



Equity Analysis: DIGITAL REALTY TRUST

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Preface

- US equity markets are in the 11th year of the longest bull run ever. Bond yields are low, with the US 10 Year Treasury Note yielding under 2%.
- In this economic environment, what is a strong investment?
- The impetus for this research is finding a company that can offer:
 1. stable income
 2. decent growth prospects at a reasonable price and
 3. some shelter from a market/economic downturn
- This analysis will focus on Digital Realty Trust, in the Data Center REIT sector

Data Center Industry

- Data center vendors lease out space, ranging in size from a rack to an entire building, to customers to house IT infrastructure (colocation). In some cases data centers enable customers to connect directly to the cloud, ISPs, and other enterprises that are located in the same data center or campus (direct connection and interconnection services).
- Key data center tenants include: 1) Cloud providers such as AWS, IBM, and Microsoft, 2) Network companies and internet service providers such as AT&T and Comcast, and 3) Enterprise customers like banks, tech companies, healthcare companies, energy companies, etc.
- The Multi-Tenant Data Center (MTDC) industry is fragmented, consisting of over 1,000 vendors globally. The top two vendors in terms of market share, Digital Realty Trust and Equinix, together comprise around 25% of the market. Many providers serve domestic markets only.
- The data center Real Estate Investment Trust (REIT) sector is made up of 5 companies: Digital Realty Trust, Equinix, CyrusOne, CoreSite, and QTS.

Digital Realty Trust (“DLR”)

Company Overview: “Digital Realty owns, acquires, develops and operates data centers. The company is focused on providing data center, colocation and interconnection solutions for domestic and international customers”. (1)

Mission: “To build a network of connected campuses and internet gateways that become the heart of the internet and cloud, powering growth and prosperity for customers, employees and shareholders.” (1)

Key Characteristics:

- 220 Data Centers
- 30 million Square Feet of Rentable Space + 5 million Square Feet Under Development or Held for Future Development
- 36 Metro Areas Globally where DLR has Operations
- \$26.4 billion - Market Capitalization
- \$3.0 billion - 2018 Revenue
- \$1.4 billion - 2018 Funds From Operations
- 12% YoY Share Price Growth, 2015-2019
- Share Price: \$120.72 (2)
- Dividend per Share: \$4.32
- Operates as a Real Estate Investment Trust



1) From Digital Realty Trust website

2) August 23, 2019

Research Overview

- **Part 1** –DLR valuation based on multiples comparison.
- **Part 2** – NAV-based valuation of DLR.
- **Part 3** –Valuation of DLR based on discounted cash flows.
- **Part 4** – Summary and recommendation.

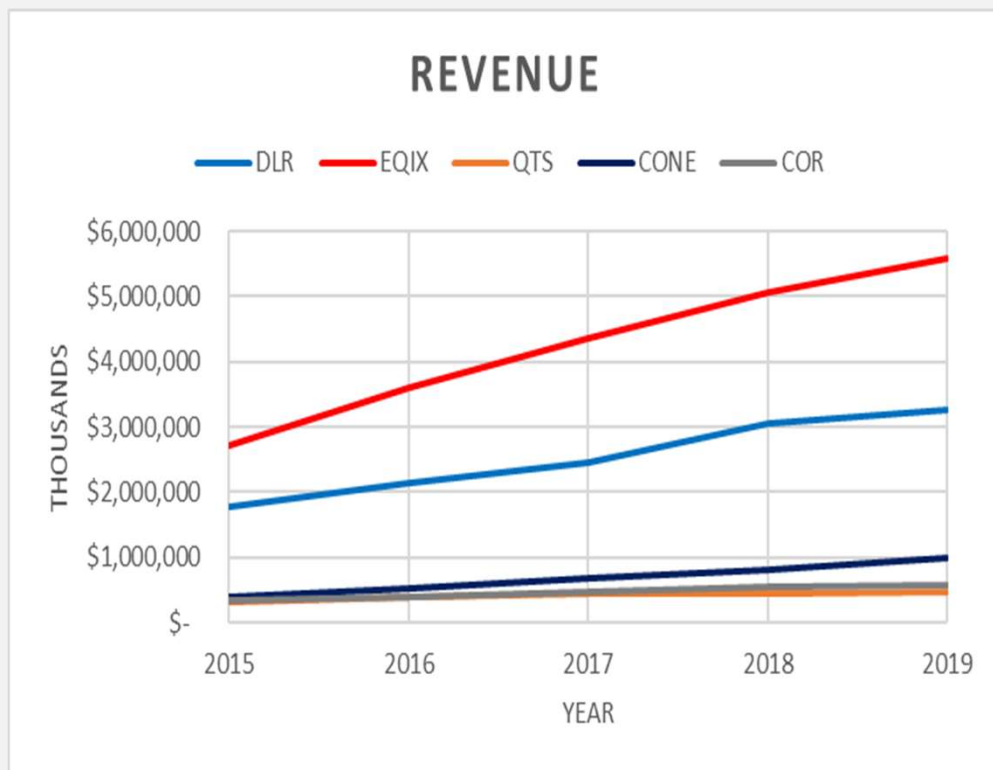
1 PART 1 – Comparables Analysis

Overview: Comparing Company Characteristics within the Data Center REIT Sector.

- i. Revenue and Market Capitalization
- ii. Locations and Total Square Footage
- iii. Funds From Operations (FFO) and EBITDA
- iv. Debt Ratios
- v. Share Price and Dividend Yield
- vi. Price per FFO

Companies include Digital Realty Trust (DLR), Equinix (EQIX), Quality Technology Services (QTS), CyrusOne (CONE), and CoreSite (COR)

