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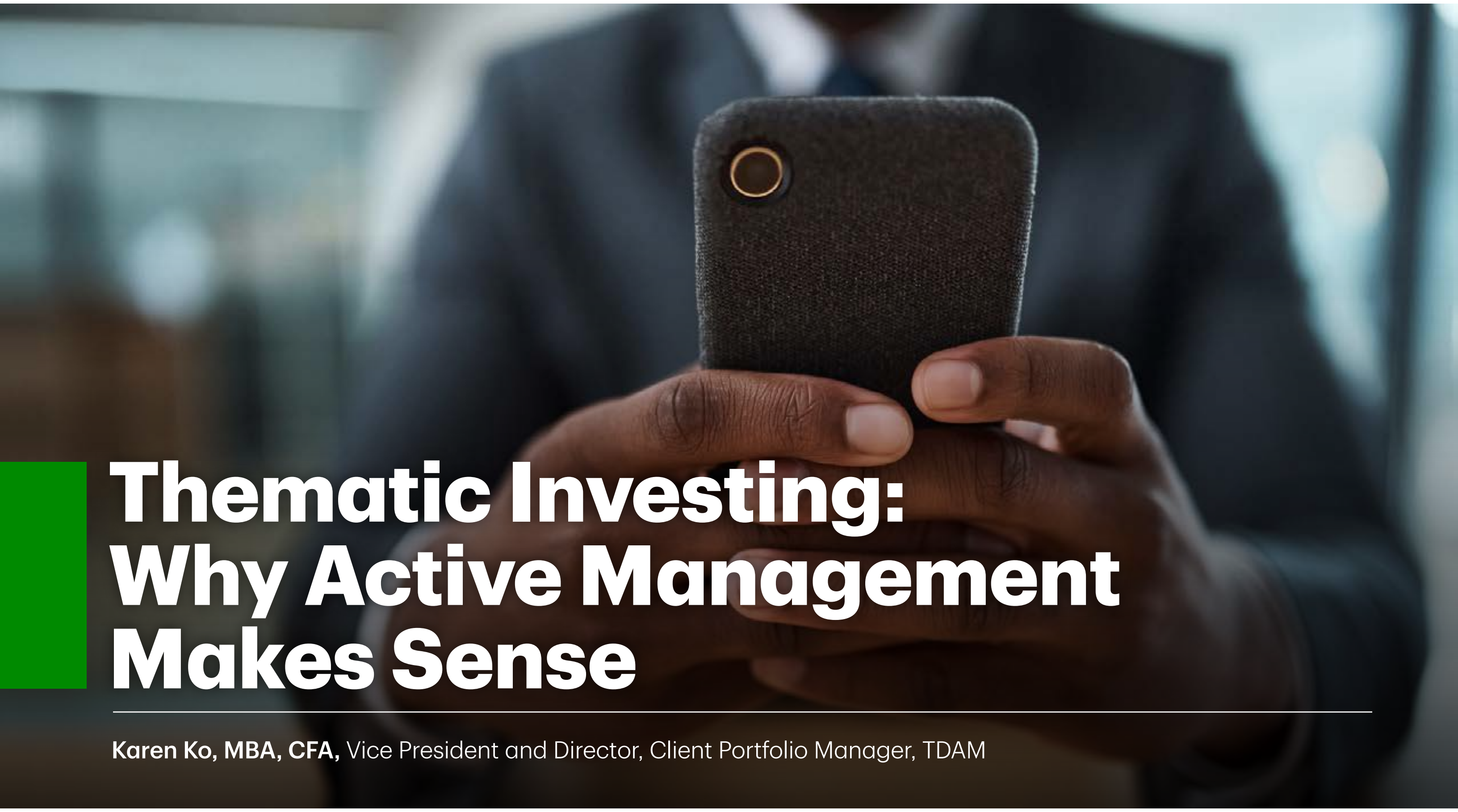


