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Crown Castle Inc

Equity Valuation

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Abstract

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Keywords: Equity Valuation, Real Estate Investment Trust, Discounted Dividend Growth Model, NAV, P/AFFO

The purpose of this thesis is to perform an equity valuation of Crown Castle Inc. (CCI), a major U.S.-based telecommunications infrastructure REIT. The primary goal is to estimate a 1-year target share price, leveraging a detailed analysis of the company's business model, industry dynamics, and prevailing economic conditions. After presenting widely used valuation techniques applied specifically to Real Estate Investment Trusts, the thesis conducts a thorough review of the internal and external factors influencing Crown Castle's performance. This is supplemented by an extensive operational and financial analysis to pinpoint the key drivers of the company's future growth and profitability.

To estimate CCI's 1-year target price, three valuation models were utilized. The Net Asset Value (NAV) valuation yielded a target price of 152.69 USD, the Dividend Discount Growth Model (DDGM) resulted in a target price of 111.82 USD, and the relative valuation suggested a target price of 128.86 USD. Based on these findings and placing greater emphasis on the DDGM and the relative valuation results, I propose a target share price of 123.6 USD with a HOLD recommendation, The sensitivity analysis underscores the potential variability in the target price due to changes in key assumptions, emphasizing the need for cautious interpretation of the results and close attention to evolving market conditions.

Resumo

Título: Corwn Castle, Inc. - Avaliação do capital próprio

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Palavras-chave: Avaliação de Acções, Fundo de Investimento Imobiliário, Modelo de Crescimento Descontado de Dividendos, NAV, P/AFFO

O objetivo desta tese é efetuar uma avaliação do capital da Crown Castle Inc. (CCI), um importante REIT de infra-estruturas de telecomunicações sediado nos EUA. O objetivo principal é estimar um preço-alvo para as acções a um ano, com base numa análise detalhada do modelo de negócio da empresa, da dinâmica do sector e das condições económicas prevalecentes. Depois de apresentar técnicas de avaliação amplamente utilizadas e aplicadas especificamente aos fundos de investimento imobiliário, a tese faz uma análise aprofundada dos factores internos e externos que influenciam o desempenho da Crown Castle. Esta análise é complementada por uma extensa análise operacional e financeira para identificar os principais factores de crescimento e rentabilidade futuros da empresa.

Para estimar o preço-alvo a 1 ano da CCI, foram utilizados três modelos de avaliação. A análise do Net Asset Value (NAV) produziu um preço-alvo de 152,69 USD, o Dividend Discount Growth Model (DDGM) resultou num preço-alvo de 111,82 USD e a análise comparável sugeriu um preço-alvo de 128,86 USD. Com base nestas conclusões e colocando maior ênfase nos resultados da avaliação DDGM e P/AFFO, proponho um preço-alvo para as acções de 123.6 USD com uma recomendação HOLD. A análise de sensibilidade sublinha a potencial variabilidade do preço-alvo devido a alterações nos pressupostos fundamentais, salientando a necessidade de uma interpretação cautelosa dos resultados e de uma atenção especial à evolução das condições de mercado.

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1. Introduction

1.1 Introduction

Equity valuation plays a pivotal role in guiding financial decision-making, particularly in investment strategies. Precise valuation techniques are also essential in the world of real estate investment trusts (REITs) due to the complexities and unique characteristics of these entities. This thesis focuses on the valuation of Crown Castle Inc., a well-known telecom tower REIT, utilizing various valuation methodologies to assess the company's financial health and investment prospects.

With its extensive portfolio of towers and fiber assets, Crown Castle is a prominent player in the telecom infrastructure market and a major provider of communication infrastructure. As the telecom industry continues to evolve with advancements in technology and rising demand for network capacity, accurate valuation of such assets becomes crucial.

The aim of this thesis is to derive a comprehensive understanding of Crown Castle’s market value and to deliver a 1-year target share price for Q2 2025, by examining Crown Castle’s strategic position within the telecom tower sector, its financial performance, and industry trends, and applying the asset-based, income-based and relative valuation methodologies.

1.2. Introduction to REITs

Real Estate Investment Trusts (REIT or REITs) is a vehicle that provides investors the opportunity to engage in real estate investments without the need or burden of direct real estate ownership. REITs facilitate an exposure to real estate without requiring direct property management, therefore offering an appealing investment alternative for novice and smaller investors. Nonetheless, the complexity of these investments, including REITs' structure, operational model, and inherent risks, justify a thorough exploration to fully understand their potentials and pitfalls (Eichholtz, Yonder, & Kok, 2012).

The inception of REITs in 1960 in the United States was aimed to expand and democratize the access to investing in real estates, enabling a broader investor participation without the substantial capital requirement for direct real estate ventures (Block, 2011). This model has since been adopted globally, with REITs being traded on major stock exchanges. Despite their trading on exchanges, REITs differ from ordinary stocks due to their obligatory income distribution to shareholders. REITs are mandated to distribute at least 90% of their taxable income to shareholders in the form of dividends, while this obligation also positioning them as an attractive option for those seeking steady income, particularly in low-interest-rate environments (Eichholtz, Yonder, & Kok, 2012). However, unlike corporate dividends, REIT dividends are taxed as ordinary income, therefore, to optimize after-tax returns, investors often hold REITs in tax-advantaged accounts (Block, 2011).

Investors are drawn to REITs due to their professional management and diversified portfolios, which help mitigate idiosyncratic risks and reduce operational demands on individual investors. They have the ability to offer potential for both income distribution and capital appreciation, making them a valuable component of a diversified investment portfolio. However, investors must be aware of the risks involved, including the illiquidity of non-traded REITs and the sensitivity of public REITs to interest rate changes and market volatility, which necessitates careful research and analysis (Damodaran, 2012; Morrell & Shiers, 2015; Eichholtz, Yonder, & Kok, 2012).

REITs are distinct from traditional stocks in their operational focus as well - split between equity REITs and mortgage REITs. Equity REITs derive income from property leases, and mortgage REITs, focused on generating income through financed property purchases. Equity REITs can be further categorized into various sectors, including residential, office, retail, industrial, healthcare, and specialized REITs. Each sector offers unique investment opportunities and risk-

return profiles, driven by the specific characteristics and demand drivers of the underlying real estate assets (Nareit, 2023)

In the specialized REIT segment, Infrastructure REITs have emerged as a category focusing on ownership and operation of infrastructure assets such as telecommunications towers, data centers, energy pipelines, and transportation facilities. These REITs provide critical support to the modern economy through their ability to facilitate the operation of vital services like communication, transportation, and energy distribution. The growth of infrastructure REITs has been driven by rising demand for data transmission and storage, the global expansion of 5G networks, and the necessity for significant investments in renewable energy infrastructure. Unlike traditional REITs, infrastructure REITs are often more resilient to economic downturns due to the essential nature of the services they support. However, they can be exposed to risks such as regulatory changes, technological advancements, while also requiring large capital expenditure. The appeal of infrastructure REITs lies in their potential for stable and long-term cash flows, supported by long-term contracts and the critical importance of their assets to economic activity (Brown, 2021; Nareit, 2023).

The evolution of REITs has significantly impacted the global investment landscape, offering a unique blend of real estate exposure and the liquidity of stock investments. While REITs present a less hands-on approach to real estate investments compared to direct real estate ownership, they require thorough financial and operational analysis (Block, 2011).

2. Valuation Methods for REITs

In this section I investigate how to value REITs with different valuation methodologies, specifically with the asset based, income based and relative valuation models.

2.1. Asset-Based Valuation Methods

The asset-based valuation approach focuses on estimating a company's value by determining the market value of its underlying assets and subtracting the market value of its liabilities. There are two main methods: Net Asset Value (NAV), which is commonly used for REITs, and Replacement Cost method, which estimates the cost to replace the company's assets at current prices. This section explores the NAV approach and its application for REITS.

2.1.1. Net Asset Value (NAV)

Net Asset Value (NAV) represents the net value of the company and is calculated by subtracting the total market value of liabilities from the total market value of assets (Block, R.L., 2011). By estimating the market value (MV) of real estate assets, adjusting for liabilities, and subsequently determining per-share value, NAV facilitates a direct comparison with the market price of REIT shares. This approach is particularly relevant given the tangible and often appreciating nature of real estate assets. Calculating NAV is a critical and widely used method for valuing REITs, highlighting the intrinsic worth in a REIT's tangible assets (Block, R.L., 2011).

One way of calculating the NAV is to firstly divide the properties by sector and location, then determine a Capitalization Rate (Cap Rate) based on current market rates, for each property segment. The Cap Rate is a critical metric in real estate for estimating potential returns on investment. This rate transforms income flows, the lease-generated revenue, and the operating expenses of managing the property -the net operating income (NOI)-, into a quantifiable metric. Cap rates are subject to variation based on location, property type, and the prevailing market conditions (Geltner, D., & Miller, N.G., 2007). Furthermore, cap rates are influenced by interest rates and exhibiting an inverse relationship with property values, where lower interest rates typically result in lower cap rates, and higher property value. This dynamic highlight the significance of considering broader economic indicators in using cap rate for valuing a REITs NAV, ensuring that valuations reflect both micro-level property specifics and macro-level economic trends (McDonald, J.F., & Dermisi, S.V., 2008).

Utilized cap rates for valuation purposes are often derived from market and transactions data. Therefore, the correct way to find cap rates is by searching data on similar properties and industries from market reports, or from industry research providers.

After determining the Cap Rate for each property segment an estimate of the properties' market value is found by dividing the forward looking (usually 1 year) net operating income (NOI) by the appropriate Cap Rate, then subtracting the MV of any liabilities (Block, R.L., 2011). Furthermore, according to Green Street Advisors it is necessary to add the sum of the values of land (L), developments in progress (D), equity in unconsolidated joint ventures (EUJV), and estimated fee income (EFI), non-rental revenues (NRR), and other investments (OI) to arrive at an adjusted NAV which is closer to the true worth of REIT shares (Block, R.L., 2011).

$$MV\ of\ Property\ Segment_{\mathrm{i}} = \frac{Total\ forward\ NOI\ Segment_{\mathrm{i}}}{Cap\ Rate\ Segment_{\mathrm{i}}}$$

$$NAV = \sum_{i=1}^{n} MV\ of\ Property\ Segment_{\mathrm{i}} - MV\ of\ Liabilities$$

$$Adjusted\ NAV = NAV + \sum_{i=1}^{n} Other\ Factors_i$$

$$Other\ Factors_i = L_i + D_i + EUJV_i + EFI_i + NRR_i + OI_i$$

To find the NAV per share, this total NAV is then divided by the number of outstanding shares. This process encapsulates the NAV's reliance on cap rates to evaluate a property's worth in the current market environment, directly impacting the per-share value of a REIT.

Despite its complexity and potential imprecision, the NAV approach is an essential method for valuing REIT stocks and assessing the underlying real estate value. According to Block, R.L. (2011) investors should typically be cautious about paying 100% or more of a REIT's NAV, especially if the company has a history of destroying shareholder value, carries excessive balance sheet risk, or has poor corporate governance. Conversely, REITs with strong organizational structures, effective growth and value creation strategies, and wide capital access may warrant a premium above NAV, as these factors indicate the potential for increased funds from operations (FFO), NAV, and dividends.

Some investors criticize NAV analysis for REIT valuation, arguing it overlooks the broader business value of REITs, focusing narrowly on property values. On the other hand, the NAV approach helps mitigate uncontrolled optimism during unsustainable FFO growth phases and discourages the overvaluation of REITs growing FFO through the use of excessive debt. This is crucial because leveraging with debt, especially low-cost variable-rate debt, can artificially inflate FFO growth, leading to deceptive valuations.

Effective NAV analysis demands diligent research into property markets and Cap Rates. Small inaccuracies in cap rates can lead to significant deviations from reality. Therefore, while NAV models are essential for REIT valuation, they must be used cautiously. NAV serves not just as a metric for assessing current value but also as a lens through which the potential for future growth and value creation can be evaluated, guiding investors towards informed decisions in the REIT landscape. (Block, R.L., 2011).

2.2. Income-Based Valuation Methods

Income-based valuation methods are crucial in assessing the financial viability and growth potential of REITs, focusing on the income of these entities and the intrinsic value of the company. These models measure the value of any asset to be equal to the present value of the future expected cash flows that are discounted back to a desired date (Valuation Date) at an appropriate rate that reflects the riskiness of these cash flows (Damodaran, 2002). Based on Pinto et al., 2010 there are three categories: the dividend discount models, the free cash flow models, and the residual income models. This section delves into two primary methods: the Discounted Cash Flow (DCF) and the Discounted Dividend Growth Model (DDGM) for REITS.

2.2.1. Discounted Cash Flow (DCF) for REITS

The Discounted Cash Flow (DCF) method is a key approach of income-based valuation, offering a comprehensive view of an investment's value by forecasting future cash flows and discounting them back to their present value. This method is based on the principle that a property's value is directly linked to its ability to generate cash flows in the future (Damodaran, A. (2012)).

Discounting expected future Adjusted Funds From Operations (AFFO), to a net present value offers a method for the valuation of REITs' shares. AFFO refines the traditional FFO metric by accounting for capital expenditures (Capex) and other non-cash items. This adjustment is needed to arrive to a more accurate representation of the REIT's operational performance, and to reflect the ability to generate cash flow form its core business. To further refine AFFO calculations, the impacts of leasing costs and the amortization of intangible assets are also suggested to be considered. These can vary significantly among REITs and affect comparability (Eichholtz, Yonder, & Kok, 2012).

Determining the appropriate discount rate can involve several methods, each reflecting different aspects of risk and market conditions. One approach adjusts the average Cap Rates of a REIT's property portfolio for debt leverage, with higher debt levels requiring a higher discount rate, aligning commercial property valuation metrics with REIT valuations. Alternatively, a combination of private market cap rates and the yield on risk-free benchmarks like 10-year U.S. Treasury notes, plus a risk premium, can be used. According to Block (2011), the historical average risk premium for U.S. REITs is around 330 basis points, which should be adjusted with

a “beta” factor corresponding to the specific REIT’s price changes relative to the broader market.

Forecasting cash flows while challenging, it is more manageable for the near term, typically up to 5 years, compared to longer horizons. According to Block (2011), an effective strategy involves estimating the AFFO for the first 5 years and calculating its NPV using an appropriate discount rate. To account for the value generation beyond the next five years, a terminal value must be estimated, which often represents a significant part of the property's valuation. This is done by applying a moderate long-term growth rate, typically 2-3%, to the fifth year's AFFO and then discounting it to its present value.

Despite DCF method offers a comprehensive view of an investment's value by forecasting its cash flows, Kahr, J., & Thomsett, M.C., (2005) suggests that it should be used cautiously and in combination with other valuation models due to its challenges in precisely predicting cash flows and finding the accurate discount rate. Furthermore, this method might overstate value since it implies investors receive future AFFOs sooner than they do in reality. Shareholders mainly get the REIT's dividends, with the rest reinvested for future growth. Moreover, although REITs are required to distribute 90% of their taxable income, this distribution is based on net income, which is often significantly lower than AFFO due to large depreciation expenses. As a result, REITs can reinvest more than 10% of their AFFO, taking advantage of the higher cash flow that AFFO represents while still meeting their distribution obligations.