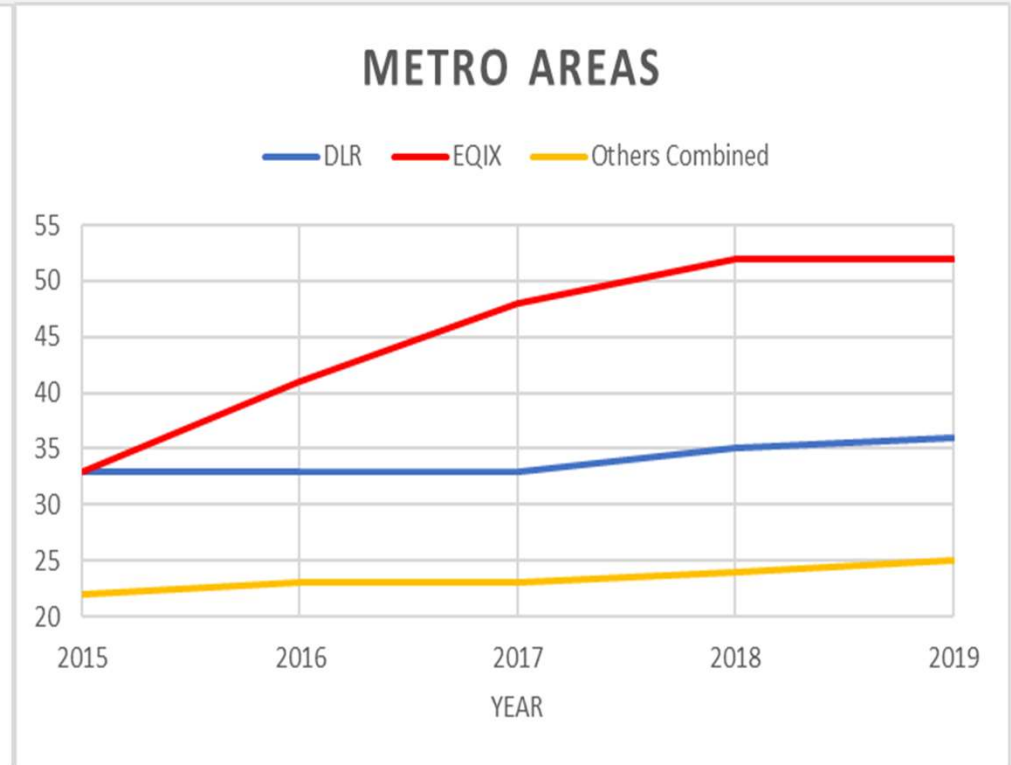
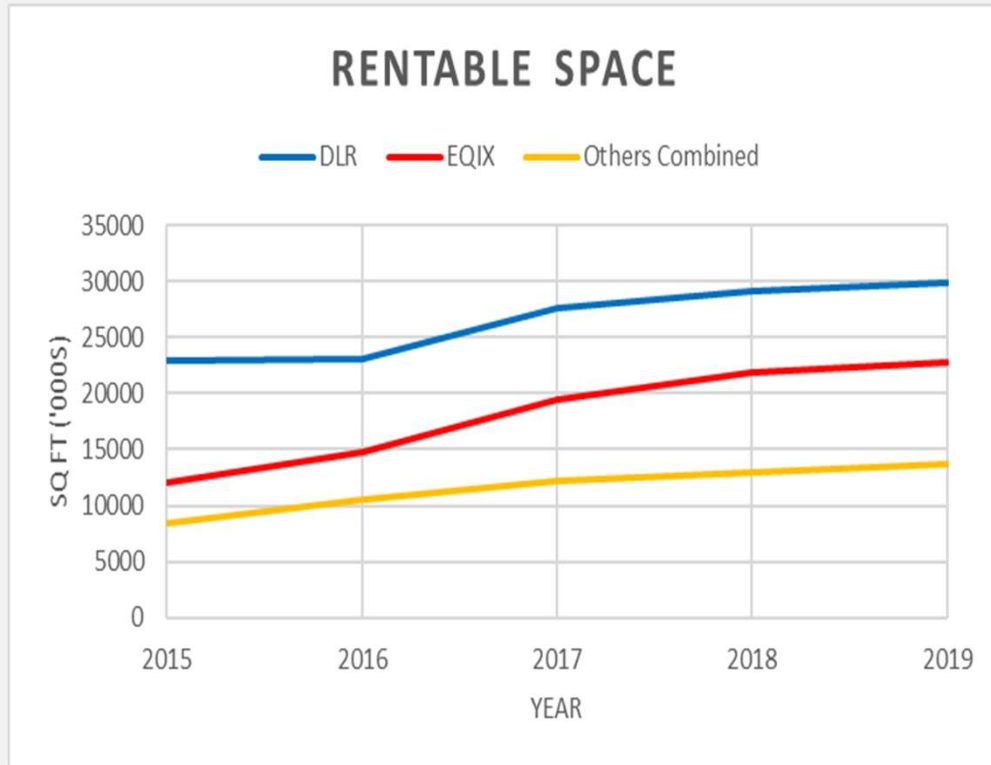
1i Revenue and Market Capitalization



| | DLR | EQIX | QTS | CONE | COR | | DLR | EQIX | QTS | CONE | COR |
|-----------------------------|---------|---------|---------|---------|---------|--------------------------------|---------|---------|--------|--------|--------|
| 2019 Revenue [Billions] (3) | \$ 3.25 | \$ 5.58 | \$ 0.47 | \$ 0.98 | \$ 0.57 | 2019 Market Cap [Billions] (4) | \$ 26.4 | \$ 46.5 | \$ 3.0 | \$ 7.9 | \$ 5.7 |
| YoY Growth ('15-'19) | 16.5% | 19.6% | 10.7% | 25.2% | 14.6% | | | | | | |

- DLR is firmly in second place in terms of revenue and market cap, trailing EQIX by about 40%, but greater than the three other competitors combined. The rest of the analysis will combine COR, CONE, and QTS.
- Compared to EQIX, DLR's market cap has more consistently reflected expected revenues.

1ii Data Center Locations and Total Rentable Space

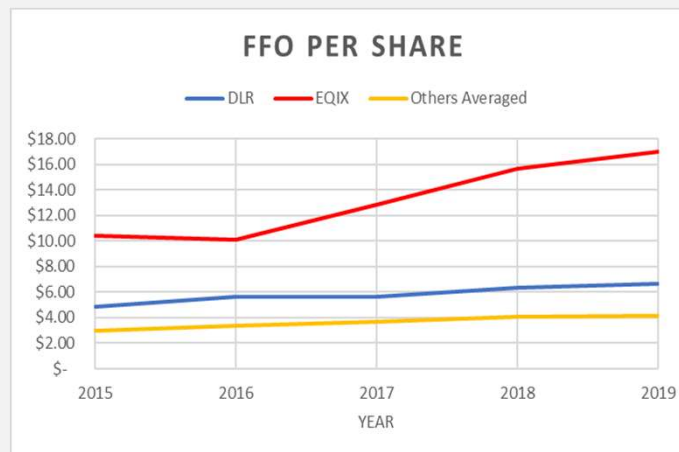


| Rentable Space [Millions of square feet] (5) | DLR | EQIX | Others |
|--|------|------|--------|
| | 29.9 | 22.7 | 13.6 |

