022 billion (-1% YoY) and VND115 billion (-44% YoY), respectively. EPS 2017 after deducting bonus and welfare fund (10% of NPAT) is estimated to be VND3,001.

Outlook and Valuation

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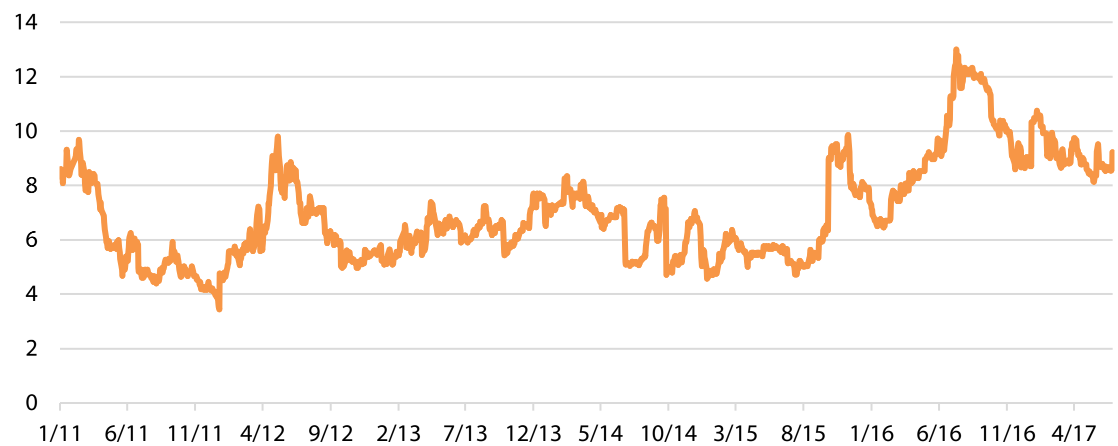
APPENDIX

Which P/E level the market paid for DQC?

According to Bloomberg, DQC is trading at an average historical P/E of 10x.



Source: Bloomberg as of 07/ 02/2017

Separate the financial income from Cuba partner, we calculate that the market accept an average P/E of around 12x for the core earnings of DQC.

	2013	2014	2015	2016
1. Fin. income from Cuba (VND bn)	55.3	73.6	67.2	113.0
2. Outstanding shares	24,424,679	24,424,679	31,458,342	34,359,416
3. EPS from Cuba	1,813	2,410	1,708	2,631
4. EPS total	4,965	9,687	6,573	5,915
5. EPS from core business	3,152	7,277	4,865	3,285
6. Closed Price	33,700	55,500	57,000	62,000
7. Close Price ex. EPS from Cuba	31,887	53,090	55,292	59,369
8. P/E for core business	**10.1x**	**7.3x**	**11.4x**	**18.1x**

Source: RongViet Research calculated

Overall, DQC is historically trading at a P/E of 10-12x. This is on par with that of other stock in the lighting sector. We estimate EPS of DQC for 2017 and 2018 to be VND3,001 and VND3,501, respectively.

Table 3: Peer group comparison

Company	Nation	Market cap (VND bn)	NPAT Growth 2016	NPAT Growth 2015	Gross Margin 2016	Net Margin 2016	ROE 2016	ROA 2016	P/E trailing	P/E forward
DQC	**Vietnam**	**1,618**	**-2%**	**-13%**	**27%**	**20%**	**16%**	**13%**	**9.3**	**15.5**
RAL	Vietnam	1,570	57%	43%	21%	5%	25%	7%	9.5	n/a
Zheyang Yankon	China	31,718	18%	31%	27%	10%	15%	8%	20.5	16.7
NVC Lighting	Hong Kong	8,761	191%	-116%	27%	4%	6%	3%	15.3	n/a
Luxpia	Korea	192	-34%	16%	24%	4%	5%	5%	23.3	n/a
Lite-on Technology	Taiwan	88,094	31%	10%	14%	4%	12%	4%	12.1	11.1
Everlight Electronic	Taiwan	16,084	-1%	-16%	24%	6%	10%	5%	12.8	10.9
Strongled lighitng	Taiwan	611	-26%	37%	36%	7%	10%	6%	12.6	n/a
Average					**25%**	**6%**	**12%**	**5%**	**15.1x**	