2.2.2. Discounted Dividend Growth Model for REITS

The DDGM valuation method starts with the actual dividend paid out to project the future dividends over a long term, then using a specific discount rate and assumed dividend growth rate the present value can be estimated (Damodaran, A. (2012)). The formula is:

$$P_0 = \frac{D_0(1+G)}{R-G}$$

Where:

P0: present value of future dividends

D0: dividend in current period

R: investor's required rate of return

G: expected dividend growth rate.

The above formula presents the one-stage DDGM, however if the company's business activity cannot be captured with only one growth phase, then the more advanced two-, or three-stage models are also common to use. These models are particularly useful for capturing the different growth phases of a company. For example, the three-stage model includes an initial period of high growth, a transition period, and a final stable growth phase, providing a comprehensive framework. While, in the two-stage models, the projections are divided into an explicit and a terminal growth phase, with different assumptions (StableBread, 2024).

In the two-staged model, the explicit period involves projecting dividends in detail for a specific number of years, capturing the initial phase of higher or fluctuating growth rates, then the terminal period assumes a stable growth rate into perpetuity. This approach is based on the premise that after the initial phase, companies typically enter a phase of stable, long-term growth (Damodaran, A. (2012)).

There are several methods to determine the inputs of the model. The expected dividend growth rate can be estimated by looking at the dividends' historical growth rates and deriving an expected growth rate for the future. However, this method assumes that the growth in the past will also continue in the future which might not be the case for a lot of companies, especially in changing economic conditions and volatility in the historic sample data (Damodaran, A. (2012)). While another way to determine a sustainable growth rate is to multiply the Return on Equity with the Retention Ratio (ROE * Retention Rate), although for REITs there are no significant retention. One might also consider macroeconomic trends like GDP growth, inflation and specific industry trends such as the actual market growth to establish an estimation for the growth rate. Combining these methods could result in a robust estimation.

There are also several existing ways to estimate a required rate of return. The general method is Cost of Equity from the CAPM (Capital Asset Pricing Model) :

$$R_e = R_f + \beta * (R_{fm} - R_f)$$

Where:

R_e*: Cost of Equity*

R_f*: Risk Free Rate*

β*: beta coefficient for the individual stock*

$R_m - R_f$: *Expected Market Risk Premium.*

Alternatively, the sum of the Dividend Yield with the Expected Growth Rate in Dividends can also be utilized as a required rate of return. This method is more useful to stable mature firms. (Damodaran, A. (2012)).

The DDGM may disadvantage REITs with low dividend to AFFO ratios unless adjusted for by assuming a higher dividend growth. A model could alternatively focus on near-term accelerated dividend growth, valuing the tangible cash flows received as dividends (Block, R.L., 2011).

Income-based valuation methods, particularly the DCF and Discounted Dividend Growth Model approaches, are instrumental in determining the value and growth prospects of REITs. These methodologies showcase the importance of forecasting and understanding the income streams and the broader economic factors influencing property values. Both face challenges and their effectiveness hinges on the precision of future growth predictions and the selection of discount rates. For instance, an overestimated expected growth rate or underestimated discount rates inflate valuations, while underestimation does the opposite.

2.3. Relative Valuation Methods

Relative valuation methods offer a perspective on REITs valuation by comparing standardized financial multiples to those of similar entities. Identifying a comparable set of companies involves looking at REITs with similar operational focuses, which might be difficult as characteristics are usually differ to some extent. While the multiples in REIT valuation are constructed from market prices divided by some financial metrics and they are categorized as either backward-looking (trailing) multiples, current multiple or forward-looking multiple. However, Goedhart et al. (2005) highlights the importance of using forward-looking as the empirical evidence shows more accurate results, and only use historical multiples when the estimations are not reliable.

This method is crucial for understanding where a REIT stand compared to its competitors and for identifying undervalued or overvalued assets based on perceptions by the market. The above discussed income-based valuation models rely on several specific assumptions, making the model very sensitive if these assumptions deviate from reality. Therefore, complementing intrinsic valuation methods, the relative valuation can be key to avoid any strategic mistakes to make on the market. (Goedhart et al., 2005). This section explores two central relative valuation ratios: Price to Earnings (P/E) Ratio and the P/FFO model.

2.3.1. Price to Earnings (P/E) Ratio

The P/E ratio, while a more traditional stock market valuation metric, offers insights into how the market values the earnings generated by the REIT compared to its share price. P/E ratio is a widely utilized metric in the valuation of publicly traded companies, however there are some limitations specific to the real estate sector. Block points out that REITs are better compared using price to funds from operations (P/FFO) or price to adjusted funds from operations (P/AFFO) ratios, given that these metrics reflect the operational performance of REITs more accurately than P/E ratios (Block, R.L., 2011; Morningstar, 2023).

When used however, the applicability of the P/E ratio in REIT valuation must be considered with caution. While P/E is calculated using earnings before dividends are distributed, REITs typically have higher non-cash expenses, such as depreciation, which lower net income and can result in higher P/E ratios compared to other sectors. Consequently, other metrics like Price-to-FFO or Price-to-AFFO are often more appropriate for evaluating REITs. (Morrell & Shiers, 2015; Damodaran, 2012).

2.3.2. P/FFO and P/AFFO ratios

The P/FFO ratio approach to valuing REITs typically involves estimating a company's future funds from operations (FFO) per share and deciding on an appropriate P/FFO multiple that reflects the company's expected performance (Zerbst, R.H., & Cambon, B.R., 1984). Usually, this multiple is derived from data on the set of peer companies, while also using potential adjustments considering a multitude of factors, including historical averages, management quality, sector prospects, market outlook, interest rates, and broader stock market valuations. Moreover, forward-looking and macroeconomic considerations, such as future real estate prices and interest rate trends, influence the warranted P/FFO or P/AFFO ratios (Block, R.L., 2011).

However, Adjusted Funds From Operation (AFFO) is a more accurate reflection of a REIT's free cash flow than FFO, yet it's less commonly reported, compelling investors to either manually approximate it from disclosures or rely on brokerage firms, industry publications for data (Brown, G.R., & Matysiak, G.A., 1999).

These ratios are popular for comparing REITs, however, the use of P/FFO and P/AFFO multiples in REIT valuation faces several challenges. FFO and AFFO are non-GAAP measures with varying definitions, leading to inconsistencies across different REITs (Nareit, 2021).

Market conditions and investor sentiment also influence these ratios, introducing a speculative element to their valuation (Ling & Archer, 2020). These challenges should not lead to dismiss relative valuation with these multiples, but to recognize their limitations.

In general, high multiples may reflect improving asset values and cash flows, but one must be cautious not to justify increasing multiples as stock prices rise. Concluding that a REIT is overvalued based on slight discrepancies from model predictions is risky, highlighting the need for additional valuation methods. (Block, R.L., 2011).

Overall relative valuation method allows for a comparative analysis, offering a framework that complements the asset-based and income-based methods discussed in previous sections.

3. Industry and Company Overview

The following chapter will detail the overall Tower REIT Industry, and specifically will give an overview of and analyse the subject company, Crown Castle.

3.1 Telecom Tower REITs

3.1.1 Tower Business Overview

The telecommunications infrastructure sector has been foundational to global communications, while this industry has undergone significant transformations from its early days of simple telegraph and telephone lines to today's complex cellular and broadband networks that support massive data, voice, and video communication catering billions of global users. The technological advancements have facilitated the transition from voice-only services to a data-centric world, where broadband connectivity is essential for daily activities.

A key component of this infrastructure are telecom towers, which are vertical structures, that do not transmit or receive anything on their own but serve as the physical infrastructure for mounting antennas and other communication equipment. These towers are crucial for mobile network coverage and the delivery of wireless communication services.

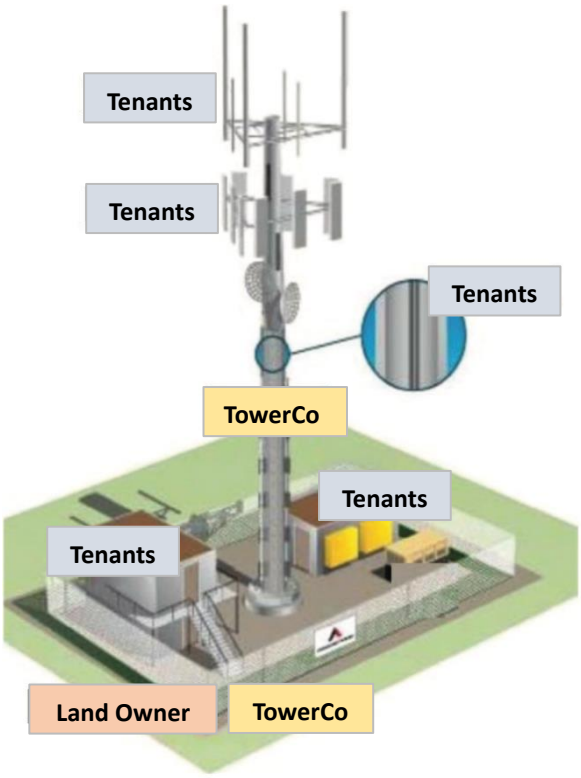


Figure 1: Tower Structure
(Source: American Tower Investor Relations Introduction to tower industry, pardot.americantower.com/l/25692/2020-12-17/71kyw1/25692/1693922217TjdVY4qK/atc_investor_relations_introduction_to_tower_industry_american_tower_q2.pdf)

The telecom tower industry has shifted from being predominantly owned and controlled by telecommunication firms to a more diversified ownership structure including specialized Tower Companies (TowerCo) mostly REITs. These REITs focus on leasing antenna spaces on thousands of towers simultaneously to multiple tenants, usually major wireless communication providers (i.e. AT&T, Verizon, T-Mobile) that provide cellular phone service to consumers and businesses. These competing telecommunications firms collocate on the same towers to leverage the capital investment, rather than bearing the cost of sole ownership. This practice, driven by economic incentives led to the outsourcing of tower ownership to REITS. Since a tower with multiple tenants generates significantly higher returns as additional tenants increase margins without notably raising operational costs or requiring additional capital expenditure. This arrangement benefits the telecommunication firms by reducing their capital investments, and the Tower REITs by enhancing tower utilization, margins, and returns on capital. (Mordor Intelligence, 2024).

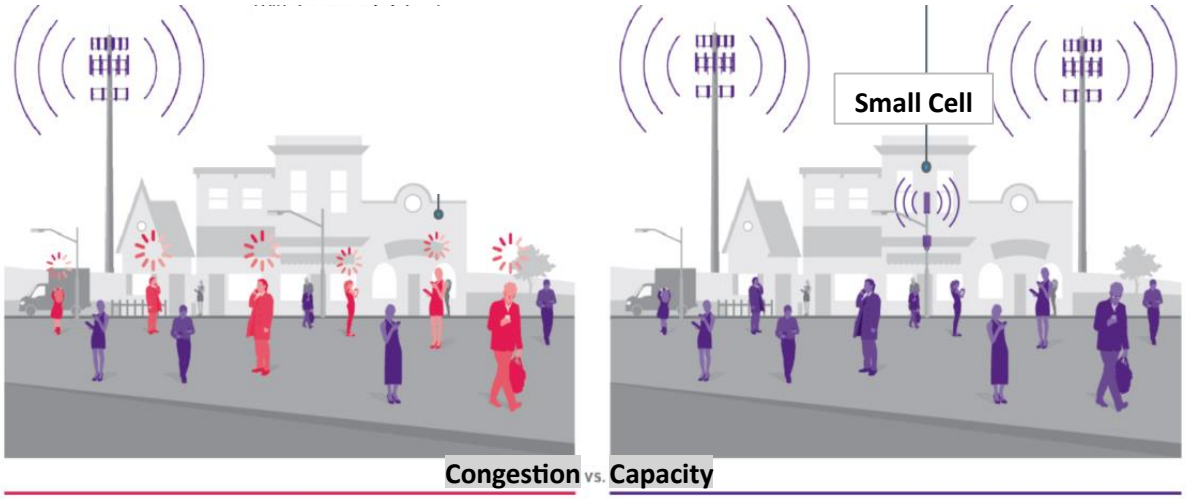
Furthermore, tower cash flow multiples are elevated due to predictable long-term cash flow growth. Tower leases typically include annual rent escalators, and telecom firms pay additional rent when shifting from 4G to 5G, while new tenants also contribute to robust cash flow increases.

In terms of land ownership, the Tower REITs typically enter into a long-term lease agreement for the parcel but may buy it as well. The wireless carriers usually only lease space on the tower, while they pay for, own, install, insure and maintain all equipment, such as antennas and cables, shelters and base station (electronics).

3.1.2 Fiber Business Overview

As the need for higher bandwidth and faster connectivity continues to grow, particularly with the rollout of 5G technology (the next generation of wireless technology that promises faster speeds and more reliable connections), the telecom infrastructure sector has evolved to include more than just traditional towers. A crucial component of this infrastructure evolution is the development of small cell networks supported by extensive fiber optic systems.

The fiber business collectively includes both small cells and fiber solutions. Small cells are compact low-powered cellular access nodes, essentially wireless transmitters and receivers



specifically designed to extend and enhance network coverage in dense urban areas where larger towers cannot reach, or in areas requiring additional capacity. With increased data usage wireless congestion can happen when too many people try to use the same cell site, and the extra demand can overload the capacity of the site. While adding new infrastructure (small cells) is a way to relieve wireless congestion, by adding more capacity.

Figure 2: Wireless Congestion vs Capacity (Source: CCI investor presentation November 2023)

The small cells are largely dependent on a fiber optic cable infrastructure. This fiber network provides the essential data transfer from cell sites to the network backbone. Fiber optics use light to transmit data over long distances at high speeds, and this technology serves as the backbone of the internet and communication networks, supporting the rapid exchange of vast amounts of information. CCI's fiber network is primarily used to connect small cells and provide fiber solutions to various customers, including carriers and enterprises. This fiber network spans major metropolitan areas and other strategic locations, ensuring broad coverage and accessibility, while serving the requirements of large carriers.

Table 1 highlights the key differences and similarities between these two core businesses.

	Towers	**Small cells**
Business Model Highlights		
Underlying demand driver	Wireless data growth	Wireless data growth and density
Customer Base	Wireless carriers	
Buying Decisions	• Nationally negotiated contracts • Individual decisions made at market level	• Nationally negotiated contracts • Local market pricing conditions
Significant Demand Drivers	2G to 3G to 4G to 5G	4G to 5G
Business Model	High initial investment Lease-up over time Shared infrastructure reduces cost of ownership	
Barriers to Entry	• First mover • Municipal regulations	• First mover at scale • Municipal and utility regulations
Unit Economics		
Initial Investment per Opportunity	~$500K - $1MM	~$10MM - $500MM
Initial Asset Yield	3-4%	6-7%
2-Tenant Asset Yield	High single digit	Low double digit
3-Tenant Asset Yield	Mid-teens	
Pace of Lease Up	1 Tenant every 10 years	
Maintanance Capex	<1% of revenue	1% of revenue
Initial Contract Term	10 years	
Renewable Rates - per Annum	98-99%	
Escalators - per Annum	~3%	~1.5%

Table 1: Tower vs Small Cells business

(Source: CCI investor presentation November 2023)

3.2 Company Overview of Crown Castle Inc.

Crown Castle Inc. ("CCI", "Crown Castle" or "The company") operates within the U.S. communications sector and has grown over the last three decades to become one of the leading providers of shared communications infrastructure in the U.S. The infrastructure comprises a portfolio of over 40,000 towers, 115,000 small cells, about 90,000 route miles of fiber and additional assets such as rooftops, which are critical for the installation of telecommunications equipment that enables the transmission and reception of wireless signals. CCI also offers site development services related to its towers (site acquisition, architectural and engineering, and zoning and permitting, aimed at supporting the installation of tenant equipment), but following a restructuring plan (Plan) in July 2023, they discontinued offering tenant equipment installations and augmentations as part of its Towers services.