Thematic Investing: Why Active Management Makes Sense

Karen Ko, MBA, CFA, Vice President and Director, Client Portfolio Manager, TDAM

At a Glance:

- Recent decades have seen the rapid disruption and tremendous growth opportunities resulting from macroeconomic, geopolitical and technological trends
- The mobile phone industry has been one area of attractive opportunities
- However, investors who took a passive investment approach have not been able to take advantage of these opportunities, underscoring the importance of actively managed portfolios when seeking exposure to different themes
- At TD Asset Management Inc. (TDAM), we use an active investment approach to attain the best investment exposures to companies that achieve sustainable growth

Thematic investing is an investment approach that tries to capitalize on long-term opportunities created by macroeconomic, geopolitical and technological trends. These are generally long-term, structural and transformative shifts that interrupt an existing equilibrium and affect a wide spectrum of industries and social groups. By getting exposure to these themes, investors hope that the growth potential of the companies positioned to take advantage of structural changes is not yet fully priced in the market today, hence there is alpha to be made. Alpha refers to those returns which are in excess of benchmark returns.

Thematic investing has a long history, but the trend has generated significant interest in recent years. Assets in thematic Exchange-Traded Funds (ETFs) hit $133 billion in 2021, up from $27 billion before the pandemic[1]. According to a FactSet 2021 survey, the most frequently cited avenue for thematic investment was the ETF, which was being leveraged by 80% of respondents interested in thematic investing[2]. Index providers have a well-defined methodology that generally consists of a set of rules and formulas for constructing their indices. As most ETFs broadly track an index[3] which is predefined at inception, investors are betting on the future potential of a disruptive theme that will continue to evolve with new technology, new consumer behaviours and new regulatory hurdles, based on a set of companies determined today.

But given the dynamic and uncertain nature of these long-term themes, our Fundamental Equities team believes the most attractive alpha opportunities present themselves to an actively managed portfolio. We believe it is important to take a rigorous analytical approach to ensure that investors not only identify the right disruptive trends, but also invest in the companies which are able to exploit the growth opportunities within the themes.

Our active investment approach emphasizes deep fundamental insights across the entire value chain and focuses on the growth potential of an industry as well as the competitive position of the companies in that industry, the sustainability of their profitability and the quality of their earnings to uncover investment opportunities. In addition, our team implements a valuation discipline to ensure investors are not paying for all the potential upfront.

[1] https://www.cnbc.com/2021/06/29/thematic-investing-has-taken-off-how-to-capitalize-on-trends-.html