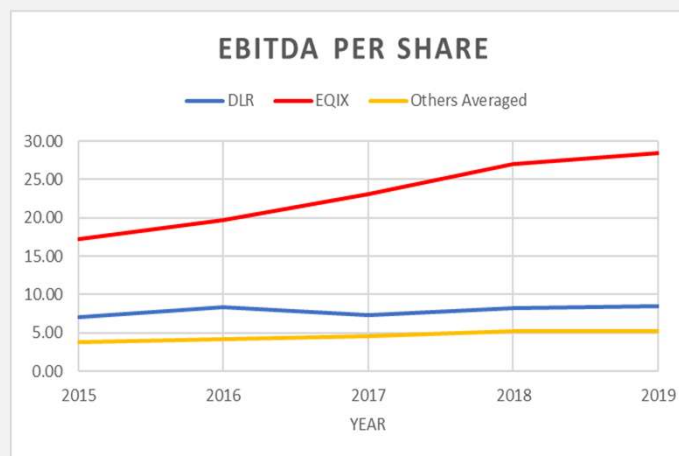
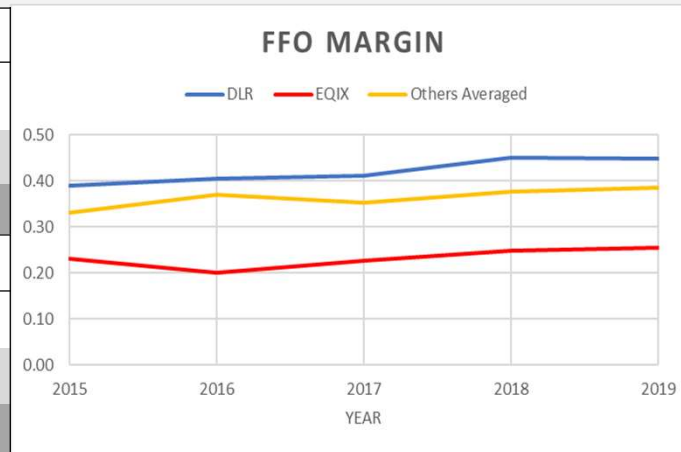
| Metro Areas (5) | DLR | EQIX | Others |
|-----------------|-----|------|--------|
| | 36 | 52 | 25 |

- DLR actually has the most total rentable space – almost half of the sector's total. DLR has a strong multi-metro footprint, lagging EQIX, but substantially ahead of the others combined.
- A divergence in expansion strategy compared to EQIX starting in 2015 is evident.

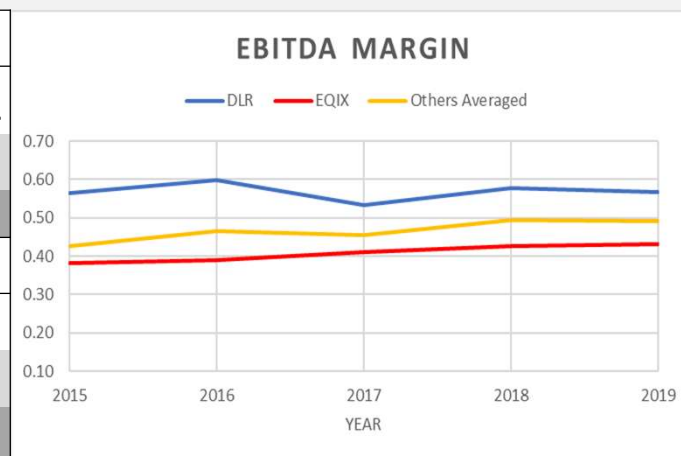
1iii FFO and EBITDA



| | DLR | EQIX | Others |
|------------------------|---------|----------|---------|
| 2019 FFO Per Share (6) | \$ 6.65 | \$ 16.95 | \$ 3.65 |
| 2018-2019 Growth | 4.4% | 8.5% | 3.6% |
| 2015-18 Growth YoY | 9.8% | 15.3% | 13.0% |
| | DLR | EQIX | Others |
| 2019 FFO Margin | 0.45 | 0.25 | 0.38 |
| 2018-2019 Growth | -0.5% | 3.2% | 2.2% |
| 2015-18 Growth YoY | 4.9% | 3.0% | 4.6% |



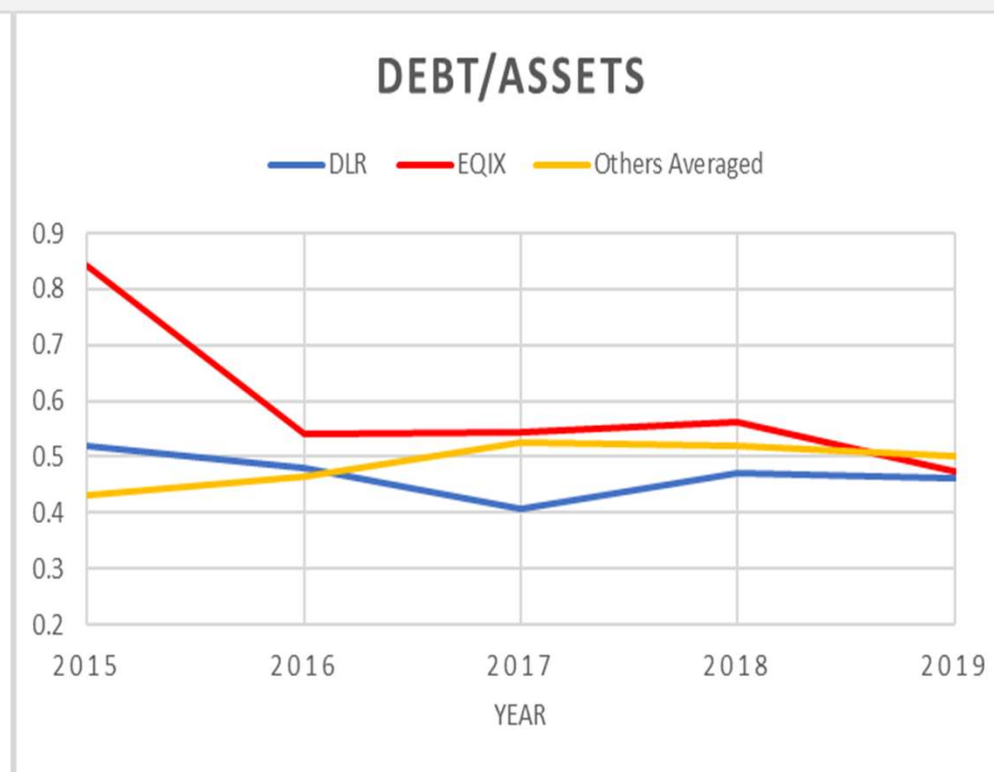
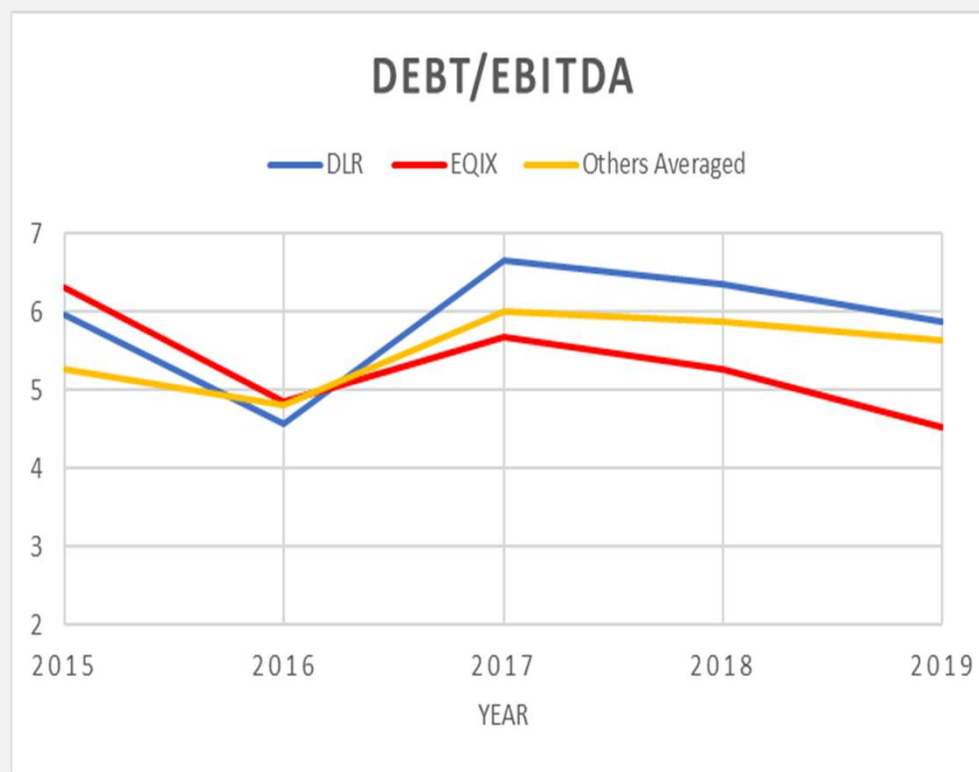
| | DLR | EQIX | Others |
|---------------------------|---------|---------|---------|
| 2019 EBITDA Per Share (6) | \$ 8.45 | \$28.39 | \$ 5.24 |
| 2018-2019 Growth | 3.1% | 5.1% | 1.1% |
| 2015-18 Growth YoY | 6.2% | 16.3% | 11.3% |
| | DLR | EQIX | Others |
| 2019 EBITDA Margin | 0.57 | 0.43 | 0.49 |
| 2018-2019 Growth | -1.8% | 0.8% | -0.8% |
| 2015-18 Growth YoY | 1.2% | 3.9% | 5.2% |