Crown Castle's ownership structure is mostly consists of investment manager firms, while other type of investors such as brokerage firms and individual investors represent a much smaller share. A significant amount of the 45.9 Billion ($) market capitalization is shared by the three largest stockholders, which are The Vanguard Group (12.8%), BlackRock (5.1%) and State Street (4.9%) (Figure 3). These large institutional players generally seek long-term capital growth and recurring income through investments in REITs.

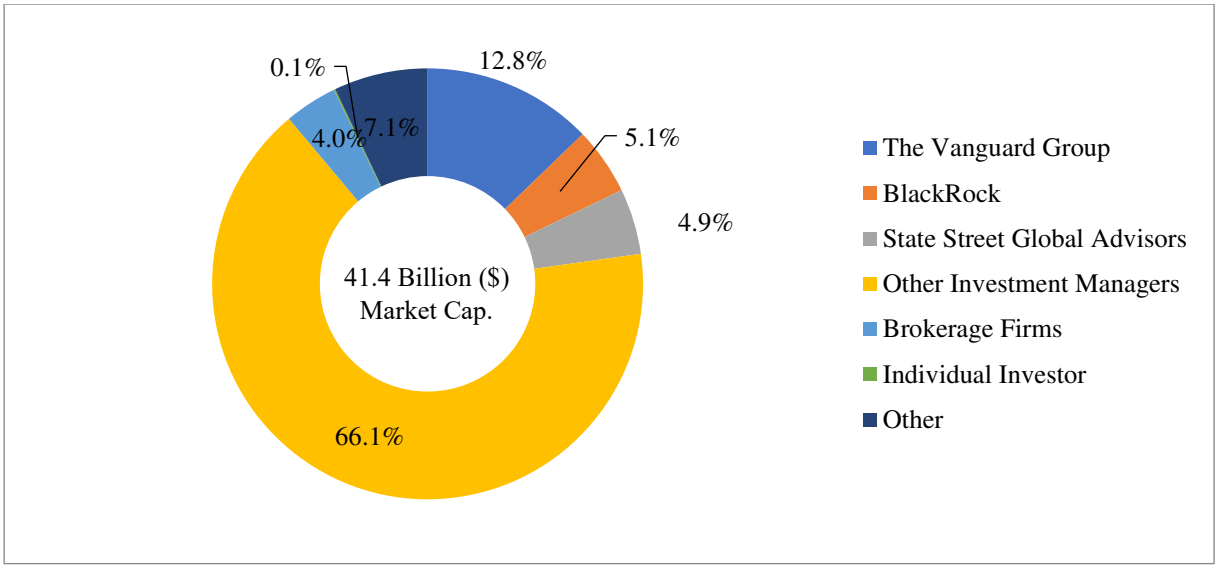


Figure 3: Ownership Structure of Crown Castle as of April 2024 (source: Refinitiv)

Figure 4 illustrates the total return indices (TRI) of CCI (blue) and the Dow Jones U.S. Select REIT Index (green) and the ECB Deposit Facility Rate (grey, secondary axis) over the last five-years from April 30, 2019. The TRI reflects the cumulative value of reinvesting dividends as well as capital gains, which is essential due to the high dividend rates of REITs. From early 2022, both Crown Castle and the U.S. REIT industry demonstrate a noticeable decline. This could partially be explained by the fact that the ECB started to increase its Deposit Facility Rate mid 2022 with an attempt to control inflation and stabilize the economy, which generally had a negative effect on the real estate sector due to the rising cost of capital and potentially higher yields on alternative fixed income investments.

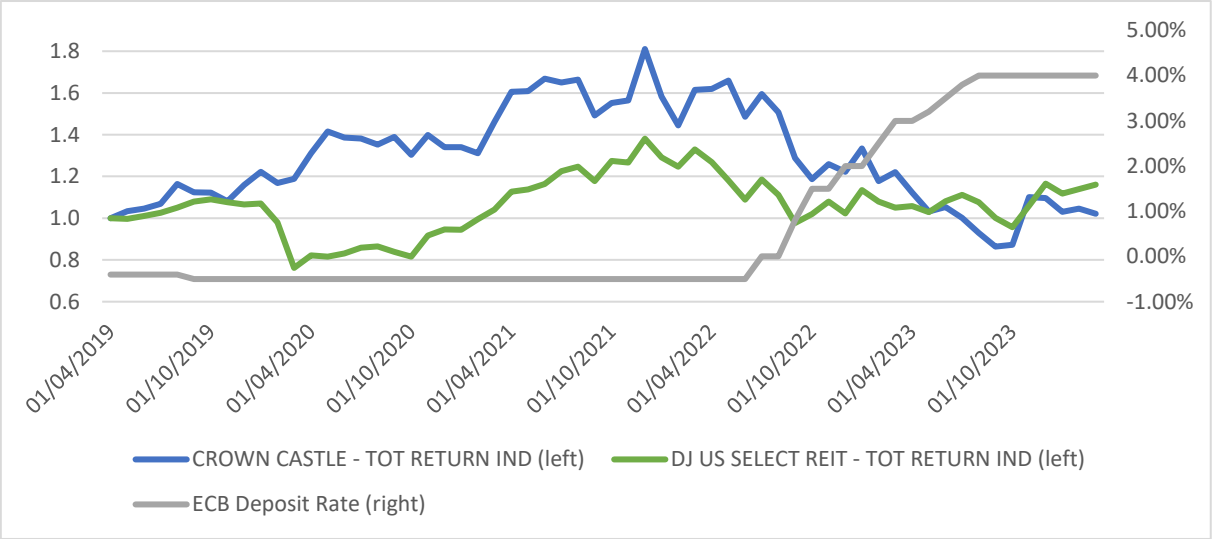


Figure 4: CCI TRI, DJ U.S. Select REIT TRI and ECB Deposit Facility rate in the last 5 years as of April, 2024 (monthly data), (source: Refinitiv)

CCI's above industry average performance in the beginning of the last five years vaporized and aligned more closely with the REIT index towards the end of the period. In the last couple of months, the broader industry experienced a slight increase from its lows, however Crown Castle is lagging behind.

3.3 Business model

By leasing space on its towers, rooftops, small cells, and utilizing its fiber network, CCI provides a platform for tenants to deploy their networks efficiently and cost-effectively, which in turn generates long-term recurring revenue streams for the company. The lease contracts usually also provide inflation protection with annual rent escalators. This business model supports the expansion of wireless communication and broadband services, making CCI

infrastructure a pivotal player in enabling connectivity and technological advancements in the U.S. communications landscape.

Geographically, CCI strategically positions its towers across the 50 (56%) and 100 (71%) largest U.S. basic trading areas (BTAs), which are significant market zones based on economic activity, ensuring coverage in key locations. This distribution demonstrates CCI's focus on maintaining a strong presence in areas with high demand for telecommunications services.

The core customer base is formed by leading U.S. wireless carriers: T-Mobile, AT&T, and Verizon. Together, they accounted for approximately three-quarter of CCI's total site rental revenues in 2023 (Figure 5). Site rental revenues constituted 94% of CCI's consolidated net revenues in the same year, predominantly from leasing infrastructure, specifically 67% derived from the Towers segment and 33% from the Fiber segment. Within the Fiber segment, 67% and 33% related to fiber solutions and small cells, respectively. The vast majority of these revenues are recurring and derived from long-term tenant contracts. As of December 31, 2023, exclusive of renewals exercisable at the tenants' option, the tenant contracts had a weighted-average remaining life of approximately 6 years and represented $39 billion of expected future cash inflows.

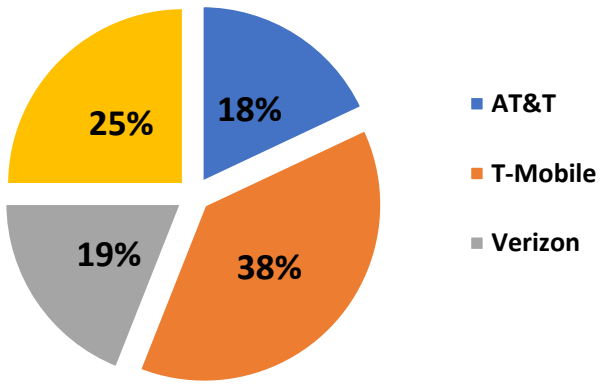


Figure 5: Site Rental Revenues by Tenant as of 2023 (source:SP Capital IQ)

CCI employs a mixed ownership model for its tower sites, incorporating both owned and leased or managed land. CCI try to optimize flexibility and market responsiveness, by balancing of its tower rental gross margin, with 40% coming from owned land and 60% from leased or managed land, with contracts averaging 35 years. Its strategic presence in major U.S. metropolitan areas, especially with fiber assets in public rights-of-way, underscores this adaptability. Owning land bolsters site control and may cut operational costs, while leasing enables rapid expansion and market opportunity capture.

CCI's operational strategy aims at enhancing site rental gross margins and shareholder value through diligent capital investments and efficient cash flow management. Newly deployed investments focus on expanding communications infrastructure and asset base, in anticipation of a surging demand for wireless services. While as a REIT, CCI is committed to distributing substantial dividends, adhering to the requirement of disbursing at least 90% of taxable income to shareholders.

3.4. Industry Outlook

The U.S. tower REIT market is characterized by a high level of competition and consolidation, with a few key players dominating the landscape and holding a substantial portion of the market. Major companies beyond CCI in this sector include American Tower Corporation and SBA Communications Corporation. These firms are strategically expanding their customer base and enhancing their service offerings through partnerships and acquisitions of smaller telecom tower startups, which contributes to the moderately high market concentration (Mordor Intelligence, 2023).

American Tower and SBA Communications are notable for their strategic acquisitions and partnerships, which have allowed them to maintain significant market shares and extend their service capabilities across the U.S..

While CCI announced a pivotal collaboration in January 2022 with T-Mobile US. This 12-year agreement allows T-Mobile enhanced access to Crown Castle's extensive network of towers and small cell sites, which is crucial for the expansion of T-Mobile's national 5G network. This deal also supports CCI in securing long-term revenue growth from its investments in small cells and tower infrastructures (Mordor Intelligence, 2023).

The telecommunications industry in the United States is destined for significant transformation, largely driven by rapid technological advancements and strategic market shifts. According to Market Line Industry Report (2023) the market value of U.S. wireless telecommunication services projected to grow at a compound annual growth rate (CAGR) of 3.6% in the period between 2022 and 2027. As mentioned in the previous sections the performance of Telecom Tower REITS are largely dependent on the prospect of the wireless telecommunication industry and the major wireless carriers. However, there are industry reports specific to the telecom towers market that projects a growth from USD 28.48 billion in 2024 to USD 40.90 billion by 2028, at a CAGR of 6.98% (Technavio, 2023). While there are no available specific market

report on the fiber industry, according to SCF market forecast report (2023) the number of small cells deployed is expected to grow by a CAGR of 6.66% in the U.S. between 2024 and 2028.

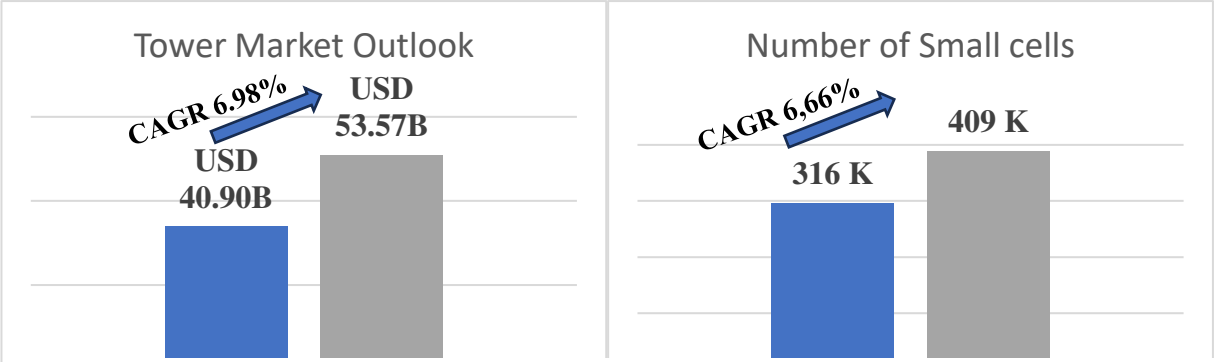


Figure 6: Telecom Tower Market Analysis and Projected Number of Small Cells in North America (source: Technavio, 2023, SCF market forecast report (2023)

Demand for towers is driven by huge macro trends such as population growth (increasing data usage), technological innovation in particular the shift from 4G to 5G (and eventually to 6G). The rise of data-heavy applications like social media, streaming, e-commerce, AI, cryptocurrency, and video conferencing also expands the need for more towers to boost network capacity.

As telecom companies increase adoption of tower-sharing practices and outsource maintenance and operations, -which has become particularly relevant as companies seek to expand their networks while minimizing capital and operational expenditures- demand for tower infrastructure is driven further (Mordor Intelligence, 2024).

The implementation of 5G technology is an important growth driver, which necessitates a denser infrastructure network, an increased number of cell towers and small cells to support enhanced coverage and higher data speeds. In response this demand for 5G, major U.S. telecom companies were expanding their operational footprints aggressively in the last few years. (Mordor Intelligence, 2023). However, as the 5G rollout matures, the pace of infrastructure expansion is slowing, and major U.S. telecom companies are now reducing their capital expenditures on 5G networks, reflecting a shift from rapid deployment to ongoing maintenance and optimization. This deceleration suggests that while 5G remains a critical driver, its growth impact will moderate as the market transitions from expansion to stabilization (Dell'Oro Group, 2024).

The broadband landscape in the U.S. is also rapidly evolving. Consumers now have access to a diverse range of services from terrestrial wireline and wireless to space-based networks. This

expansion is particularly impactful in historically underserved areas, which are now experiencing enhanced connectivity options due to increased government funding (Deloitte, 2024).

However, the environmental impact of expanding telecom infrastructures, such as radiation from towers, remains a concern. These issues represent significant challenges that the industry must address to maintain its sustainable growth and public trust. While the telecom sector's response to the COVID-19 pandemic—marked by a surge in demand for internet services due to increased remote working—highlights the sector's critical role in modern economies and its capacity to adapt to rapidly changing consumer demands.

In conclusion, the U.S. telecom towers market is at a pivotal stage, characterized by a maturation in 5G deployment, strategic corporate actions, and ongoing investments in technology and infrastructure. As the market transitions from rapid expansion to a more stable growth phase, the industry must address challenges such as customer consolidation, competitive pressures, and regulatory hurdles. Successfully navigating these factors will be essential to capitalizing on emerging opportunities and advancing the next generation of telecommunications services.