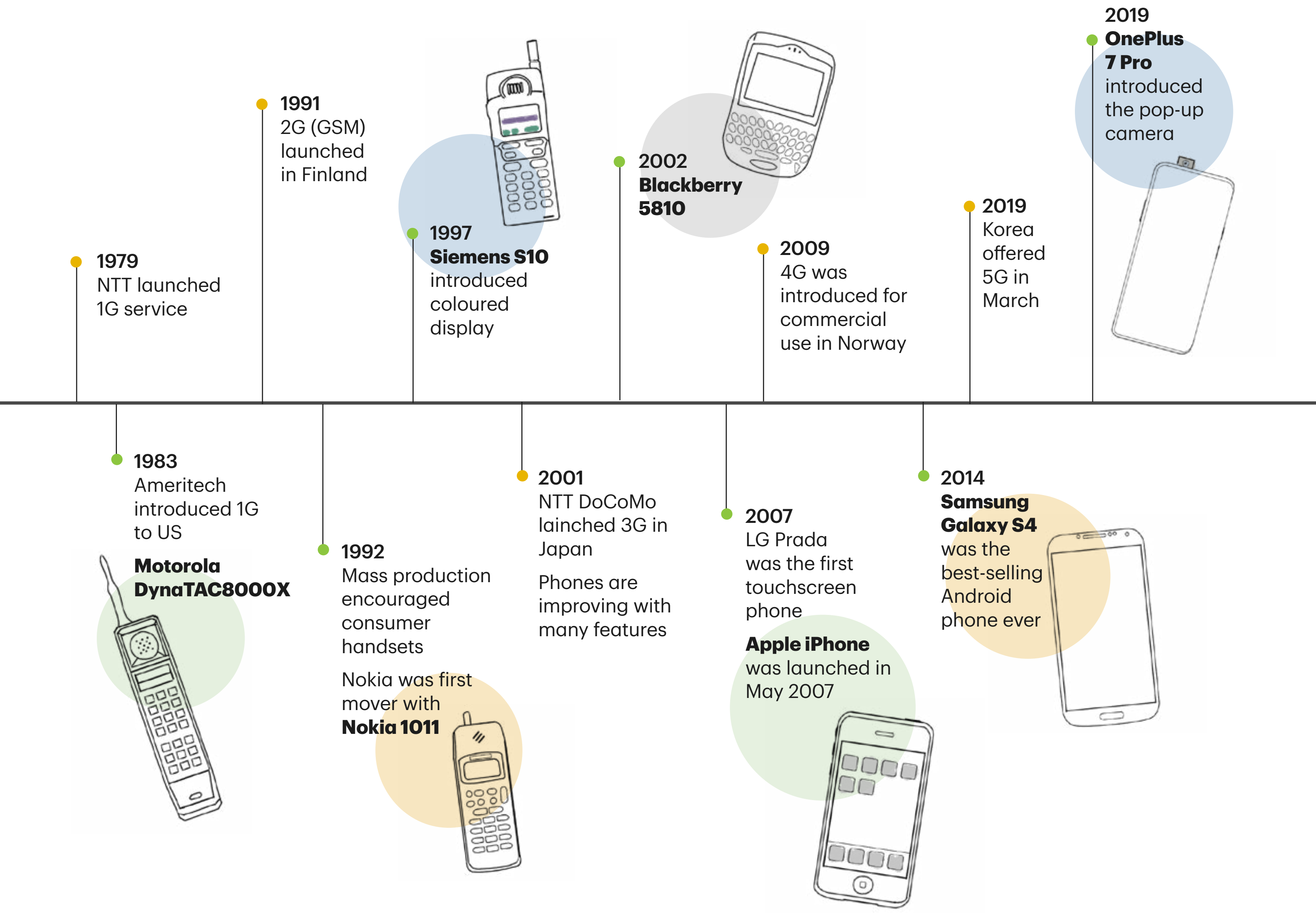
[2] https://insight.factset.com/thematic-investing-catches-fire

[3] https://www.morningstar.com/articles/1041771/the-benefits-and-drawbacks-of-active-etfs

The Smartphone Example

Let's look at the development of the mobile phone in the past 20 years as an example. Obviously, the smart phone theme continues to evolve with the introduction of the 5G network, but the past two decades have provided a good playbook to look to the future.