Source: Bloomberg as of 07/ 02/2017

Unit: VND bn

INCOME STATEMENT	FY2015	FY2016	FY2017E	FY2018F
Revenue	1,019	1,035	1,022	1,191
COGS	724	760	752	864
Gross profit	**294**	**275**	**270**	**327**
Selling Expense	124	99	107	125
G&A Expense	61	70	60	70
Finance Income	118	144	42	29
Finance Expense	27	2	3	3
Other income/loss	5	1	1	1
Gain from joint ventures	1	4	2	2
PBT	**206**	**254**	**144**	**160**
Prov. of Tax	58	50	29	25
Minority's Interest	3	1	1	1
PAT to Equity Shareholder	**144**	**203**	**115**	**134**
EBIT	174	107	103	131
EBITDA	200	129	135	176

Unit: %

FINANCIAL RATIOS	FY2015	FY2016	FY2017E	FY2018F
Growth				
Revenue	-16.7	1.6	-1.3	16.6
EBITDA	-19.9	-35.5	4.7	30.4
EBIT	-22.9	-38.5	-3.8	27.8
PAT	-39.0	40.8	-43.6	16.7
Total assets	-13.6	5.0	-2.2	8.8
Total equity	11.9	6.0	1.5	3.0
Profitability				
Gross margin	28.9	26.6	26.4	27.4
EBITDA margin	19.6	12.4	13.2	14.8
EBIT margin	17.0	10.3	10.0	11.0
Net margin	14.2	19.6	11.2	11.2
ROA	9.5	12.8	7.4	7.9
ROCE	14.3	8.7	8.2	10.1
ROE	13.4	17.8	9.9	11.2
Efficiency				
Receivables turnover	2.1	3.3	4.0	4.0
Inventories turnover	2.8	2.7	2.8	2.8
Payables turnover	2.4	2.4	2.5	2.2
Liquidity				
Current	3.9	3.5	3.6	2.8
Quick	3.1	2.7	2.7	2.0
Finance Structure				
Total debt/equity	0.0	4.2	0.0	0.0
ST debt/equity	0.0	4.2	0.0	0.0
LT debt/equity	0.0	0.0	0.0	0.0

Unit: VND bn

BS	FY2015	FY2016	FY2017E	FY2018F
Cash and cash equivalents	288	323	239	184
Short-term investments	145	328	320	285
Receivable	489	309	255	298
Inventories	260	285	271	311
Other current assets	11	9	10	10
Property, plant & equipment	78	76	200	341
Intangible assets	82	98	97	96
Long term investments	74	73	76	78
Other non-current assets	87	88	88	88
Total assets	**1,514**	**1,589**	**1,554**	**1,691**
Payable	302	311	301	389
Short-term borrowings	0	48	0	0
Long-term borrowings	0	0	0	0
Other non-current liabilities	73	4	4	4
Bonus and Welfare fund	50	72	83	96
Technology development fund	0	0	0	0
Total liabilities	**426**	**435**	**388**	**490**
Common stock and APIC	659	688	688	688
Treasury stock	-41	-41	-41	-41
Retained earnings	200	192	186	194
Other comprehensive income	38	0	0	0
Investment and Development Fund	223	306	329	355
Total equity	**1,079**	**1,145**	**1,162**	**1,196**
Minority Interest	4	5	5	5

CF	FY2015	FY2016	FY2017E	FY2018F
Profit before tax	268	254	144	160
-Depreciation	17	(0)	32	45
-Adjustments	(40)	(10)	0	0
+/- Working capital	(142)	(7)	29	(20)
Net Operating CFs	**103**	**237**	**206**	**184**
+/- Fixed Asset	(22)	(10)	(155)	(185)
+/- Deposit, equity investment	398	(172)	2	2
Interest, dividend, cash profit received	1	7	0	0
Net Investing CFs	**376**	**(175)**	**(153)**	**(183)**
+/- Capital	94	29	0	0
+/- Debt	(310)	48	(48)	0
Dividend paid & other	(147)	(105)	(88)	(56)
Net Financing CFs	**(364)**	**(28)**	**(136)**	**(56)**
Beginning cash & equivalents	**173**	**288**	**322**	**239**
+/- cash & equivalents	116	35	(84)	(55)
Ending cash & equivalents	**288**	**322**	**239**	**184**

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Intermediate- term (up to 6 months)	>20%	10% to 20%	-5% to10%	-15% to- 5%	<-15%
Long-term (over 6 months)	>30%	15% to 30%	-10% to 15%	-15% to -10%	<-15%

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