4. Company analysis

In the following sections Crown Castle is analysed both strategically (utilizin the PESTEL and SWOT analysis), as well as financially/operationally.

4.1 Strategic analysis

4.1.1 PESTEL Analysis

Political

Crown Castle's operations depend significantly on the regulations set by federal, state, and local governments, especially concerning **zoning and land use** for tower and other infrastructure placements. The regulatory environments that impact tenant operations also affect Crown Castle. Regulations that favour the deployment of new technologies or liberalize the use of existing infrastructures can enhance tenant demand, whereas stringent regulations might restrict how tenants deploy their networks, impacting their need for CCI's infrastructure.

Policy changes including **tax regulations** or **trade policies** could also heavily affect CCI's financial performance and operations.

Economic

As a capital-intensive business, Crown Castle is sensitive to changes in **interest rates**, which affect financing costs and capital structure. An increase in interest rates can lead to higher borrowing costs, potentially slowing down expansion projects and increasing the cost of debt. Conversely, lower interest rates can facilitate cheaper access to capital, encouraging more aggressive development and acquisition strategies. Furthermore, their ability to grow revenues is directly impacted by the **economic cycles** and tied to the telecom industry's economic health. In times of economic prosperity, telecom companies are more likely to invest in expanding and upgrading their networks, which directly benefits CCI through increased demand for its services. Uncertainties or downturns however can reduce tenant spending on infrastructure, affecting CCI's growth. **Inflation** could also heavily affect their business by the higher inflation rates causing elevated costs for construction and maintenance of towers and fiber networks. Additionally, inflation can potentially lead to reduced consumer spending on telecom services, indirectly affecting Crown Castle.

Social

Cities becoming more densely populated require robust telecommunications infrastructure to support the high volume of data traffic. Increasing **urbanization** as well as the **generational shift in consumer base** to a younger more tech-savvy group can drive demand for mobile and broadband services and boost the need for more infrastructure, benefiting Crown Castle. Moreover, the shifts in work and lifestyle habits, such as the rise in remote working can potentially change where and how telecom infrastructure is most needed, and possibly increase demand in residential rather than traditional business districts.

While the need for infrastructure grows, **public opposition** remains a critical challenge. Aesthetic concerns, perceived **health risks**, and property value impacts associated with telecom towers can lead to community resistance. Increasing awareness and concern about health issues, fears about electromagnetic radiation can influence public acceptance of telecommunications infrastructure. These local oppositions can result in significant delays, increased project costs, and even the cancellation of planned infrastructure projects. Managing public relations, ensuring compliance with health standards, and engaging in transparent communication are essential elements for mitigating these risks and facilitating smoother project execution.

Furthermore, social concerns about **digital dividing**, - the inequalities in access to telecommunications and technology - also grows. CCI can potentially face pressure from public and governmental bodies to contribute to bridging this divide, particularly in under-served rural and low-income urban areas.

Technological

As mentioned in previous sections, the techlogical evolution such as the transition from 5G and eventually 6G technology is a significant driver of infrastructure development presenting opportunities for growth in the log-term. As telecom operators aim to offer faster and more reliable service, the demand for new and upgraded infrastructure, including towers and fiber networks, intensified. While technological advancements that enhance network efficiency or developments in satellite internet technology can introduce **alternative transmission methods**, that could potentially bypass the need for traditional leased infrastructure like ground-based fiber and towers. Technological innovations in the fiber segment such as enhanced spectral efficiency or the introduction of new materials that improve signal fidelity or enable greater data compression or smarter routing technologies could also diminish the volume of physical infrastructure needed. The risk of current technologies becoming obsolete due to new innovations is a significant and could potentially reduce the demand for CCI's services.

Furthermore, cybersecurity becomes a critical and real concern for protecting data and infrastructure, as operations increasingly rely on digital solutions. The integrity and security of telecommunications infrastructure are critical, not only for the operations of CCI but also for national security reasons. Ensuring robust cybersecurity measures is essential to protect against data breaches, and other cyber threats.

Environmental

Environmental regulations regarding CO_2 emissions and **climate change** could affect how infrastructure is built and maintained. The telecommunications industry is energy-intensive, and there is increasing pressure to reduce carbon footprints. Furthermore, the issue of public opposition could emerge due to environmental concerns about the ecological impact of constructing infrastructure in sensitive areas, in addition to the above-mentioned health related risks.

The physical assets of Crown Castle are highly vulnerable to damage from **natural disasters**, like hurricanes, floods, and earthquakes, impacting service continuity and repair costs.

Therefore, it is necessary for Crown Castle to be prepared, insured and build resilient infrastructure design to ensure continuity of service and reduce potential downtime and recovery costs.

The expansion into fiber and the ongoing construction projects bring environmental scrutiny regarding the impact of these activities on public lands and rights-of-way. The disturbance of natural habitats, potential pollution, and other environmental impacts from digging and construction activities need careful management, and involves securing appropriate permits, conducting environmental assessments, and engaging in restoration activities post-construction.

Legal

The telecommunications sector is heavily regulated, and it is essential for Crown Castle to comply with local, state, and federal laws, especially those that are related to telecommunications services, data security, and infrastructure development, as well as building codes, zoning laws, and environmental regulations. Non-compliance can lead to legal disputes, fines, delays in projects, affecting overall operational efficiency and reputation.

CCI is vulnerable for potential legal challenges related to property disputes, contract disagreements, or regulatory compliance issues. Issues could arise from rights of land use, easements, or lease agreements with landowners. Contract disputes could also lead to litigation, straining resources, and potentially damaging business relationships. There are also inherent risks with construction projects, including labour, and safety, where non-compliance to contractual obligations could result in penalties.

4.1.2. SWOT Analysis

Strengths	**Weaknesses**
• Established Infrastructure • Long-term contracts • Recurring Revenue	• High Leverage • Tenant Concentration • Increased Competition
Opportunities	**Threats**
• Growth in 5G and Mobil Data • Strategic Acquisitions • Strategic Partnerships	• Regulatory Changes • Technological Advancements • Economic Downturns

Table 2: SWOT analysis (Source: Own analysis)

These attributes of Crown Castle were largely discussed in the PESTEL analysis as well, therefore the comprehensive SWOT analysis is included in Appendix 1: SWOT Analysis. The business of CCI involves several other risks as well, regarding their expansion in the fiber segment, volatility in demand, health concerns related to RF emission, climate vulnerability, risks related to the restructuring plan and some other issues. However, due to the limited space, these are reported in Appendix 2: Other risks.

4.2. Financial and Operational Analysis

In the following chapter Crown Castle's historical financial and operational data are analysed, utilizing the findings of the strategic analysis to illustrate the trends and identify effects on the company's historical performance.

4.2.1. Historical Financials by Segments

4.2.1.1 Towers

Figure 7 represents the historical performance of the towers segment. Crown Castle was able to increase its revenues and operating profit in the last five years except last year where revenues from services and other sources decreased significantly while management were able to cut back on the cost of operations (exclusive of depreciation, amortization and accretion, which are shown separately in the Other cost section, not directly assigned to each business segment), resulting an increased operating profit margin in 2023 as well. This fundamental change in the constituents of the operating profit in 2023 was due the previously mentioned restructuring plan that took off in July 2023, when CCI discontinued offering tenant equipment installations and augmentations as part of its Towers services (while other services and other offerings are of a variable nature as the cash flows are not under long-term tenant contracts). This Plan aims at lowering costs and reducing employee headcount by 15%.

In 2023 revenue increases under contractual cash escalators were substantially offset by a decline in the associated straight-line accounting adjustment. The decrease in operating profit was also due to higher Towers site rental costs of operations, including ground lease agreements that contain contingent payment provisions such as CPI-based escalations.

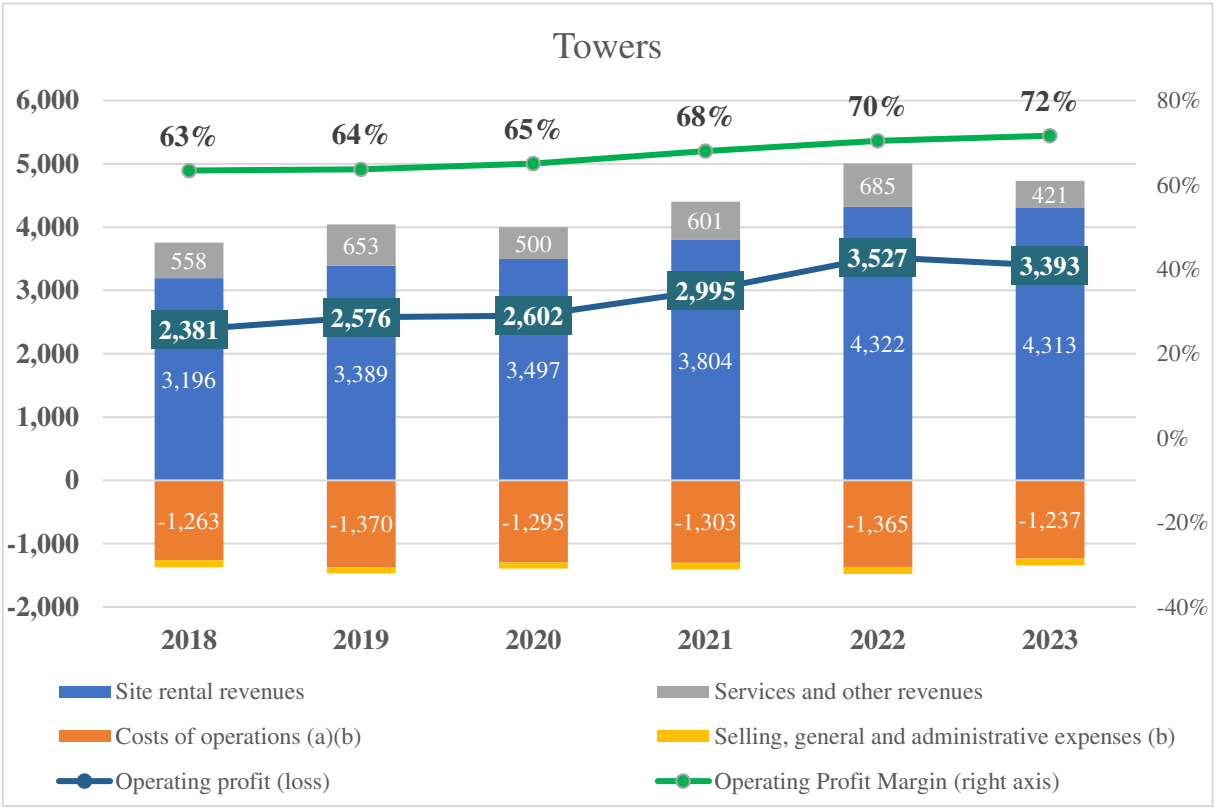


Figure 7:Tower segment historical financials

(Source: CCI 10-K filing (2024) Notes: (a) Costs of operations for the year ended December 31, 2023 excludes (1) stock-based compensation expense, net of $ 29 million and (2) prepaid lease purchase price adjustments of $16 million.)

4.2.1.2. Fiber segment

The focus on the Fiber segment is starting to crystalize in the financials as revenues increased with almost 13% compared to 2.7% increase in 2022, while simultaneously CCI achieved a 3-percentage point increase in their operating margin in this segment. The outlier operating margin in 2020 is caused by the non-recurring increase in other operating income. This is due to, T-Mobile cancelling approximately 5,700 small cell nodes that were initially contracted with Sprint prior to its merger with T-Mobile. These small cells mostly were not yet constructed and would have been located at the same locations as other T-Mobile small cells. The cancellation resulted in T-Mobile accelerating payment of all contractual rental obligations associated with the approximately 5,700 small cells as well as the payment of capital costs incurred to date amounting around $308 million. Additionally, CCI recognized $54 million from the unamortized upfront payments previously recorded as "Deferred revenues" and "Other long-term liabilities" as "Other operating income" on its 2020 consolidated statement.

Fiber site rental revenues and Fiber site rental gross margin for 2023 were $2.2 billion and $1.5 billion, and increased by $252 million and $216 million, respectively, from 2022. Both Fiber site rental revenues and Fiber site rental gross margin were predominately impacted by $170 million of payments and $59 million of accelerated prepaid rent amortization, offset by $21 million of non-renewals, each related to the Sprint Cancellations. Fiber services and other gross margin was $16 million for 2023 and increased by $13 million from $3 million from 2022 primarily as a result of site abandonment fees associated with the Sprint Cancellations.

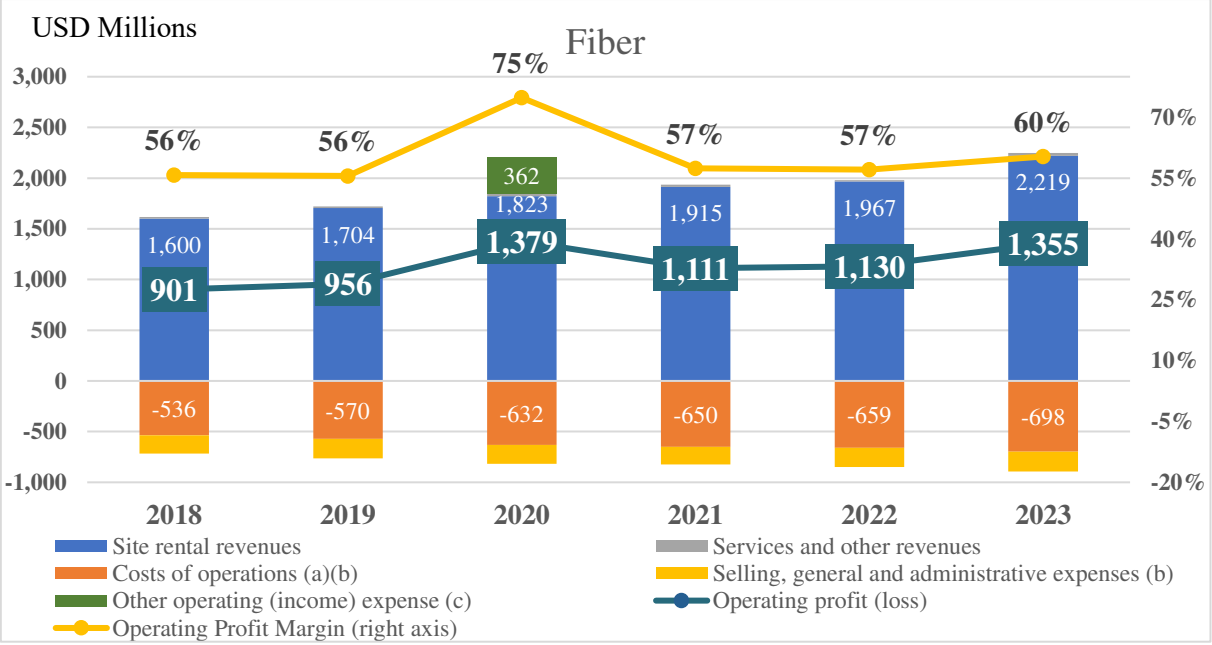


Figure 8: Fiber segment historical financials

Source: CCI 10-K filing (2024) Notes: (a) Costs of operations for the year ended December 31, 2023 excludes (1) stock-based compensation expense, net of $ 29 million and (2) prepaid lease purchase price adjustments of $16 million.