Figure 1: A Brief History of the Mobile Phone



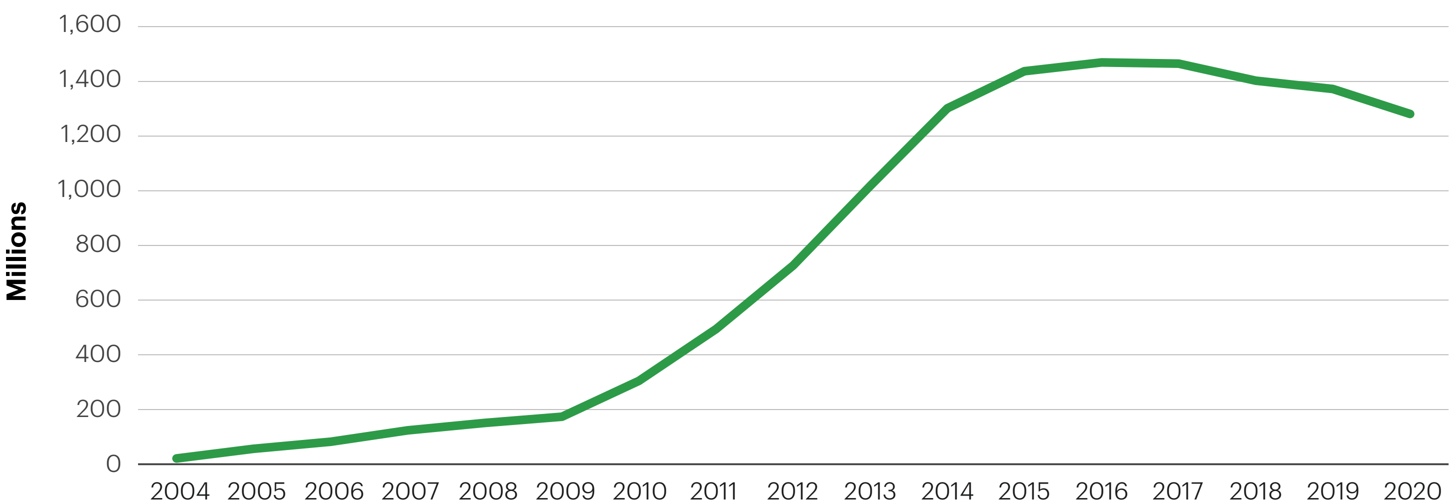
https://www.tigermobiles.com/evolution/#eighthPhone
https://www.cengn.ca/information-centre/innovation/timeline-from-1g-to-5g-a-brief-history-on-ce

The first commercial mobile technology - the Motorola DynaTAC8000X - was created in 1979 in Japan, and the phone was introduced in the US in 1983. Over the ensuing decades, mobile technology continued to advance. With each phase of development, new leaders emerged, while some companies simply disappeared, causing losses for investors and highlighting the importance of active management. An active fundamental portfolio manager will be able to identify companies with sustainable business models, which can potentially help generate increased investment returns.

Smartphone ETF Performance and Constraints

The growth of the smartphone was exponential between 2004 and 2020, the most recent period for which data is available. As can be seen in **Figure 2**, worldwide, annual smartphone sales increased from 20.65 million units in 2004 to 1.28 billion units in 2020. However, if an investor identified this mega trend and invested in an ETF tracking the Nasdaq CTA Smartphone Index[4] from inception in February 2011 to the end of 2021, they would not have made returns that significantly exceed the market (see **Figure 3**).