- DLR has the highest FFO and EBITDA margins in the sector at **0.45** and **0.57** respectively, and has shown a trend of mostly increasing margins.
- DLR has had positive growth in FFO and EBITDA per share, however this growth has lagged EQIX and the others historically, partly because of a more aggressive issuance of new equity, partly due to slightly slower revenue growth.
- Per-share and margin growth rates are expected to slow in 2019 for all, compared to historical rates.

6) 2019 figures based on managements' guidance for FY19, as of end of Q2

1iv Debt Ratios



| | DLR | EQIX | Others |
|----------------------|------|------|--------|
| 2019 Debt/EBITDA (7) | 5.87 | 4.53 | 5.63 |

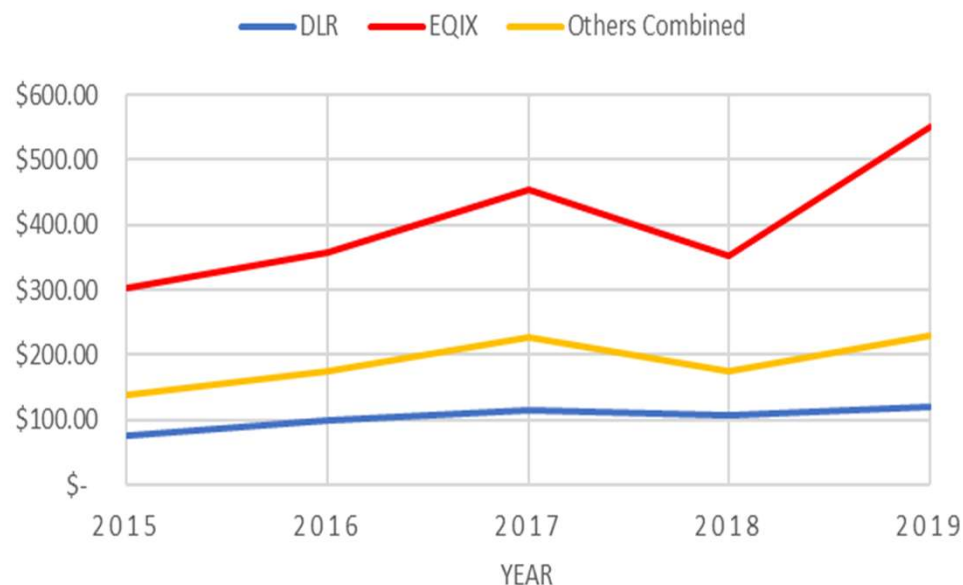
| | DLR | EQIX | Others |
|----------------------|------|------|--------|
| 2019 Debt/Assets (7) | 0.46 | 0.48 | 0.50 |

- The debt ratios are similar across the sector. DLR has a BBB credit rating, an average cost of borrowing equal to 3.268%, and a debt portfolio that is predominantly unsecured.
- DLR's debt ratios are also improving, with debt-to-EBITDA expected to decrease 7.6% in 2019.

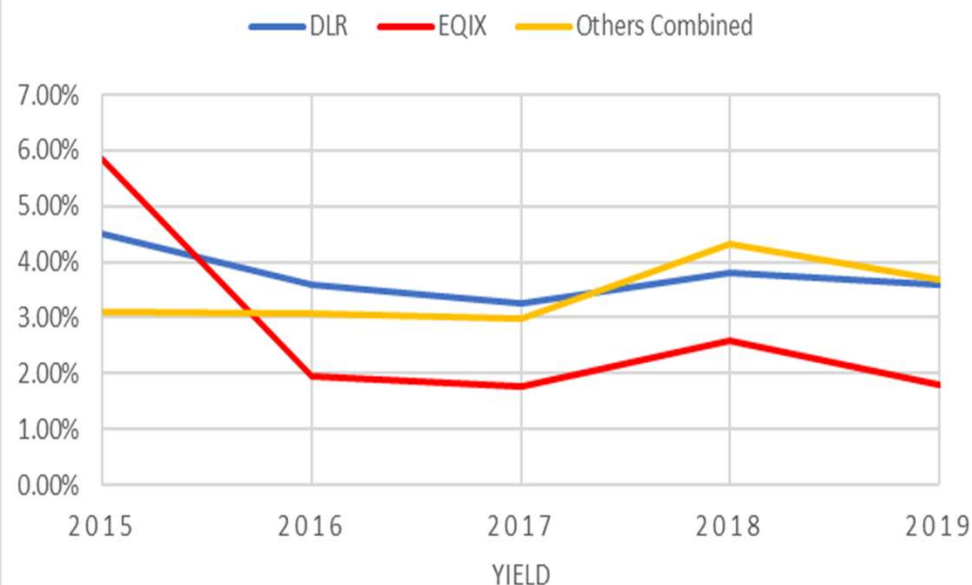
7) 2019 debt and asset figures are from Q2 earnings statements, 2019 EBITDA is based on managements' guidance as of Q2 19