4.2.1.3 Total with Other costs

Appendix 3: Total Historical Financials and Forecast of AFFO shows the total AFFO and its constituents for several prior years as well as a detailed forecast (assumptions are noted below the table in the Appendix). Including other costs that represents amounts excluded from specific segments and reconciles segment operating profit to total income before income taxes.

In 2023 the restructuring charges were majorly due to cash payments for employee severance and other one-time termination benefits, along with some charges related to remaining obligations under facility leases, non-cash charges for accelerated depreciation linked to office

space consolidation, and additional non-cash charges related to share-based compensation. According to CCI 10-K filing (2024) the actions and charges regarding the Plan are expected to be mostly completed by June 2024, with associated payments for employee reductions and office space consolidation finishing in 2024 and 2032, respectively.

Regarding the other charges, Depreciation, amortization (D&A) increased regularly year over year due to network expansions. D&A was $1.75 billion in 2023 and increased by 3% from 2022 explained by a corresponding increase in gross property and equipment due to Capex. Interest expense and amortization of deferred financing costs, increased by 22%, from 2022, predominately resulted from an increase in interest rates on variable rate debts, as well as an increase in outstanding indebtedness due to the financing of discretionary Capex. CCI also suffered losses on retirement of long-term obligations, in conjunction with its refinancing activities in 2022, while they did not incur such losses in 2023.

The provisions for income taxes for 2023 and 2022 were $26 million and $16 million, respectively. For both 2023 and 2022, the effective tax rate differs from the federal statutory rate predominately due to the REIT status, including the dividends paid deduction.

Overall, in 2023 the net income fell by 9.64% to $1.53 Billion compared to $1.69 Billion 2022, primarily due to the above-mentioned decrease in Towers operating profit and elevated expenses including interest, amortization of deferred financing costs, restructuring charges and depreciation, while being partially mitigated by the increase in Fiber operating profit.

4.2.1. Investments, Capital Structure and Liquidity

During the last five years (2019-2023) Crown Castle's Total Asset have stagnated around $38.5 billion. Their Towers assets decreased yearly by 1% on average, while Fiber assets increased around 1.5% yearly (CAGR) in the same period. Capital expenditures in the Fiber segment dipped in 2021 but has risen again in the last two years and in 2023 the company spent more than 6 times the amount they deployed in their Towers segment. However, investments in the Towers business have gradually declined over the past five years by an average of 23% per year (CAGR).

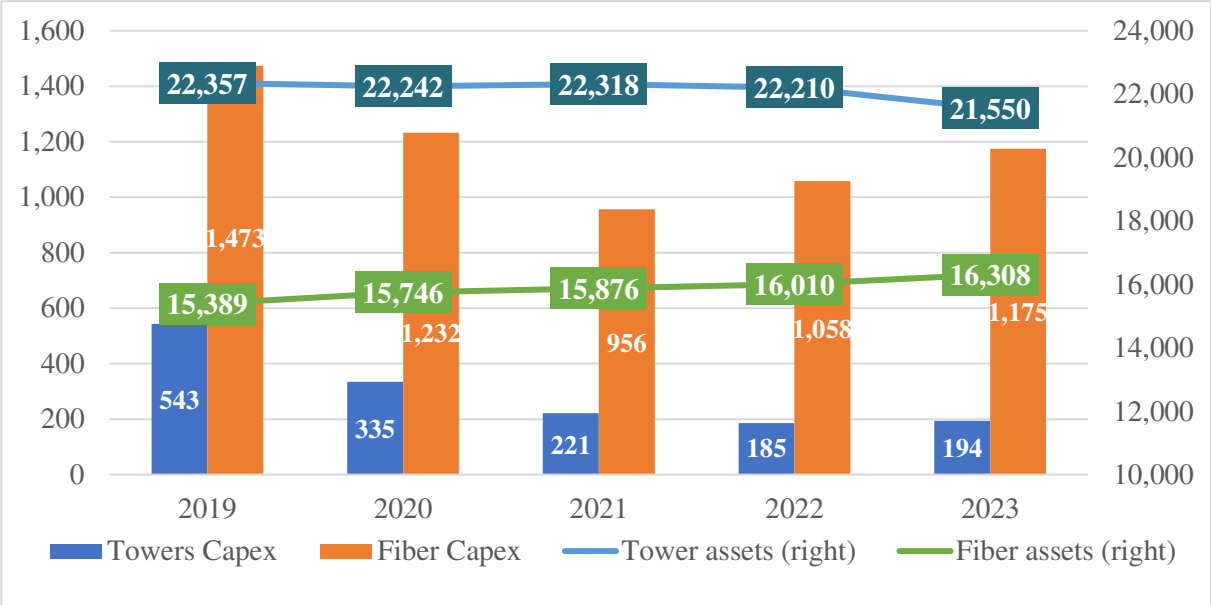


Figure 9: Investing activities and CCI's asset base over time.
Source: (SP Capital IQ, CCI 10-K filing (2024))

CCI's capital structure is designed to optimize its weighted-average cost of capital and thereby drive shareholder value over the long term. The company maintains a leverage target of approximately five times Adjusted EBITDA. Total debt and other obligations' calculated market value were at $25.3 billion, and with a market capitalization of $45.9 billion the D/E ratio stands at 0.55 as of the cut-off date. This substantial debt level is managed through a mix of short-term and long-term instruments, including commercial paper and senior notes, ensuring flexibility and access to capital markets. (See Appendix 4: Detailed Capital Structure)

This high level of indebtedness increases vulnerability to economic conditions. CCI faces market risks from interest rate fluctuations, which can impact the cost of existing debt and potential refinancing of fixed rate debt, as mentioned in the PESTEL analysis. While the company actively tries to manage this risk by maintaining a mix of fixed (92%) and floating rate (8%) debts, they will face the challenge of refinancing (with potentially high interest rate environment), particularly due to ~51% of its fixed-rate debt is maturing within the next five years. CCI also has a notable balance of operating leases as part of their liabilities related to the leasing of land where its towers are located. (See Appendix 4: Detailed Capital Structure)

(USD millions)	2024	2025	2026	2027	2028	Thereafter	Total
Fixed rate debt	**791**	**539**	**2,686**	**2,282**	**2,628**	**12,334**	**21,260**
Average interest rate	3.30%	1.60%	3.00%	3.50%	4.50%	3.60%	3.60%
Variable rate debt	**45**	**60**	**91**	**1,636**	**$—**	**$—**	**1,832**
Average interest rate	5.90%	4.70%	4.40%	4.50%	—%	—%	4.50%
Debt and other long-term obligations	**835**	**599**	**2,777**	**3,918**	**2,628**	**12,335**	**23,092**
Interest payments on debt and other long-term obligations	873	850	815	705	581	5,642	9,466
Lease obligations	570	557	548	542	540	5,472	8,229
Total material cash requirements	**2,278**	**2,006**	**4,140**	**5,165**	**3,749**	**23,449**	**40,787**

Table 3: Future Principal, Interest and Lease Obligations.

(Source: CCI 10-K filing (2024) Note: The projection of lease obligation assumes that payments for certain renewal periods exercisable at CCI's option that are reasonably certain to be exercised)

The higher leverage can also limit flexibility in operational and strategic decision-making. The terms of CCI's debt instruments impose further restrictions, limiting the ability to incur additional indebtedness, pay dividends, and undertake certain investments or transactions that might be otherwise advantageous. This could hinder their ability to adapt to market conditions or seize strategic opportunities promptly.

Regarding its liquidity, as of December 31, 2023, Crown Castle reported having $281 million in cash and cash equivalents. Further availability under its 2016 Revolving Credit Facility (Revolver) stands at $6.291 billion, providing substantial liquidity to meet operational and strategic investment needs, and an ability to handle upcoming debt maturities without undue strain. The upcoming year's liquidity uses are expected to exceed cash flows from operations, yet the company is well-positioned to cover these uses through its existing liquidity sources.

The company's ability to service its debt while complying with REIT distribution requirements presents another layer of complexity. The requirement to distribute at least 90% of its taxable income to shareholders can constrain available cash for other uses, including debt service. However, since this requirement pertains to taxable income rather than cash flow, the company still retains flexibility in managing its finances. Non-compliance with these requirements due to financial strain could jeopardize CCI's REIT status, leading to adverse tax consequences and potentially impacting its stock value.

5. Valuation

In this analysis three valuation model were utilized, the NAV, the DDGM and the P/AFFO. NAV approach is applied to assess the value and provide a clear picture of the worth of CCI's tangible assets, as this method is particularly useful for REITs, where asset values play a crucial role in determining overall company value.

DDGM are utilized to capture the intrinsic value generated for shareholders, focusing on the future dividend payments, the primary source of income for REIT investors. Unlike the DCF method, which may overstate value by assuming investors receive future AFFOs immediately, the DDGM recognizes that shareholders directly benefit from the dividends when distributed, while a portion of cash flows is reinvested for growth. As mentioned in section 2.2.1., although REITs must distribute 90% of their taxable income, this is based on net income, which is typically lower than AFFO due to depreciation. This allows REITs to reinvest more than 10% of their AFFO while still fulfilling their distribution requirements, making DCF of AFFO a less suitable approach.

While the P/AFFO relative valuation method serves as a safety net if the intrinsic valuations' assumptions are deteriorated from reality and offering a market-based perspective to cross-check the intrinsic valuations. The following sections detail the 1-year target share prices derived from these applied valuation approaches.

5.1 NAV approach

To calculate the target share price with the NAV model, firstly the property segments need to be separated by sector and location, this is due to the application of different cap rates for each property segments as discussed in Section 2.1. Crown Castle operates exclusively in the U.S. market, and their two business segments (Towers and Fiber) are closely related, therefore these segments are not separated in the analysis.

As the first step, the NOI for 2023 was calculated by subtracting all attributable operating expenses from the recurring rental and other income generated by the portfolio of properties. Then an expected growth rate in NOI was established by taking the average of the market growth rate estimate and the weighted average historical growth. The market growth estimate was calculated as a weighted average of the two business segment expectations (6.98% for telecom tower market and 6.66% for the fiber market) using the separated segments NOI for 2023 as weights, while the historical growth rate was calculated by allocating higher weights

to recent years. The weights for the historical growth of NOI were assigned based on the fact that the recent stagnation in NOI I is due to several persistent factors that are likely to continue impacting Crown Castle's performance:

(a) T-Mobile-Sprint Cancellation and Risks of Potential Future Consolidations: The termination of leases due to the T-Mobile-Sprint merger, along with the risk of further customer consolidation is reducing demand and may lead to more cancellations or unfavourable lease renewals.

(b) 5G Rollout Maturation: The pace of new infrastructure deployments is slowing, reducing growth opportunities in the near term.

(c) Increased Competition and Market Maturity: Weakened CCI's position in contract renegotiations. This reduced pricing power may negatively impact future growth.

(d) Inflationary Pressures in the Current Market: Higher operating costs for CCI, including labour and materials, which could constrain NOI growth if these costs cannot be fully passed on to customers.

These aspects indicate to heavily overweight the recent development in NOI compared to previous growth rates, when forecasting until Q2 of 2025.

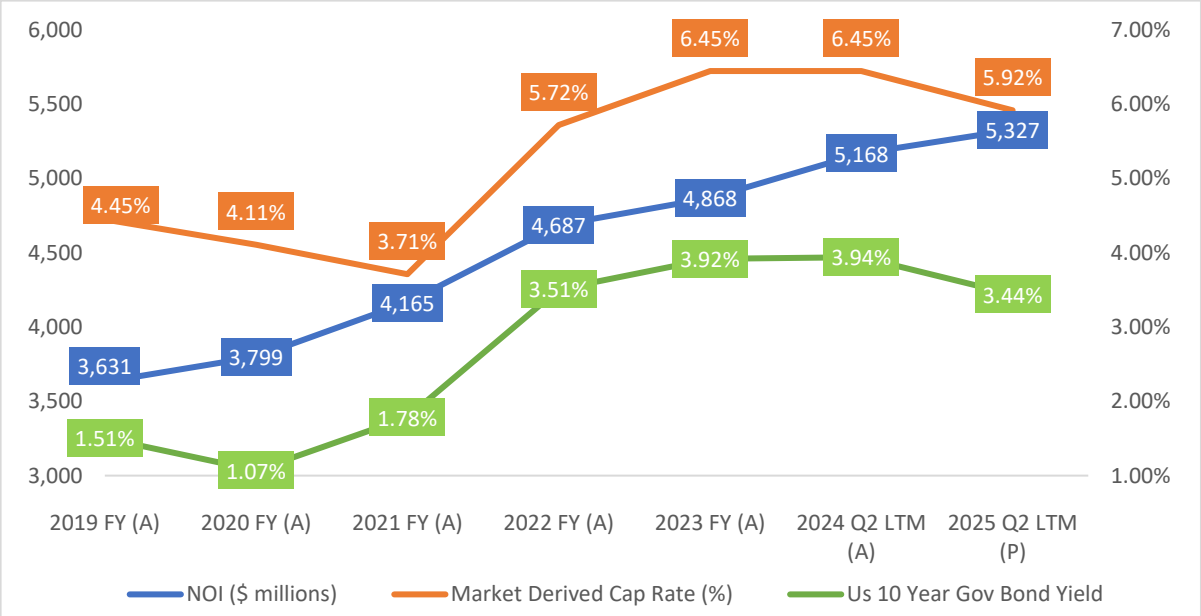


Figure 10 Future Historical NOI ($ millions) and market derived capitalization rate (%). Source: CCI 10-K filing (2024), SP Capital IQ, https://www.worldgovernmentbonds.com/bond-forecast/united-states/10-years/ [Accessed: 011/08/2024].

The historical projected levels of NOI and the market derived capitalization rate (%) along with the U.S. 10-year government bond yield are presented in Figure 10. While the detailed elements of the historical NOI and weighted average historical growth are to be found in Appendix 5: Historical NOI

The spread between the U.S. 10-year yield and the projected capitalization rate in Q2 2025 is in line with the historical average of around 2.5%. The capitalization rate used for the model is calculated as an average of cap rates from two different sources. One of the cap rates is derived from a more general category, the industrial commercial property segment cap rate was utilized, while also the Market derived cap rate for the whole business (SP Capital IQ) was considered. With the NAV approach significantly depending on the assumed cap rate this unreliable estimate can deteriorate the outcome of this valuation method. Therefore, conducting a sensitivity analysis was appropriate, stress testing the two crucial assumptions, the used cap rate and next year's growth in NOI in Table 5.

The property value was calculated by dividing the expected NOI for 2025 Q2 LTM by the assumed cap rate, but to arrive at the NAV further adjustment was needed, adding 1,134 USD millions of Development assets, 2,442 USD millions of the Value of Land and subtracting the Market Value of Debt (calculated using the market value of each security as of the valuation date, sourced from SP Capital IQ, See: Appendix 4: Detailed Capital Structure) amounted of 27,323 USD millions (these values are presumed to be the same next year as the most correct assumption). The calculation resulted an NAV of 66,269 USD millions, or 152.69 USD per share. Other adjustments mentioned by Block, R.L. (2011) were not applicable for Crown Castle.