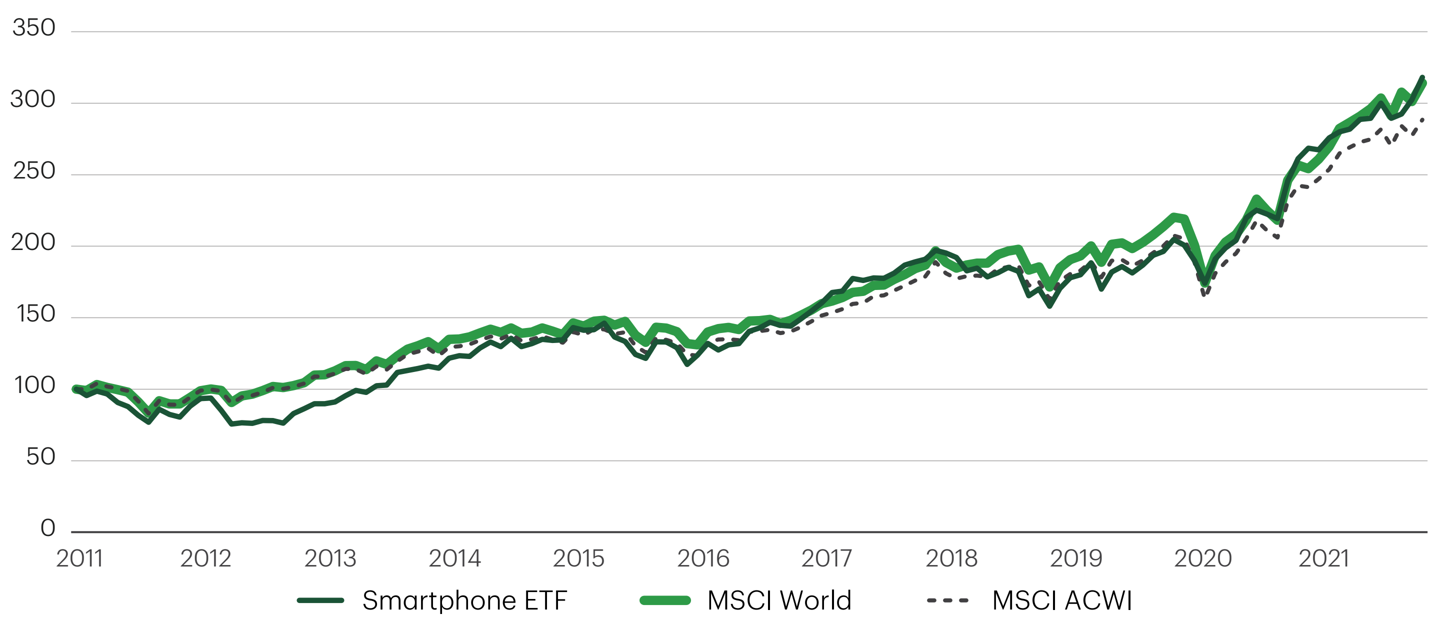
Figure 2: Annual Global Smartphone Unit Sales



Source: TDAM, Bloomberg Finance LP. As of February 28, 2022.

Figure 3: A Smartphone ETF Total Shareholder's Return Compared to the Markets

An ETF tracking the Nasdaq Smartphone Index just kept pace with markets



Source: TDAM, Bloomberg Finance LP. As of February 28, 2022.

[4] https://indexes.nasdaqomx.com/Index/Overview/QFON

To understand why, let's start by examining the Nasdaq CTA Smartphone Index methodology. The index consists of three sectors at weights below[5]:

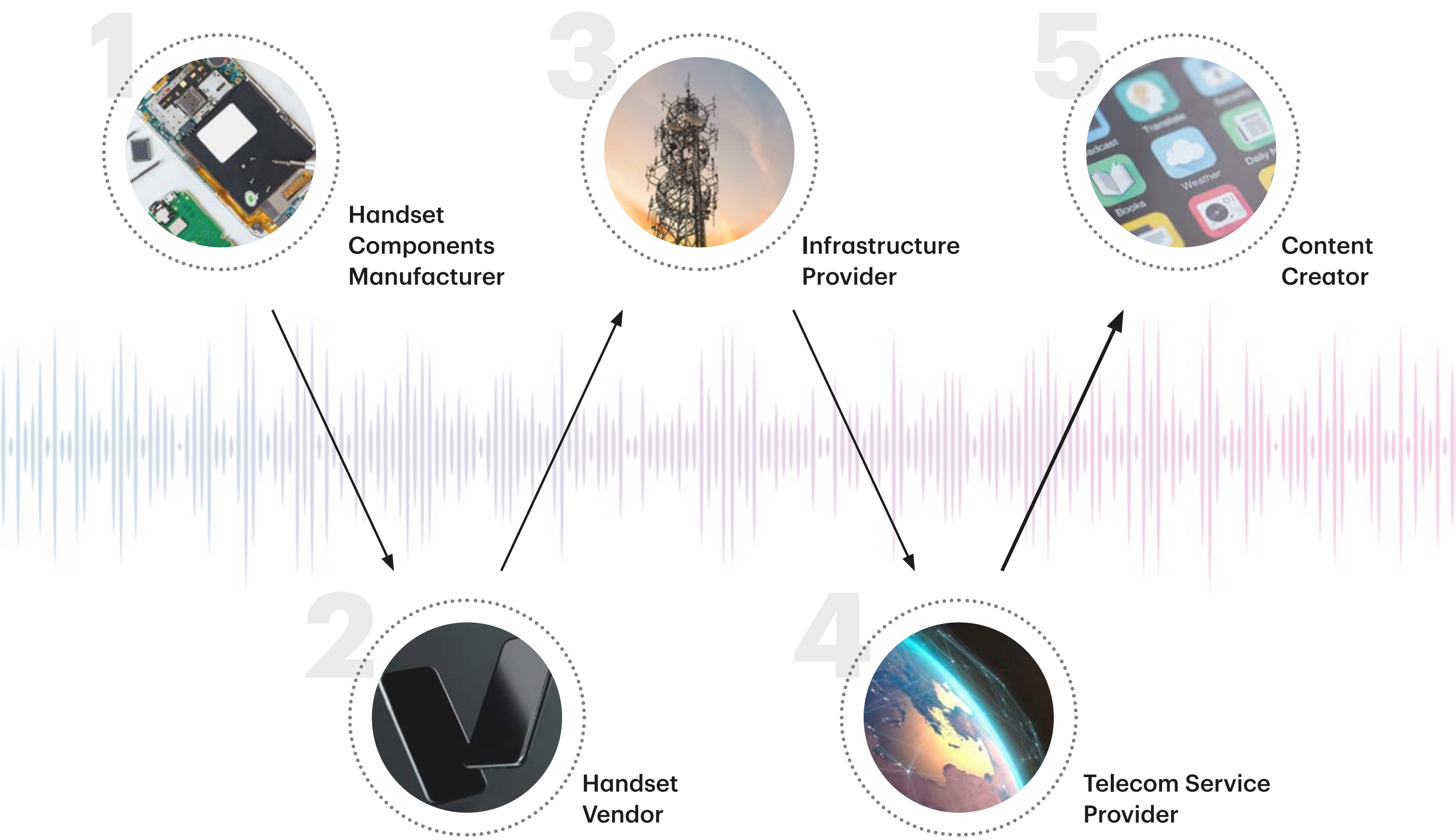
- Handsets – 45%
- Software Applications/Hardware Components – 45%
- Providers – 10%

Upon investigation of the entire value chain for the smartphone, we see that there have been vast differences in total returns performance. When a disruptive technology causes a paradigm shift, it attracts significant capital to the market. Many companies want to participate in the race and allocate resources to Research & Development (R&D) to bring more technological breakthrough.

There will be many "firsts" along the journey, but as the market becomes more crowded and product differentiation begins to blur, the market will eventually consolidate into a handful of ultimate winners. Companies providing differentiated products with superior technology as well as features and prices appealing to consumers will earn outsized returns. Companies which provide commoditized products or fail to keep pace with innovations will lag in performance.

Now, let's analyze each segment of the smartphone value chain and discuss how our active management approach could add value by identifying potential winners and avoid companies that will lag behind or even become obsolete.