1v Share Price and Dividend Yield

SHARE PRICE



DIVIDEND YIELD



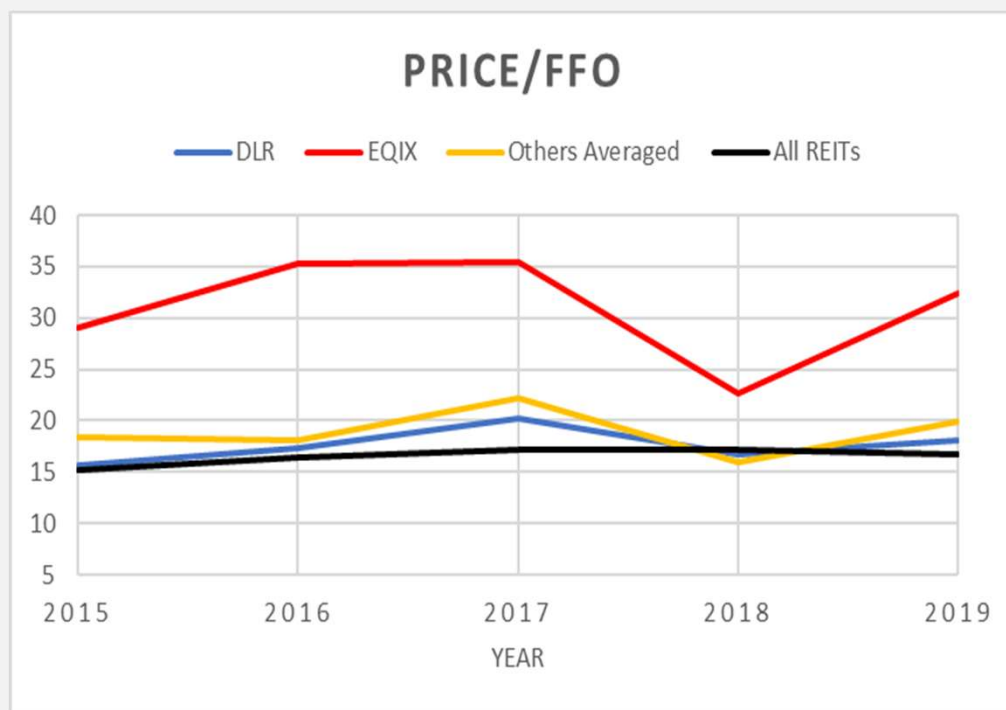
| | DLR | EQIX | Others |
|--------------------|-----------|-----------|-----------|
| Share Price (8) | \$ 120.72 | \$ 549.42 | \$ 229.60 |
| YTD Change | 13.3% | 55.7% | 30.4% |
| 2015-19 Growth YoY | 12.4% | 16.1% | 13.3% |

| | DLR | EQIX | Others |
|-----------------------|-------|--------|--------|
| Dividend Yield (8) | 3.58% | 1.79% | 3.69% |
| YTD Change | -5.6% | -30.7% | -14.6% |
| 2015-19 Avg Chnge YoY | -4.4% | -10.0% | 13.6% |

- The share prices for EQIX and the Others Combined (all held) have increased significantly year-to-date while DLR has increased more modestly. Over 5 years DLR lags the others in YoY share price appreciation.
- A dividend yield of 3.58% puts DLR in a similar range to the basket of the others, and far higher than EQIX

8) 2019 price and dividend yield based on August 23rd 2019 share prices

1vi Price/FFO



- DLR's Funds From Operations are valued at a **9% discount** to the others' averaged, and at a **44% discount** to EQIX's.
- DLR is priced at a 3% premium to its own historical average P/FFO, which is lower than the 5% premium EQIX is priced at and 6% premium that the average of the others is currently priced at relative to their own historical averages.
- Data Center REITs and all REITs in general are priced at a premium compared to 5 year historical averages.

| | DLR | EQIX | Others | All REITs |
|--------------------------------|--------------|--------------|--------------|--------------|
| P/FFO (9) | 18.15 | 32.41 | 19.94 | 16.68 |
| Average P/FFO ['15-'18] | 17.59 | 30.96 | 18.87 | 16.51 |


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Takeaways

- DLR is priced at a significant discount to EQIX, despite stronger profitability, comparable footprints, and fairly consistent growth. EQIX has had steadier revenue growth, has a more global presence, and has a slightly stronger balance sheet, but does this justify the 40% premium to DLR?
 - Equinix's customer base is stronger and more diversified.
 - Equinix has a dominant position in IXPs, which increases property values and likely satisfies investors that its rents are more stable and capable of growth.
- DLR is priced at a discount compared to holding all of CONE, COR, and QTS, despite having stronger profitability, a larger customer base, and a significantly larger global presence. Revenue growth for DLR has slowed, especially for 2019, but is this representative of the medium-term prospects of the company and its competitors? There seems to be no premium for DLR's significant market position.
- DLR's share price and dividend yield are fairly stable for 2019 compared to industry peers.

1 Multiple Analysis

| <u>FFO Scenarios</u> | | <u>2019 FFO</u> |
|------------------------------|--|-----------------|
| Under: | Underperform by repeating performance of Q2, meaning YoY growth of only 2.2% | 6.51 |
| Match: | Meet management's guidance of \$6.65 FFO/Share, equaling 4.4% YoY growth for FY2019 | 6.65 |
| Over: | Beat guidance: repeat performance of H1 in H2 and approach historical average YoY growth of 8.3% | 6.90 |
| <u>P/FFO Ratio Scenarios</u> | | <u>Ratio</u> |
| low: | Match 5-Year Low (2015) | 15.60 |
| mid: | Match 5-Year Average | 17.59 |
| high: | Match 5-Year High (2017) | 20.16 |

|  DIGITAL REALTY Data Center Solutions | | | P/FFO Ratio Forecast | | |
|---|----------------|------|-----------------------------|--------|--------|
| | | | low | mid | high |
| FY19 FFO per Share Forecast | | | 15.60 | 17.59 | 20.16 |
| | Underperform | 6.51 | 101.56 | 114.51 | 131.24 |
| | Match Guidance | 6.65 | 103.74 | 116.97 | 134.06 |
| | Outperform | 6.90 | 107.64 | 121.37 | 139.10 |

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Valuation Based on Multiples