NAV Valuation	
(USD millions)	
NOI 2023	**4,868**
B.) Market growth rate estimate	6.93%
C.) Weighted average historical growth rate	5.38%
Growth (A+B)/2	**6.16%**
NOI (2025 Q2 LTM)	**5,327**
C.) Cap Rate for industrials (Statista estimate)	5.39%
D.) Market Derived Cap Rate (SP Capital IQ)	6.45%
Cap Rate ((C+D)/2)	**5.92%**
(+) Propert Value (NOI/Cap Rate)	**90,016**
(+) Developement asset	**1,134**
(+) Value of Land	**2,442**
(-) Market Value of Debt	**27,323**
NAV	**66,269**

# of shares (weighted average, diluted)	434
NAV per share (USD)	**152.69**

Table 4: NAV valuation (Source: Own Calculation)

Sensitivity analysis NAV per share								
		Next Year's Growth Rate						
(USD)		3.16%	4.16%	5.16%	6.16%	7.16%	8.16%	9.16%
Cap Rate	5.17%	172.73	176.06	179.42	182.80	186.20	189.62	193.06
	5.42%	162.23	165.41	168.61	171.84	175.08	178.34	181.63
	5.67%	152.66	155.70	158.76	161.84	164.94	168.06	171.20
	5.92%	143.90	146.81	149.74	**152.69**	155.66	158.65	161.66
	6.17%	135.85	138.64	141.46	144.29	147.14	150.00	152.89
	6.42%	128.42	131.11	133.81	136.53	139.27	142.03	144.80
	6.67%	121.56	124.14	126.74	129.36	132.00	134.65	137.32

Table 5: NAV per share sensitivity analysis (Source: Own Calculation)

As described in chapter 2.1.1. certain factors would imply a premium or discount on NAV, such as management quality, balance sheet strengths and strategic factors. The deeper analysis in section 4 of these aspects would suggest a slight premium for management quality due to historical performance and potential upsides from strategic factors, while there are also substantial risks which could potentially disturb the business (i.e: High Leverage, Tenant Concentration, Increased Competition, Regulatory Changes, Technological Advancements, Economic Downturns). Therefore, no premium or discount was applied to the NAV per share value.

As noted in section 2.1.1., the NAV approach reduces uncontrolled optimism in unsustainable FFO growth and prevents overvaluation of REITs that boost AFFO through excessive debt. Therefore, it complements P/AFFO and cash flow-based methods like the DDGM by addressing the potential distortions caused by excessive debt and unsustainable FFO growth. On the other hand, the NAV model also has its limitations as already detailed in previous chapters, for instance small inaccuracies in cap rates can lead to significant deviations from reality.

5.2. DDGM

The two-stage DDGM model was also used to determine the 1-year target price. Crown Castle already paid out 3.13 USD/share in dividends in 2024, assuming the absolute quarterly

dividends will not change during the financial year the same amount, 1.565 USD/share of dividend was extrapolated for Q3 and Q4 of 2024. Then the dividend in Q4 was used as the base of the forecast of the quarterly dividend payments, while relying on certain other assumptions, such as the growth phase and length of the explicit and terminal period, and a discount rate to calculate the present values (1-year forward looking) of the expected dividend payments.

The explicit period was constructed to be 4.5 years, to be in line with the available industry expansion data and the assumed duration of the effect of CCI's slight change in business focus (focusing more on the fiber segment). The assumptions for the two-phase growth rates as well as the discount rate are presented in Table 6.

GROWTH RATES	
Long-term dividend growth rate (Projected U.S. annual inflation rate)	**2.10%**
A.) Weigthed Average Historical Dividend growth	2.88%
Expected CAGR of telecom tower market (65%)	6.98%
Expected CAGR of fiber market (35%)	6.66%
B.) Expected CAGR of the Business	6.87%
Explicit period growth rate ((A+B)/2	**4.87%**
DISCOUNT RATE	
C.) Cost of Equity	7.93%
D.) Dividend Yield + Expected Growth	8.96%
Discount rate ((C+D)/2)	**8.45%**

Table 6: Growth rates and Discount rate estimation for DDGM (Source: Own Calculation)

For the explicit period the growth rate was derived from the weighted average historical dividend growth (overweighing recent years similarly as in NAV valuation) and an expected CAGR of the business. The expected business CAGR is the weighted average of the industry estimates using the expected fraction of future revenues in each business segment as weights (65% for Towers, and 35% for small cells). However, the quarterly dividends are assumed to be flat going through 2025, due to the same factors mentioned in NAV valuation about the recent development and current conditions.

While the long-term dividend growth rate from 2029 onwards is assumed to be in line with the long-term U.S. inflation forecast as a stable growth rate into perpetuity. This is due to the inflation-linked escalators in its long-term contracts and the presumable transitions to a more stable phase, its dividend growth is expected to primarily reflect inflation adjustments rather than significant expansion. The discount rate used to calculate the present value of the dividends (1-year from now) was determined as an average of CCI's cost of equity and the dividend yield

+ expected growth (in line with the suggestion of Damodaran, A. (2012)). The calculation of the cost of equity was based on the CAPM and detailed in Appendix 6: Cost Of Equity Derivation.

These assumptions were then applied in the DDGM model (presented in Table 7), where the forecasted quarterly dividend payments starting from Q2 2025 were discounted back to their present value, as of one year after the cut-off date, to determine the target price.

DDGM Model	24 Q2 (A)	24 Q3	24 Q4	25 Q1	25 Q2	25 Q3	25 Q4	26 Q1	…	28 Q3	28 Q4	Terminal period
Period					0.00	0.25	0.50	0.75	…	3.25	3.50	8.37
Expected Dividend per Share	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.64	…	1.81	1.81	
Discount factor					*1.00*	*0.98*	*0.96*	*0.94*	*…*	*0.77*	*0.75*	
PV in 1-year					1.57	1.53	1.50	1.54	…	1.39	1.36	

Sum of Explicit period	20.00
Terminal period	89.82
1-Year Target Price	**111.82**

Table 7: DDGM model, and target share price (Source: Own calculation)

Sensitivity analysis								
1-year Target Price								
	Explicit period growth rate	3.37%	3.87%	4.37%	4.87%	5.37%	5.87%	6.37%
	Long-term growth rate	3.25%	3.50%	3.75%	2.10%	4.25%	4.50%	4.75%
Discount Rate	7.70%	104.07	110.47	117.90	126.62	137.02	149.66	165.33
	7.95%	100.54	106.46	113.29	121.26	130.69	142.04	155.96
	8.20%	97.24	102.74	109.04	116.34	124.93	135.17	147.60
	8.45%	94.16	99.27	105.09	111.82	119.66	128.94	140.11
	8.70%	91.27	96.03	101.43	107.63	114.83	123.28	133.35
	8.95%	88.55	92.99	98.02	103.76	110.37	118.09	127.23
	9.20%	85.99	90.15	94.83	100.15	106.26	113.34	121.66

Table 8:: DDGM taget price sensitivity analysis (Source: Own Calculation)

As mentioned in section 2.2.2 income-based valuation methods underscore the importance of forecasting and understanding income streams, but they face challenges and their effectiveness

hinges on the precision of future growth predictions and the selection of discount rates. Therefore, a third approach, the relative valuation with the P/AFFO ratio, with less subjective assumption was also applied.

5.3. P/AFFO

As stated in section 2.3 relative valuation methods offer a perspective on REITs valuation by comparing standardized multiples to those of similar entities. Therefore, to utilize the P/AFFO metric for relative valuation method firstly require a selection of a peer group. The peer group selection process for Crown Castle was involved several screening criteria utilizing SP Capital IQ's company screening platform. The following criteria was set (1) Company Type In Public Company (2) Company Status In Operating (3) Industry Classification In (Primary) Telecom Tower REIT; Data Center REIT. The screening resulted 7 companies (excluding Crown Castle) presented in Appendix 7: Peer Group. Further refinement based on business and geographic focus resulted in 4 peer companies, presented in Table 9.

Name	Industry	TEV	Market Cap	P/ NAV /share	Ebitda margin (FY23)	Revenue 1 year growth	Revenue 5 year CAGR	Dividend Yield	Dividend/ share 5 year CAGR	Debt/ Ebitda (Q2 FY24)
American Tower Corporation	Telecom Tower REIT	151.6	99.5	106.14	63.02	4.04	8.42	3.04	15.41	8.09
SBA Communications Corporation	Telecom Tower REIT	38.4	23.0	69.78	66.70	2.97	7.77	1.83	21.51	9.11
Digital Realty Trust, Inc.	Data Center REIT	69.9	50.9	121.83	44.87	16.44	12.08	3.11	3.85	5.3
Equinix, Inc.	Data Center REIT	92.0	76.2	107.34	41.94	15.34	8.73	2.12	9.70	5.11
Crown Castle Inc.	Telecom Tower REIT	75.1	45.9	82.85	59.23	(0.07)	5.39	5.93	7.90	7.66
Min		38	23	69.8	41.9	-0.1	5.4	1.8	3.9	5.1
Average		88	59	97.6	55.1	7.7	8.5	3.2	9.2	7.5
Median		81	51	106.1	59.2	4.0	8.4	3.0	8.8	7.9
Max		152	100	121.8	66.7	16.4	12.1	5.9	15.4	9.1

Table 9: Peer analysis (Source: SP Capital IQ, Own Calculation)

The selected peer group include two telecom tower REIT and two data center REIT. Although one might assume these industries are similar enough, however it seems data center REITS operate with different margins, lower debt levels and higher growth momentum (1-year). In the

U.S. telecom tower market CCI stands as the second biggest player after American Tower Corporation. but produced the lowest EBITDA margin in FY23 and the weakest revenue growth last year as well as in the last 5 years. While CCI's dividend yield is the highest among peers, they were unable to grow their dividends with the same pace as the other two telecom tower REIT.

In this analysis, the forward-looking P/AFFO metrics were considered, as Goedhart et al. (2005) emphasize their importance due to the empirical evidence showing greater accuracy. As stated in section 2.3.2. FFO and AFFO are non-GAAP measures, leading to inconsistencies and the adjustments made to derive AFFO from FFO can be subjective, affecting comparability (Nareit, 2021). After analysing the derivation of these two metrics, no inconsistencies have been found in the case of the selected REITs, therefore no adjustment were needed to progress further. The stock prices as of valuation date and the forward multiples are presented in Table 10. The differences between the two sectors justified applying distinct weights for the multiples, instead of using a simple average or the median.

Ticker	Company	Stock Price[a]	AFFO/Share (FY25)	P/AFFO (FY25)	Weights
NYSE:AMT	American Tower Corporation	213.12	10.72	19.89	40%
NASDAQGS:SBAC	SBA Communications Corporation	214.22	13.10	16.35	40%
NYSE:DLR	Digital Realty Trust, Inc.	156.83	6.57	23.86	10%
NASDAQGS:EQIX	Equinix, Inc.	803.14	37.66	21.33	10%
NYSE:CCI	Crown Castle Inc.	105.63	6.86	15.40	N/A

Table 10: Forward multiples (Source: SP Capital IQ, Own calculation)

(a) As of the valuation date 17/07/2024

Weighing the multiples produced a decreased figure compared to the average and median P/AFFOs. To arrive at a 1-year target price the AFFO was forecasted to FY25 Q2 LTM using the expected AFFO for FY24 published by CCI, and an assumed growth rate of -5.52%. This growth rate was established by using the weighted average historical growth of AFFO minus the effect of debt refinancing on AFFO (detailed explanation in Appendix 8: AFFO/share growth assumption).

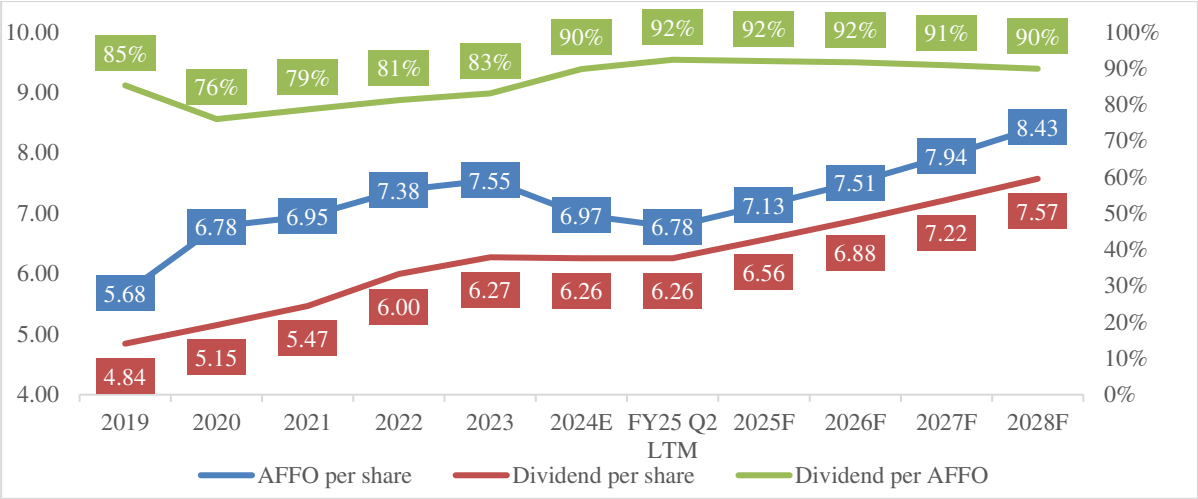


Figure 11: Historical and projected development of AFFO per share compared to Dividend per share (Source: CCI 10-K filing (2024), Own Calculation.)

The result of the relative valuation is presented in Table 11. The relative valuation resulted a 1-year target share price of 128.86 USD per share. However, as mentioned in section 2.3.2 this method also has limitations for instance market conditions and investor sentiment influence these ratios, introducing a speculative element to their valuation (Ling & Archer, 2020). Therefore, it needs to be used together with the previous two method.

Average P/AFFO	**20.36**
Median P/AFFO	**20.61**
Weighted Average P/AFFO	**19.01**
AFFO Expected (FY24)	**6.97**
A.) Histrocial AFFO growth	-4.30%
B.) Effect of Debt Refinancing	-1.22%
AFFO growth 1 year (A-B)/	-5.52%
AFFO Forecast (FY25 Q2 LTM)	**6.78**
Price target FY25 Q2	**128.86**

Table 11: Relative valuation result. (Source: Own Calculation)

5.4 Final Target Price

The final 1-year target price was determined considering the results from all the three valuation methods detailed above.

As discussed in the NAV valuation, this method helps temper overly optimistic projections of FFO growth, particularly when REITs might boost AFFO through excessive debt. NAV acts as an upper limit to prevent overvaluation, offering a more grounded estimate of a REIT's value.

While NAV doesn't directly determine market share price, it becomes especially relevant when other valuation methods suggest a REIT might be overvalued or when a REIT is near liquidation and assets may be sold in the open market, though often at a discount. Therefore, in Crown Castle's case, this method should only be considered with a lower weight of 10%.

There are no specific reason to overweigh the two other methods compared to one another. They are equally completing each other to arrive at a comprehensive valuation, considering all the drawbacks and strengths of each. Therefore, an equal weight of 45% were assigned to the DDGM and P/AFFO methods.

The weightings resulted a final 1-year target price in a range between 108.8 and 151.7 USD/share, +0.9% and +41.4% respectively compared to the share price as of valuation date (See Table 12 and **Error! Reference source not found.**).