- I think DLR management's guidance on FY19 FFO per share is conservative, as 6.65 would mean year-over-year growth of only 4.4%, which is far lower than its historical average. A fairly strong 1st half, more space available for rent, and a generally resilient economy support an earnings surprise and FFO/Share beating guidance for FY19.
- DLR's P/FFO ratio is slightly above its 5-year average, but selling at a large discount to its peers, which are also priced at more significant premiums to their own historical averages.
- The Data Center REIT sector, and REIT sector as a whole, are priced at premiums to FFO above historical averages, despite lower expectations for revenue and profitability growth. This suggests that investors are potentially buying REITs now for their diversification, income, and other characteristics as an asset class. This trend seems likely to continue given the state of stock and bond markets.
- Summary: 1) I believe conditions support earnings for DLR that exceed FY19 guidance, 2) DLR's P/FFO ratio has some headroom, and 3) the REIT sector as a whole, and data center REITs in particular, are likely to be a favorable asset class for investors in the near term.
- Forecast: a slight earnings outperformance with FFO per share of 6.75 for FY19, representing annual YoY growth of 6%, and P/FFO ratio improvement to 19.2, reflecting strength of the sector and of DLR's prospects.
- **Price Target:** $6.75 \times 19.2 = \$129.60$

2 PART 2 – Net Asset Value Basis

Overview: Finding an intrinsic value estimate of Digital Realty Trust by calculating its Net Asset Value.

Structure:

- i. Inputs to Use
- ii. Estimating Cap Rate
- iii. Determining Net Asset Value

2i NAV Calculation Inputs

DLR calculates 'Cash NOI' to be used for NAV calculations.

Determining Cash NOI from Operating Income

Operating Income

- Fee Income
- Other Income
- + Depreciation and amortization
- + General and administrative
- + Severance, equity acceleration, and legal expenses
- + Transaction expenses
- + Impairment in investments in real estate
- + Other expenses
- = **Net Operating Income**
- net Straight-line rental revenue
- net Above- and below-market rent amortization
- = **Cash Net Operating Income**

NAV Calculation Method

H1 Cash NOI

- + H1 Partners' share of consolidated JVs
- H1 Acquisitions / dispositions / expirations
- + H1 2Q19 carry-over & remaining FY19 backlog cash NOI
- = Total pro forma NOI H1
- x H2 NOI Growth Estimate
- = H2 NOI pro forma estimate
- 2019 NOI pro forma estimate
- ÷ **cap rate**
- = Estimated value of operating real estate
- + Other Assets
- = *Total Assets*
- *Total Liabilities*
- = Total NAV
- ÷ Total Shares
- = **NAV/Share**

2ii Estimating Cap Rate

- Net Asset Value calculation is highly dependent on the cap rate used, however, there is no standardized definition or method for determining the appropriate cap rate.
- For instance, some REIT sectors have accepted cap rates for investors to use in NAV calculations, some firms, such as Green Street Advisors, apply a granular analysis and assign cap rates to individual properties, and other methods exist for finding cap rates based on income and expected growth.
- I am averaging outputs from 3 methods to assign a cap rate for Digital Realty Trust.
 - Method 1: Cap Rate = $\text{NOI} / \text{Market Value}$
 - Method 2: Cap Rate = Discount Rate – Growth Rate
 - Method 3: Cap Rate = Commonly used/cited rates from various sources

2ii Estimating Cap Rate

| Method | | | | |
|------------------|-----------------------------|---|----|------------|
| 1 | NOI/Market Value | NOI (2018) | \$ | 1,938,730 |
| | | Market Value (end 2018) | \$ | 23,122,047 |
| | | Cap Rate | | 0.084 |
| 2 | Discount Rate - Growth Rate | Equity Discount Rate ⁽¹⁰⁾ | | 0.095 |
| | | 5-Year Average Dividend Growth Rate ⁽¹⁰⁾ | | 0.065 |
| | | Cap Rate | | 0.030 |
| 3 | Accepted rate for sector | Between 5-7% ⁽¹¹⁾ | | 0.05 |
| | | | | 0.07 |
| | | Cap Rate | | 0.060 |
| Average Cap Rate | | | | 0.058 |

10) Equity discount rate and dividend growth rate discussed later

11) From various online sources including nreionline.com and nadatacenters.com

2iii Determining NAV

| | |
|--|---------------------|
| H1 Cash NOI | \$1,001,923 |
| H1 Partners' share of consolidated JVs | \$41 |
| H1 Acquisitions / dispositions / expirations | -\$19,821 |
| H1 2Q19 carry-over & remaining FY19 backlog cash NOI | \$29,630 |
| <u>H1 Pro Forma NOI</u> | <u>\$1,011,773</u> |
| H2 NOI Growth estimate (12) | 0.022 |
| H2 Pro Forma NOI estimate | \$1,034,032 |
| <u>2019 Pro Forma NOI estimate</u> | <u>\$2,045,805</u> |
| Cap Rate | 0.058 |
| <u>Estimated value of operating real estate</u> | <u>\$35,272,500</u> |
| Other Assets | \$2,793,348 |
| <i>Total Assets</i> | <i>\$38,065,848</i> |
| <i>Total Liabilities</i> | <i>\$13,889,539</i> |
| <u>Total NAV</u> | <u>\$24,176,309</u> |
| Total Shares | 218,497 |
| NAV/Share | \$110.65 |

12) Growth rate estimate is based on FFO per share guidance for FY19, divided by 2

13) = H2 Pro Forma NOI Estimate + H1 Pro Forma NOI

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NAV Summary

- Averaging the 3 methods for determining cap rate produces a cap rate of 0.058.
- I think averaging methods 1 and 2 is sensible because it accounts for income being produced by the properties and future income growth. Incorporating method 3 calibrates it further.
- However, small variations in the cap rate result in significantly different NAVs. For instance, using a cap rate of 0.065 produces a NAV of \$93. Thus, a high degree of precision is needed to use the NAV method of valuation effectively.
- Share price fair value based on NAV: **\$110.65**

3 PART 3 – Discounted Cash Flow Valuation

Overview: Assessing the data center market and growth opportunities in order to determine a discounted cash flow valuation for Digital Realty Trust.

Sections:

- i. Current growth opportunities for DLR
- ii. Data: growth phases and frontiers
- iii. The role of data centers
- iv. Potential barriers to data center growth
- v. DLR company valuation based on DCF model

3i Current Growth Opportunities for DLR

1. Building and land development and filling vacancies.

DLR's occupancy rate in currently available space is around 90%. The company also has over 5 million square feet of potential rentable space under development or in land held for development, which represents about 16% of its total rentable space. So the company has the capacity to increase revenue by 26% right now.

2. Industry consolidation.

As mentioned earlier the multi-tenant data center industry is fragmented, with the two largest vendors, DLR and EQIX, together comprising around 25% of the market.

The industry seems likely to experience consolidation. There are economies of scale, but the primary reason is that a single platform will be able to better serve global customers. And with digital content delivery and internet exchange serving a global market, consistent platforms should be more desirable. Even a small enterprise with a global customer base would benefit from having computing power close to its customers.