	Low	Mid	High	Weight
NAV	121.56	152.69	193.06	10%
DDGM	85.99	111.82	165.33	45%
P/AFFO	128.86			45%
Final Target Price	**108.8**	**123.6**	**151.7**	**100%**

Table 12: Final Target Price Derivation (Source: Own Calculation)

My final target share price is mid-price of 123.6 USD/share, which is 14.8% higher than the price as of valuation date. This upside is fairly limited on tenor of a 1-year investment and can be subject to estimation errors, therefore my recommendation for the stock price of Crown Castle Inc. is a Hold.

6. Equity Research Comparison

In this section the overall findings of this thesis are compared with the investment bank report of Zacks. The report established its 6–12-month target price in August 2024 utilizing the latest half-year result of Crown Castle. Zacks recommendation for CCI is "HOLD" with a 6–12-month target price of USD 107. The report's valuation is based on 12-month forward P/FFO multiples. The USD 107 target price with their forecasted FFO per share of 6.59 reflects a 16.24 forward FFO multiple. Their target is slightly lower than the 1-year target price resulted from the P/AFFO valuation in this thesis (USD 128.86/share), due to their assumed lower FFO growth rate and multiple. The report does not describe the exact calculation to derive its recommended share price, but they are presenting a table of forward P/FFO multiples (Table 13).

P/FFO Forward (12M)				
	CCI	**Sub-industry**	**Sector**	**S&P 500**
Current	16.44	14.94	15.07	20.64
5-year high	31.56	22.10	17.36	24.14
5-year low	12.53	12.80	11.73	15.56
5-year median	23.85	17.84	14.59	19.15

Table 13: Zacks Valuation of CCI P/FFO Forward 12M (Source Zacks Equity Research report as of August 2024)

The report argues that Crown Castle's strong portfolio positions it well for growth, driven by increasing wireless data consumption. The long-term leases with creditworthy tenants ensure steady revenues, and its plan to deliver 16,000 new nodes in 2024 is promising. However, they also note that the peak of the 5G investment cycle may temper near-term performance. Additionally, they found customer concentration, industry consolidation, and high interest rates concerning for the future. These arguments are fairly in line with the analysis of the thesis.

However, Zacks' valuation relies solely on forward multiples, overlooking key factors such as the importance of dividends for REIT investors and the significant role that the asset base plays in determining the intrinsic value of REITs.

7. Conclusion

This thesis presented a comprehensive equity valuation of Crown Castle Inc. (CCI), focusing on the key historical trends and market forces shaping its future performance. Through a detailed industry, operational and financial analysis, I applied three valuation method to address the inherent complexities in valuing REIT investments.

To estimate CCI's 1-year target price, three valuation methods were employed. The NAV analysis resulted in a target price of 152.69 USD, the DDGM a target price of 111.82, while the comparable analysis suggested a target share price 128.86 USD.

Given these findings, and weighing more heavily toward the results of the DDGM and P/AFFO method, I propose a target share price of 123.6 USD with a HOLD recommendation, The sensitivity analysis underscores the potential variability in the target price due to changes in key assumptions, emphasizing the need for cautious interpretation of the results and close attention to evolving market conditions.

Overall, while the valuation offers a reasoned estimate, it is essential to recognize the associated risks and uncertainties that could influence CCI's market valuation.

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9. Appendices

Appendix 1: SWOT Analysis

Strengths

Crown Castle's portfolio is essential for telecommunications, giving it a competitive edge in infrastructure provision. While CCI's long-term contracts (with a weighted-average remaining life of approximately six years) with major tenants such as T-Mobile, AT&T and Verizon Wireless ensure a steady recurring flow of revenue over the medium/long-term. The company benefits from these lease agreements with major wireless carriers, as they provide a stable and predictable cash flow.

Weaknesses

The expansion through acquisitions and infrastructure development has led Crown Castle to incur substantial debt, which could limit future financial flexibility. Furthermore, with continuous investments in infrastructure to keep up with technological advancements and customer demand CCI could strain their financial resources. Besides the high leverage on the financing side, CCI's revenue streams are not very diversified. A significant portion of Crown Castle's revenue comes from a small number of major wireless carriers making the company vulnerable to its tenants' financial stability and any consolidation activities, due to overlapping network coverage. For instance, the T-Mobile and Sprint consolidation is expected to result in substantial non-renewals of lease contracts, impacting CCI's site rental revenues and contributing to lower anticipated dividend per share growth through 2025. While increasing competition in the infrastructure market could be a threat to the customer base and pressure prices and profit margins, particularly in times of economic slowdown when tenant budgets are constrained and may also hinder Crown Castle's ability to negotiate favourable terms on new and renewing tenant contracts, impacting growth and profitability. This competition particularly affects the fiber solutions business, where renegotiating to prevent contract terminations is more common.

Opportunities

As mentioned in previous sections with the roll out of 5G technology, increasing data usage and the expansion of connectivity services offer numerous opportunities for growth in infrastructure and services. However, as the 5G market matures and the initial surge of expansion slows, this

growth potential is expected to moderate, reflecting a shift from rapid expansion to a more stable development phase.

CCI has already started strategically expanding its portfolio through acquisitions, enhancing its geographic coverage and service offerings, while there are still opportunities to develop in this area. However, this involves significant risks as well, including potential disruptions, increased operational risks, and higher costs that may negatively impact its business and financial outcomes. The complex nature of expansion activities may also lead to unanticipated challenges, delaying the realization of intended advantages. While there are emerging opportunities in collaborations with technology companies and other infrastructure providers that could enhance service offerings and market reach.

Threats

One of the biggest threats on Crown Castle is coming from the potential regulatory changes in the area, such as changes in zoning laws, health and safety regulations, or other legal aspects that could impact the ability to expand infrastructure or modify existing assets. However, CCI is also a subject to threats in new technological advancements and rapid technological evolution could make some of its current infrastructure obsolete, requiring heavy investments to upgrade.

Crown Castle operates in a cyclical industry and as such it is sensitive to economic downturns. Fluctuations in the economy can affect the spending capacity of clients, potentially leading to delayed projects or reduced spending on infrastructure.

Appendix 2: Other risks

Fiber segment expansion: CCI's significant investments to the Fiber segment has been a in focus over the past decade, now accounting to a substantial 34% of site rental revenues in 2023, up from 31% in 2022. This expansion, however, introduces a different risk profile compared to the Tower business. Fiber operations, present new challenges such as reliance on public rights-of-way, partnerships for pole and conduit use, risks of competitive overbuilding, construction hazards, potential self-provisioning by wireless carriers, and technology evolution that may reduce fiber reliance. Moreover, the pace of adoption for fiber and small cell solutions by tenants may lag the expectations, as evidenced by the initial preference for towers in 5G

deployment. Although this is anticipated to shift favourably for fiber as network build-outs progress.

Volatility in demand: The services business has historically faced fluctuations in demand, that is due to the project-based nature of services and the influence of several factors, including competitive dynamics, tenant investment timing and scale, deployment rates, unforeseen work delays, economic conditions, labor issues, component availability, market share fluctuations, and changes in work volume. In 2023, a notable decline in tenant activity caused services revenue to drop by 36% from the previous year. Adjusting to this, CCI ceased offering installation services for Towers while maintaining site development services, as part of a strategic restructuring to stabilize this area of the business.

Health Concerns Related to RF Emissions: If radio frequency emissions from equipment on Crown Castle's infrastructure are proven to harm health, potential claims could significantly impact operations, with current insurance offering no significant coverage for such risks.

Climate Vulnerability: Crown Castle's operations are vulnerable to **climate-related events** and natural disasters, such as wildfires, which could damage infrastructure and disrupt business, potentially without adequate insurance coverage.

Challenges and Risks in Crown Castle's Restructuring Plan (Plan): Crown Castle's strategic restructuring initiated in July 2023, aimed at aligning operations with reduced tower activity, includes cutting employee headcount by 15%, ending installation services, and consolidating office spaces. Despite incurring significant restructuring charges, the success of these measures is uncertain due to potential business and economic changes. Moreover, unintended consequences such as increased employee attrition, cultural damage, and operational disruptions could undermine the intended benefits, potentially affecting Crown Castle's long-term profitability and operational goals.

Impact of Activist Stockholders on Crown Castle: Crown Castle has been influenced by activist stockholders, notably through a December 2023 Cooperation Agreement with Elliott Investment Management, resulting in board changes and strategic reviews. While the company aims for constructive engagement with all shareholders to boost long-term value, activist interventions can disrupt operations, strain resources, and create uncertainties about the company's direction.

Human capital: The company faces significant challenges in attracting, recruiting, and retaining experienced employees due to a competitive labor market and potentially uncompetitive compensation packages. This could lead to operational inefficiencies, higher costs, and a loss of crucial institutional knowledge, adversely impacting the company's business. Recent executive turnover at Crown Castle, including the departure of CEO Jay A. Brown and the interim appointment of Anthony J. Melone, introduces uncertainties and potential disruptions. These changes could affect the company's ability to meet its goals, impact employee morale, and incur additional costs, potentially adversely affecting Crown Castle's operational and financial performance.

Construction risks: The company faces significant risks in executing complex and potentially hazardous construction projects. Challenges include managing costs, labor, and safety, with potential consequences such as project delays, increased costs, and reputational damage.

Source: CCI 10-k filing (2024)

Appendix 3: Total Historical Financials and Forecast of AFFO

AFFO derivation (historical and forecast)

USDm	2019A	2020A	2021A	2022A	2023A	2024E	2025F	2026F	2027F	2028F
Towers	3,196	3,389	3,497	3,804	4,322	4,288	4,531	4,787	5,058	5,344
growth (%)		*6.0%*	*3.2%*	*8.8%*	*13.6%*	*-0.8%*	*5.7%*	*5.7%*	*5.7%*	*5.7%*
Fiber	1,600	1,704	1,823	1,915	1,967	2,328	2,508	2,702	2,911	3,136
growth (%)		*6.5%*	*7.0%*	*5.0%*	*2.7%*	*18.4%*	*7.7%*	*7.7%*	*7.7%*	*7.7%*
Site rental revenues	4,796	5,093	5,320	5,719	6,289	6,616	7,039	7,489	7,969	8,480
Services and other revenues	574	670	520	621	697	278	111	44	18	7
Net revenues	**5,763**	**5,840**	**6,340**	**6,986**	**6,981**	**6,894**	**7,150**	**7,533**	**7,986**	**8,487**
Costs of operations	(1,940)	(1,927)	(1,953)	(2,024)	(1,935)	(1,911)	(1,982)	(2,088)	(2,214)	(2,352)
Selling, general and administrative expenses	(291)	(286)	(281)	(305)	(298)	(294)	(305)	(322)	(341)	(362)
Other operating (income) expense	0	(362)	0	0	0	0	0	0	0	0
Operating profit (loss)	**3,532**	**3,989**	**4,106**	**4,657**	**4,748**	**4,689**	**4,863**	**5,123**	**5,432**	**5,772**
Operating Profit Margin	*61.3%*	*68.3%*	*64.8%*	*66.7%*	*68.0%*	*68.0%*	*68.0%*	*68.0%*	*68.0%*	*68.0%*
Other selling, general and administrative expenses	233	283	290	317	333	364	398	435	476	520
Stock-based compensation expense, net	116	133	131	156	157	156	156	156	156	156
Depreciation, amortization and accretion	1,572	1,608	1,644	1,707	1,754	1,803	1,853	1,904	1,957	2,011
Restructuring charges	0	0	0	0	85	115	0	0	0	0
Interest expense and amortization of deferred financing costs, net	683	689	657	699	850	1,081	1,148	1,206	1,276	1,354

Other (income) expenses to reconcile to income (loss) from continuing operations	47	200	205	87	41	58	58	58	58	58
Income before taxes	**881**	**1,076**	**1,179**	**1,691**	**1,528**	**1,111**	**1,249**	**1,363**	**1,508**	**1,672**
Income tax provision	(21)	(20)	(21)	(16)	(26)	(19)	(22)	(24)	(26)	(29)
Net income (loss)	**860**	**1,056**	**1,158**	**1,675**	**1,502**	**1,092**	**1,228**	**1,340**	**1,482**	**1,643**
Real estate related depreciation, amortization and accretion	1,517	1,555	1,593	1,653	1,692	1,739	1,787	1,836	1,887	1,939
Asset write-down charges	19	74	21	34	33	38	43	50	57	66
Dividends/distributions on preferred stock	(113)	(85)	0	NA	NA	0	0	0	0	0
FFO	**2,284**	**2,600**	**2,772**	**3,362**	**3,227**	**2,869**	**3,058**	**3,226**	**3,426**	**3,648**
growth (%)		*13.8%*	*6.6%*	*21.3%*	*-4.0%*	*-11.1%*	*6.6%*	*5.5%*	*6.2%*	*6.5%*
Adjustments to increase (decrease) FFO	87	278	241	(162)	49	156	38	33	22	10
Straight-lined revenues	(80)	(22)	(111)	(410)	(274)	(184)	(190)	(201)	(213)	(226)
Straight-lined expenses	93	83	76	73	73	73	73	73	73	73
Stock-based compensation expense, net	116	133	131	156	157	156	156	156	156	156
Non-cash portion of tax provision	5	1	1	6	8	4	4	5	5	5
Non-real estate related depreciation, amortization and accretion	55	53	51	54	62	64	66	68	70	72
Amortization of non-cash interest expense	1	6	13	14	14	10	11	12	12	12
Other (income) expense	(1)	5	21	10	6	8	10	11	9	9
(Gains) losses on retirement of long-term obligations	2	95	145	28	0	0	0	0	0	0
Acquisition and integration costs	13	10	1	2	1	4	2	2	2	2
Restructuring charges	NA	NA	NA	0	85	115	0	0	0	0
Sustaining capital expenditures	(117)	(86)	(87)	(95)	(83)	(94)	(94)	(94)	(94)	(94)
AFFO	**2,371**	**2,878**	**3,013**	**3,200**	**3,276**	**3,025**	**3,096**	**3,259**	**3,448**	**3,658**
growth (%)		*21.4%*	*4.7%*	*6.2%*	*2.4%*	*-7.7%*	*2.4%*	*5.3%*	*5.8%*	*6.1%*
Shares outstanding (diluted)	418	425	434	434	434	434	434	434	434	434
AFFO per share ($)	**5.68**	**6.78**	**6.95**	**7.38**	**7.55**	**6.97**	**7.13**	**7.51**	**7.94**	**8.43**
growth (%)		*19.4%*	*2.5%*	*6.2%*	*2.3%*	*-7.7%*	*2.4%*	*5.3%*	*5.8%*	*6.1%*
Dividends	2025	2190	2373	2602	2723	2717	2849	2988	3134	3286
Dividen per share ($)	**4.8**	**5.2**	**5.5**	**6.0**	**6.3**	**6.3**	**6.6**	**6.9**	**7.2**	**7.6**
growth (%)		*6.4%*	*6.1%*	*9.7%*	*4.7%*	*-0.2%*	*4.9%*	*4.9%*	*4.9%*	*4.9%*
Dividend/AFFO	**85.3%**	**76.0%**	**78.7%**	**81.2%**	**83.1%**	**89.8%**	**92.0%**	**91.7%**	**90.9%**	**89.8%**

Notes

(a) 2024 Financial data are extrapolated from the 2024 Q2 result, as the business is not seasonally cyclical.