Both Equinix and Digital Realty Trust have made significant acquisitions and mergers in the last few years and that trend seems very likely to continue, especially given their strong balance sheets, high credit ratings, and a low interest rate environment. By acquiring more competitors these companies generate new sources of revenue and are also able to offer a more valuable, multi-metro product, which should demand higher rates.

3ii Data: Growth Phases and Frontiers

- The quantity of digital information is exploding.
- IDC predicts data creation will be 10 times greater in 2025 than 2017. By 2025, IDC says worldwide data will grow to 175 zettabytes from 33zbs in 2017 ⁽¹⁴⁾.
- According to a Cisco study, Global IP traffic will increase threefold over the next 5 years. Overall, IP traffic will grow at a Compound Annual Growth Rate (CAGR) of 26 percent from 2017 to 2022 ⁽¹⁵⁾.

14) <https://www.seagate.com/our-story/data-age-2025/>.

15) <https://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/white-paper-c11-741490.html# Toc529314178>

3ii Data: Growth Phases and Frontiers

- Growth in the volume of data being exchanged and stored:
 - a. Traditional data flows are growing as individuals and organizations conduct more of their business and affairs digitally and as younger generations make up a larger segment of the population. According to a PEW Research survey, almost half of adults age 18-29 say they are online almost constantly ⁽¹⁶⁾ .
 - b. The number of global internet users is increasing. Presently, under half of the world's population uses the internet but the fraction continues to grow ⁽¹⁷⁾ .
 - c. The Internet of Things phenomenon is growing, with more types of products and devices collecting and communicating data. According to the IDC study, the number of embedded 'smart' devices will grow from 1 per person to more than 4 in the next decade and IoT 'real-time' data will make up up to 25% of total data created.
 - d. IP video traffic is expected to represent an increasing percentage of total IP traffic, including both business and consumer (Cisco study). Internet gaming is expected to increase nine-fold in 5 years, but still only represent 4% of global IP traffic.

16) <https://www.pewresearch.org/fact-tank/2019/07/25/americans-going-online-almost-constantly/>.

17) https://en.wikipedia.org/wiki/Global_Internet_usage

3ii Data: Growth Phases and Frontiers

➤ The next frontiers of data growth:

- a. Virtual Reality. Expected to grow at 65% CAGR through 2022. Presently a VR file contains around 30 times the bits of an equivalent HD video ⁽¹⁸⁾ .
- b. Artificial Intelligence and Big data analytics. Only a handful of companies operate seriously in this space at present, but the number is certain to grow. Facebook, for example, requires over 15 million square feet of data center space to manage its data. Google's parent, Alphabet reported spending over \$5 billion in a single quarter on data center construction, production equipment, and network infrastructure, with plans to develop more than 20 data centers.
- c. Converting Unstructured Data into Structured Data. According to IBM, over 88% of data available to businesses is unstructured ⁽¹⁹⁾ . With progress in analysis and conversion, more data will be gathered to be processed, new applications will be developed to interpret it, and new applications will be developed to deploy what is produced. A compounding of applications of data seems a realistic possibility.

Summary: The volume of data is growing. The uncertainty is by how much, how fast, and what infrastructure will support it. The next section examines data centers and their role in the proliferation of data.

18) <https://venturebeat.com/2017/05/06/the-bandwidth-problem-5-issues-the-vr-industry-must-resolve/>

19) <https://www.ibm.com/analytics/us/en/watson-explorer/whitepaper/>

3iii The Role of Data Centers

Competitive advantages in the current environment:

- Prime data center real estate seems to be centered around Internet Exchange Points (IXPs), the 'international airports' of digital traffic. By having space in a building that houses an IXP, an enterprise has the most immediate access to the multitude of networks on the web to distribute and communicate its content globally.
- A data center that has a network of important tenants in the facility is valuable because of the 'network effect'. Being in the same data center enables direct connection - a direct route for digital communication between entities, independent from the public web. Companies that employ cloud services and hybrid clouds benefit from direct connection because they provide maximum bandwidth and security and minimum latency.
- Physical accessibility of the data center enhances real estate value. A location near an airport for example, is desirable because it allows IT personnel to easily access their servers when needed.
- Location close to end users, in large metro areas for example, is advantageous and seems to be increasingly important. These 'Edge' facilities enable the fastest communication and lowest latency for processing an end user's or smart device's communications.
- As of now Equinix is the leader in IXP facilities, owning the IXP in some locations or leasing out the data center space to the IXP operator in some cases. These central facilities likely provide more stable and higher premium rents.
- DLR also has a footprint in the IXP space and owns its own in some locations. It seems DLR's major service however is colocation and direct connection, and hosting major cloud providers to create a network effect in its facilities and across its campuses.

3iii The Role of Data Centers

Current data center trends

- Recent and current growth in demand for data center space has come largely from big cloud providers such as AWS, Microsoft, etc, and in companies employing hybrid cloud and multi-cloud environments for their IT infrastructure ⁽²⁰⁾⁽²¹⁾. The importance of cloud services is likely to continue to grow.
- Multi-Tenant Data Centers offer other advantages to customers:
 - Scalability – easy to scale-up or down IT infrastructure
 - Lower cost – benefit of economies of scale
 - Reduced liabilities – space is leased not owned
- These advantages are likely to persist as the evolution of data usage and storage is in early stages.
- Increasing data flows buoy data center real estate, as more data storage is needed, as more applications are built and data-centric companies are created, and through customer demand for close proximity to IXPs.

20) <https://www.cio.com/article/3267571/it-governance-critical-as-cloud-adoption-soars-to-96-percent-in-2018.html>

21) <https://www.forbes.com/sites/louiscolumnbus/2018/01/07/83-of-enterprise-workloads-will-be-in-the-cloud-by-2020/#7de3e4046261>

3iii The Role of Data Centers

Emerging Trends

- Development of the IoT industry, Big Data and Analytics, VR, and ‘Structuring’ will produce large quantities of data that will need to be stored, processed, and communicated.
- Latency is already an important consideration. As interactive and real-time applications become more relevant and content resolution is enhanced, content providers and real-time service providers will need to have computing power located close to their end users to minimize latency. Data centers offer an efficient solution.
- More facilities are likely needed in densely populated locations.
- Proximity to IXPs is important as these contain dense networks and are gateways to the internet and global distribution. Presently there are 239 internet exchange points in 179 different areas ⁽²²⁾. The ability for a data center vendor to associate with existing IXPs, and to develop new ones, is important.
- DLR has a strong roster of customers, a focus on hybrid cloud offerings and interconnectivity, a presence in IXPs, and a strategy of expanding globally. All of these items support a case for relevance and growth moving forward.

22) <https://www.datacentermap.com/ixps.html>

3iv Potential Barriers to Growth

Barriers to Growth Include:

- Competition. Multiple vendors offer similar products to DLR, particularly in major hubs, which is producing higher vacancies and pressuring rates lower. As a result, DLR's rental rates overall have been decreasing.
- Reduced IT spending from customers. In an economic downturn, customers may reduce their IT spending and data center requirements. Data is becoming more critical to business though, so IT infrastructure is likely more important today than in the past and less susceptible to significant cuts.
- Can it borrow and build fast enough? There is a limit to how much the company can borrow and raise equity while maintaining a strong balance sheet. However, alternatives to expansion such as through joint ventures have emerged. DLR's recent expansion in Brazil was executed alongside Brookfield Asset Management, and Equinix recently announced a joint venture with Singapore's GIC for a major infrastructure development plan.
- New technology. Data centers are in the business of leasing out space for computing infrastructure, which has evolved significantly over the past 20 years and is sure to evolve in the future. New, smaller hardware devices that are capable of higher capacity lower the need for data center space. Data quantity growth will likely outpace server size shrinkage in the near term, but data storage hardware innovation will be a constant issue for data centers.
- A decentralized infrastructure. Edge computing moves computing and processing power close to the end-user to minimize latency. This seems to be an important concept and may cause some disruption in the data center industry. There is still the matter of interconnection, so edge computing isn't likely to completely take over, but it could become an important force in the market. On the other hand, it may provide a company like DLR with an opportunity to expand to meet ultra-low latency end-user requirements.

3v Valuation of DLR Based on Discounted Cash Flows

Outlook for Digital Realty Trust: well positioned for growth.

- DLR has a wide growth path, through:
 - 1) additional data center development to meet rising demand,
 - 2) acquisitions and joint ventures in a highly fragmented industry, and
 - 3) increasing its network densities, interconnections, and exposure to IXPs to nurture increasing rents.
- The company has a strong roster of customers, including major ISPs and hyperscale cloud providers, so an established network already exists.
- DLR has an international footprint and the second largest presence globally, a solid differentiator, and continues to push for global market share, evidenced by recent acquisitions and joint ventures and in significant land and building space being developed.
- Decent exposure to IXPs
- A strong balance sheet

3v Valuation of DLR Based on Discounted Cash Flows

History of Increasing Dividends

| | <u>2019</u> | <u>2018</u> | <u>2017</u> | <u>2016</u> | <u>2015</u> | <u>2014</u> | <u>2013</u> | <u>2012</u> | <u>2011</u> | <u>2010</u> |
|---------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Dividend per Share | \$4.32 | \$4.04 | \$3.72 | \$3.52 | \$3.40 | \$3.32 | \$3.12 | \$2.92 | \$2.72 | \$2.02 |
| Growth from Previous Year | 6.9% | 8.6% | 5.7% | 3.5% | 2.4% | 6.4% | 6.8% | 7.4% | 34.7% | |

Average Annual Growth (23) 6.5%

For the reasons outlined above I believe a 6.5% annual dividend growth rate is sustainable for the mid-long term.

3v Valuation of DLR Based on Discounted Cash Flows

Gordon Growth Model:

| GGM | | | $V = D_0(1+g)/(r-g)$ | |
|-----|-----------------|--|----------------------|--|
| Do | 2019 dividend | | \$4.32 | |
| g | growth rate | | 0.065 | |
| r | required return | | 0.095 | |
| V | Value | | \$153.36 | |

I think 9.5% is a healthy and conservative required rate of return to use for this model, considering the average annual return of the S&P500 is between 7-9% historically ⁽²⁵⁾.

Target Share Price based on Discounted Dividend Model: **\$153.36**

4 Summary and Recommendation

- i. Shelter from market downturn?
- ii. Results of each valuation method
- iii. Ranking the valuation methods
- iv. Weighting the valuation methods and making a conclusion
- v. Further analysis

4i Shelter from Market Downturn

Performance during 2008 market crash:

2008 Market Crash

| | <u>S&P 500</u> | <u>DLR</u> |
|----------------------|--------------------|------------|
| Peak-to-Bottom Loss | 56% | 57% |
| Time to Recover High | 5.5 years | 1.25 years |

- DLR suffered losses as bad as the market during the 2008 crash, but recovered to its previous high much more quickly.
- DLR is larger now, with a more diverse customer base, which should help to cushion the effects of an economic downturn.
- IT infrastructure, and data-focused processes, are a more integral part of business now compared to 2008, so spending cuts are perhaps less likely to be as severe from corporate customers during the next down-turn.
- Conclusion: DLR should be partly insulated from the next market downturn.

4ii Results of Each Valuation Method

| <u>Method</u> | <u>Valuation</u> |
|---------------------------------|------------------|
| 1 Comparables Analysis | 129.60 |
| 2 Net Asset Value | 110.65 |
| 3 Discounted Cash Flow Analysis | 153.36 |

4iii Ranking the Valuation Methods

1. I prefer the Discounted Cash Flow model for this analysis. The required rate of return can be set to a conservative level with a reasonable amount of confidence. Also, a historical pattern is clearly visible in the dividend growth rate, and growth prospects can be modeled within a band of confidence.
 - Further, because DLR operates as a REIT, there is assurance that revenue growth will translate into dividend growth:

| | <u>2019</u> | <u>2018</u> | <u>2017</u> | <u>2016</u> | <u>2015</u> | <u>2014</u> | <u>2013</u> | <u>2012</u> | <u>2011</u> | <u>2010</u> |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| DLR Total Dividends Paid as a Percentage of Revenue | 28% | 27% | 26% | 25% | 27% | 27% | 27% | 27% | 26% | 21% |

2. The Comparables Analysis method is sensible because it bases the price range on historical multiples and in relation to peer multiples. It is not as receptive to long-term growth prospects though, and not as considerate of idiosyncratic factors.
3. Without granular property market analysis and a process for determining an accurate cap rate, the NAV valuation method is more arbitrary than the other two. It can provide an anchor for the overall assessment though.

4iv Weighting the Valuation Methods, Conclusion

| Method | | Valuation | Weight | Contribution |
|--------|----------------------|-----------|--------|--------------|
| 1 | Comparables Analysis | 129.60 | 0.3 | 38.88 |
| 2 | Net Asset Value | 110.65 | 0.1 | 11.07 |
| 3 | Discounted Cash Flow | 153.36 | 0.6 | 92.02 |

Final Value

\$141.96

My per share price target for Digital Realty Trust is: **\$141.96**

As of August 23rd, this represents a price appreciation of 18% for the stock from its current price.

4v Further Analysis

1. Closer look at individual markets: supply and demand, real estate availability, customer feedback on vendor service and requirements
2. How receptive are smaller vendors to being acquired?
3. IXP pipeline
4. Contract structures within IXPs
5. Data speed and latency relation to physical distance
6. Server technology pipeline

For further discussion contact me at:

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