(b) Revenue growth for both fiber and tower revenues are derived from industry CAGR and historical CAGR focusing on recent years development and the higher emphasis on the fiber segment in the future reflecting CCI's strategic shift.
(c) Operating Profit margin are fixed on 68% level, assuming the company's restructuring plan stays successful in the future keeping margins steady.
(d) Other SG&A, Depreciation, Asset write-down charges are forecasted based on historical CAGR as the yearly historical growth were stable.
(e) Stock-based compensations are assumed to be stagnating.
(f) Restructuring Charges are related to the restructuring plan where further costs are not anticipated from 2025 onwards.
(g) Interest expense and amortization of deferred financing costs, net are iterated by assuming fixed AFFO/Debt levels and reflect the difference in the actual weighted average cost of debt (3.98%) of CCI and the anticipated cost of debt of 5.38%.
(h) Other (income) expenses to reconcile to income (loss) from continuing operations are forecasted based on last 5 years average
(i) Income taxes are forecasted based on average effective historical tax rate
(j) Adjustments to FFO
    a. Straight-lined revenues are projected to remain consistent with the historical average proportion of straight-lined revenues relative to total net revenues.
    b. Stock-based compensations are assumed to be stagnating.
    c. Non-cash portion of tax provision, Amortization of non-cash interest expense, Other (income) expense, Acquisition and integration costs are forecasted based on historical averages
    d. (Gains) losses on retirement of long-term obligations are assumed to be 0 in line with 2023 and 2024 expectations of management

Histoical Balance Sheet

Balance Sheet USDm	2018 FY	2019 FY	2020 FY	2021 FY	2022 FY	2023 FY
ASSETS						
Cash and cash equivalents	277	196	232	292	156	105
Restricted cash and cash equivalents	131	137	144	169	166	171
Receivables, net of allowance	501	596	431	543	593	481
Prepaid expenses	172	107	95	105	102	103
Current portion of deferred site rental receivables	NA	NA	NA	92	127	116
Other current assets	148	168	202	145	73	56
Total current assets	**1,229**	**1,204**	**1,104**	**1,254**	**1,217**	**1,032**
Deferred site rental receivables	1,366	1,424	1,408	1,588	1,954	2,239
Property and equipment, net	13,653	14,666	15,162	15,269	15,407	15,666
Operating lease right-of-use assets	0	6,133	6,464	6,682	6,526	6,187
Goodwill	10,078	10,078	10,078	10,078	10,085	10,085
Site rental contracts and tenant relationships, net	5,209	4,764	4,365	3,982	3,535	3,122
Other intangible assets, net	307	72	68	64	61	57
Other assets, net	920	116	119	123	136	139

Total Non-current assets	**31,533**	**37,253**	**37,664**	**37,786**	**37,704**	**37,495**
Total assets	**32,762**	**38,457**	**38,768**	**39,040**	**38,921**	**38,527**
LIABILITIES AND EQUITY						
Accounts payable	313	334	230	246	236	252
Accrued interest	148	169	199	182	183	219
Deferred revenues	587	657	704	776	736	605
Other accrued liabilities	351	361	378	401	407	342
Current maturities of debt and other obligations	107	100	129	72	819	835
Current portion of operating lease liabilities	0	299	329	349	350	332
Total current liabilities	**1,506**	**1,920**	**1,969**	**2,026**	**2,731**	**2,585**
Debt and other long-term obligations	16,575	18,021	19,151	20,557	20,910	22,086
Operating lease liabilities	0	5,511	5,808	6,031	5,881	5,561
Other long-term liabilities	3,110	2,516	2,379	2,168	1,950	1,914
Total liabilities	**21,191**	**27,968**	**29,307**	**30,782**	**31,472**	**32,146**
Common stock	4	4	4	4	4	4
Additional paid-in capital	17,767	17,855	17,933	18,011	18,116	18,270
Accumulated other comprehensive income (loss)	-5	-5	-4	-4	-5	-4
Dividends/distributions in excess of earnings	-6,195	-7,365	-8,472	-9,753	-10,666	-11,889
Total equity	**11,571**	**10,489**	**9,461**	**8,258**	**7,449**	**6,381**
Total liabilities and equity	**32,762**	**38,457**	**38,768**	**39,040**	**38,921**	**38,527**

Appendix 4: Detailed Capital Structure

Capital Structure Description	Capital Structure Type	Amount Out ($M)	Coupon or Base Rate	Market Value of Debt ($M)	Maturity Date	Securing Collateral
Operating Lease	Capital Lease	5,893	4.2000%	5,893	NA	Tangible Asset
2.900% Senior Notes	Senior Debt	1,234	2.9000%	890	Apr/01/2041	NA
Unsecured Term Loan a from Bank	Term Loans	1,162	6.5000%	1,162	Jul/08/2027	NA
2.250% Senior Notes	Senior Debt	1,091	2.2500%	927	Jan/15/2031	NA
3.650% Senior Notes	Senior Debt	997	3.6500%	967	Sep/01/2027	NA
3.800% Senior Notes	Senior Debt	995	3.8000%	965	Feb/15/2028	NA
1.050% Senior Notes	Senior Debt	994	1.0500%	931	Jul/15/2026	NA
5.000% Senior Notes	Senior Debt	991	5.0000%	1,005	Jan/11/2028	NA
2.100% Senior Notes	Senior Debt	990	2.1000%	832	Apr/01/2031	NA
4.450% Senior Notes	Senior Debt	898	4.4500%	893	Feb/15/2026	NA
3.250% Senior Notes	Senior Debt	890	3.2500%	613	Jan/15/2051	NA
3.200% Senior Notes	Senior Debt	749	3.2000%	749	Sep/01/2024	NA
3.700% Senior Notes	Senior Debt	748	3.7000%	734	Jun/15/2026	NA
Secured Tower Revenue Notes Series 18-2	Senior Debt	746	4.2000%	746	Jul/15/2048	Tangible Asset

2.900% Senior Notes	Senior Debt	744	2.9000%	715	Mar/15/2027	NA
2.500% Senior Notes	Senior Debt	743	2.5000%	635	Jul/15/2031	NA
5.100% Senior Notes	Senior Debt	743	5.1000%	745	May/01/2033	NA
3.300% Senior Notes	Senior Debt	741	3.3000%	684	Jul/01/2030	NA
5.600% Senior Notes	Senior Debt	740	5.6000%	772	Jun/01/2029	NA
5.800% Senior Notes	Senior Debt	740	5.8000%	778	Mar/01/2034	NA
Secured Tower Revenue Notes Series 15-2	Senior Debt	698	3.7000%	698	May/15/2045	Tangible Asset
Unsecured Revolver	Revolving Credit	670	6.5000%	670	Jul/08/2027	NA
4.300% Senior Notes	Senior Debt	595	4.3000%	585	Feb/15/2029	NA
4.800% Senior Notes	Senior Debt	594	4.8000%	598	Sep/01/2028	NA
3.100% Senior Notes	Senior Debt	546	3.1000%	503	Nov/15/2029	NA
1.350% Senior Notes	Senior Debt	498	1.3500%	484	Jul/15/2025	NA
4.000% Senior Notes	Senior Debt	498	4.0000%	491	Mar/01/2027	NA
4.150% Senior Notes	Senior Debt	490	4.1500%	400	Jul/01/2050	NA
5.200% Senior Notes	Senior Debt	396	5.2000%	370	Feb/15/2049	NA
4.000% Senior Notes	Senior Debt	346	4.0000%	272	Nov/15/2049	NA
4.750% Senior Notes	Senior Debt	344	4.7500%	306	May/15/2047	NA
Finance Leases and Other Obligations	Capital Lease	270	10.0000%	270	Dec/31/2029	Tangible Asset
Secured Notes Series 09-1 Class A-2	Senior Debt	40	9.0000%	40	Aug/15/2029	Tangible Asset
3.150% Senior Notes	Senior Debt	0	3.1500%	0	Jul/15/2023	NA
Unsecured Commercial Paper Notes	Commercial Paper	0	6.1000%	0	2023	NA

For the Market value of Debt the data were sourced from SP capital IQ. Where market value were not available, book value were used (in case of the operating lease)

Appendix 5: Historical NOI

TOTAL NOI						
	2019 FY	2020 FY	2021 FY	2022 FY	2023 FY	CAGR
Net revenues	**5,763**	**5,840**	**6,340**	**6,986**	**6,981**	***4.9%***
A.) Site rental	5,093	5,320	5,719	6,289	6,532	*6.4%*
Services and other	670	520	621	697	449	*-9.5%*
Operating expenses						
B.) Site Rental	1,462	1,521	1,554	1,602	1,664	*3.3%*
Services and other	524	448	439	466	316	*-11.9%*
NOI (A-B)	**3,631**	**3,799**	**4,165**	**4,687**	**4,868**	***7.6%***
growth (%)		*4.63%*	*9.63%*	*12.53%*	*3.86%*	
weights (%)		10%	10%	10%	70%	
Weighted average historical growth rate	***5.38%***					

Appendix 6: Cost Of Equity Derivation

U.S. Telecom Tower Players	5- year Betas	D/E	Effective tax rate	Unlevered Beta
American Tower Corporation	0.98	0.52	6.98%	0.66
SBA Communications Corporation	0.89	0.65	10.09%	0.56
Crown Castle Inc.	0.91	0.55	1.57%	0.59
Average	0.93	0.57	6.21%	0.60

Cost of equity	
Source Damodaran - Overall U.S. REITS	
Beta for REITs (Damodaran)	1.03
D/E	0.79
Effective tax rate	1.95%
Unlevered Beta for REITs (Damodaran)	**0.65**
Source Own Calculation – U.S. Telecom Tower REITs	
Beta (5 years, average industry)	0.93
D/E	0.57
Effective tax rate	6.21%
Unlevered Beta for REITs (Damodaran)	**0.60**
CCI	
Market Value of Debt	27.32
Market Value of Equity	45.90
D/E for CCI	0.60
Effective tax rate for CCI (5 years average)	1.57%
Re-levered Beta for CCI	**0.95**
Risk free Rate (U.S. 10 year treasury)	4.16%
U.S. market premium (Damodaran as of July 2024)	3.97%
Re-levered Beta for CCI	0.95
CoE	**7.93%**

The calculation of the re-levered beta was based on the unlevered beta derived from own analysis.

Appendix 7: Peer Group

Entity name	Industry classificataion	Business Description	Include	Notes
American Tower Corporation (AMT)	Telecom Tower REIT	American Tower, one of the largest global REITs, is a leading independent owner, operator and developer of multitenant communications real estate with a portfolio of over 224,000 communications sites and a highly interconnected footprint of U.S. data center facilities.	Yes	Exact match in business model
SBA Communications Corporation (SBAC)	Telecom Tower REIT	SBA Communications Corporation is a leading independent owner and operator of wireless communications infrastructure including towers, buildings, rooftops, distributed antenna systems (DAS) and small cells. With a portfolio of more than 39,000 communications sites throughout the Americas, Africa and in Asia, SBA is listed on NASDAQ under the symbol SBAC. Our organization is part of the S&P 500 and is one of the top Real Estate Investment Trusts (REITs) by market capitalization.	Yes	Exact match in business model
Digital Realty Trust, Inc. (DLR)	Data Center REIT	Digital Realty brings companies and data together by delivering the full spectrum of data center, colocation, and interconnection solutions. PlatformDIGITAL, the company's global data center platform, provides customers with a secure data meeting place and a proven Pervasive Datacenter Architecture (PDx) solution methodology for powering innovation and efficiently managing Data Gravity challenges. Digital Realty gives its customers access to the connected data communities that matter to them with a global data center footprint of 300+ facilities in 50+ metros across 25+ countries on six continents.	Yes	Extensive global data center operations align well with CCI's infrastructure focus.
Equinix, Inc. (EQIX)	Data Center REIT	Equinix (Nasdaq: EQIX) is the world's digital infrastructure company . Digital leaders harness Equinix's trusted platform to bring together and interconnect foundational infrastructure at software speed. Equinix enables organizations to access all the right places, partners and possibilities to scale with agility, speed the launch of digital services, deliver world-class experiences and multiply their value, while supporting their sustainability goals.	Yes	Leader in data centers with overlapping client base and infrastructure needs
Digital Core REIT (DCRU)	Data Center REIT	Digital Core REIT (SGX: DCRU) is a leading pure-play data centre REIT listed in Singapore and sponsored by Digital Realty, the largest global data centre owner and operator. Digital Core REIT aims to create long-term, sustainable value for all stakeholders through ownership of a stabilised and diversified portfolio of mission-critical data centre facilities concentrated in select global markets.	No	Smaller scale Less market presence Narrower focus on data centers
Keppel DC REIT (AJBU)	Data Center REIT	Keppel DC REIT was listed on the Singapore Exchange on 12 December 2014 as the first pure-play data centre REIT in Asia. Keppel DC REIT's investment strategy is to principally invest, directly or indirectly, in a diversified portfolio of income-producing real estate assets which are used primarily for data centre purposes, as well as real estate and assets necessary to support the digital economy. Keppel DC REIT's investments comprise an optimal mix of colocation, fully-fitted and shell and core assets, as well as debt securities issued by NetCo which holds network assets, thereby reinforcing the diversity and resiliency of its portfolio. Keppel DC REIT is managed by Keppel DC REIT Management Pte. Ltd. (the Manager) and is sponsored by Keppel, a global asset manager and operator with strong expertise in sustainability-related solutions spanning the areas of infrastructure, real estate and connectivity.	No	Regional focus and less diversified portfolio.
MFC Industrial REIT (MIT)	Data Center REIT	MFC Industrial Real Estate Investment Trust, through its subsidiary, APUK Ltd, invests in and owns land and data center building located in London, the United Kingdom. The company qualifies as a real estate investment trust for federal income tax purposes. It generally would not be subject to federal corporate income taxes if it distributes at least 90% of its taxable income to its stockholders. MFC Industrial Real Estate Investment Trust is based in Bangkok, Thailand.	No	Focuses on broader industrial real estate

Appendix 8: AFFO/share growth assumption

	2019	2020	2021	2022	2023	2024E	FY25 Q2 LTM
AFFO (USD millions)	2371.0	2878.0	3013.0	3200.0	3277.0	3025.0	2941.5
Weighted-average common shares outstanding-diluted	418.0	425.0	434.0	434.0	434.0	434.0	434.0
AFFO per share	5.68	6.78	6.95	7.38	7.55	6.97	6.78
AFFO Growth		19.4%	2.5%	6.2%	2.3%	-7.7%	-5.5%
Weights on Historical growth				10.0%	20.0%	70.0%	
				Weighted Average Historical Growth			-4.3%

The weight of AFFO per share historical growth were assigned based on the same reasons mentioned in Appendix 5, as those factors are also influencing the development of AFFO/share.

The overall AFFO/share growth also incorporates the effect of debt refinancing of -1.22%. This amount is due to an extra interest expense of USD 37 million indicated by the refinancing of

the maturing fixed rate debt in 2024 and 2025 of USD 1,330 million. The extra interest expense is derived by taking the difference between the calculated 5.38% cost of debt of CCI and the rates on the maturing fixed rate debt and multiplying with the amount of maturing fixed rate debt.

The cost of debt is calculation is presented in the following table:

Cost of Debt	
Rating	BBB+
Default Spread (Damodaran, (2012))	1.50%
Risk free rate	3.88%
Cost of Debt	**5.38%**