Figure 4: Simplified Mobile Phone Value Chain



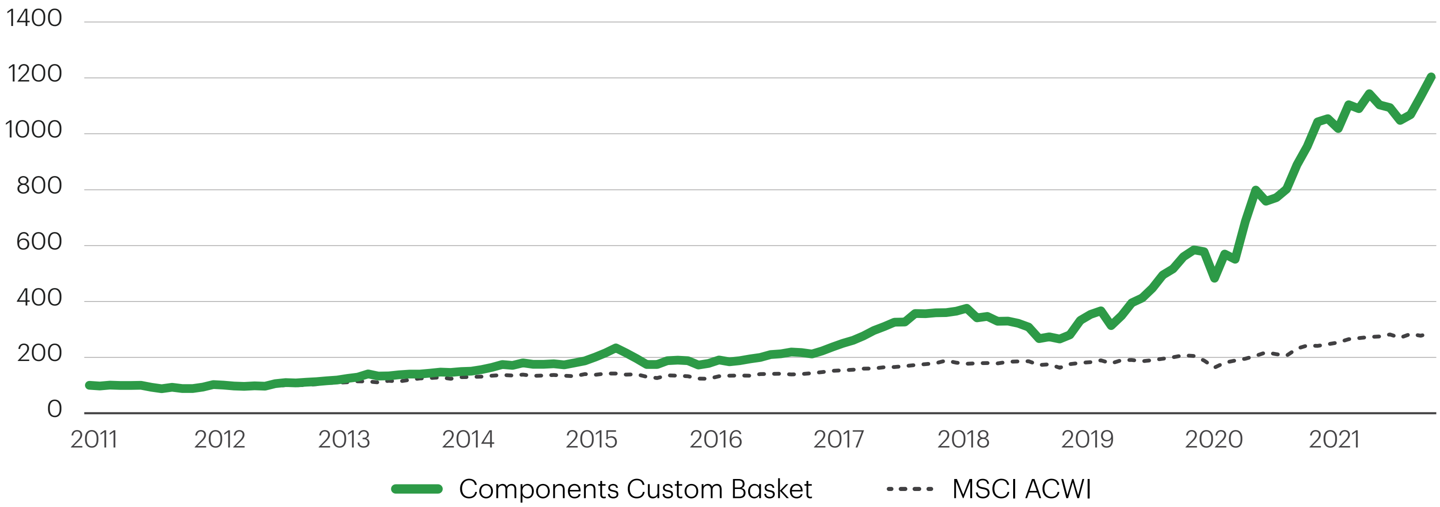
[5] https://indexes.nasdaqomx.com/Index/Overview/QFON

Components

Inside the tiny handheld device are numerous components, from the mission-critical processor and the front and rear camera lens to the casing and frame. Bloomberg tracks data on 685 suppliers to Apple. Since there is no market index to track this group of companies, we have created a basket of companies that supply to Apple and Huawei. The basket of stocks has significantly outperformed the market (see **Figure 5**).

Figure 5: Cellphone Components Custom Basket Total Shareholders Return Compared to the Markets

Cellphone components basket has produced superior returns



Source: TDAM, FactSet.[6] As of February 28, 2022.

This segment of companies is interesting as they directly participate in the growth of the handset, not just from a volume perspective, especially at the beginning of the adoption cycle, but also in terms of content (i.e., components and parts). As the result of handsets getting progressively more complex features, we have seen tremendous increases in components and parts – for example, 3G phones have one camera, whereas newer models have four cameras.

Given the vast number of players in the supplier sphere, it is critical to have a strong investment thesis. Our approach is to look for companies that possess some level of technology leadership. This factor is critical for the processor, with Taiwan Semiconductor Manufacturing Co. (TSMC) being the most advanced semiconductor producer globally. For the components that require a lower technology intensity, scale and cost leadership as well as supply security are important factors. Many successful suppliers have also expanded their platforms vertically and/or horizontally, where they provide a one-stop shop to offer customers convenience and to capture a larger wallet share. We are excited about this segment: its growth outlook is attractive and there are many companies that enjoy technological advantages that will likely allow them to maintain a high Return on Invested Capital (ROIC) level.

What are the risks that can derail a good investment opportunity? Key client risk has always been front and center. Traditionally, it has been about losing a major contract with downstream customers. In recent years when geopolitical tension has risen, the risk of sanctions - either on the company itself or on its customers - as well as supply chain relocations have added to the risk spectrum. An active manager needs to be vigilant about analyzing all these developments to avoid potential losses.

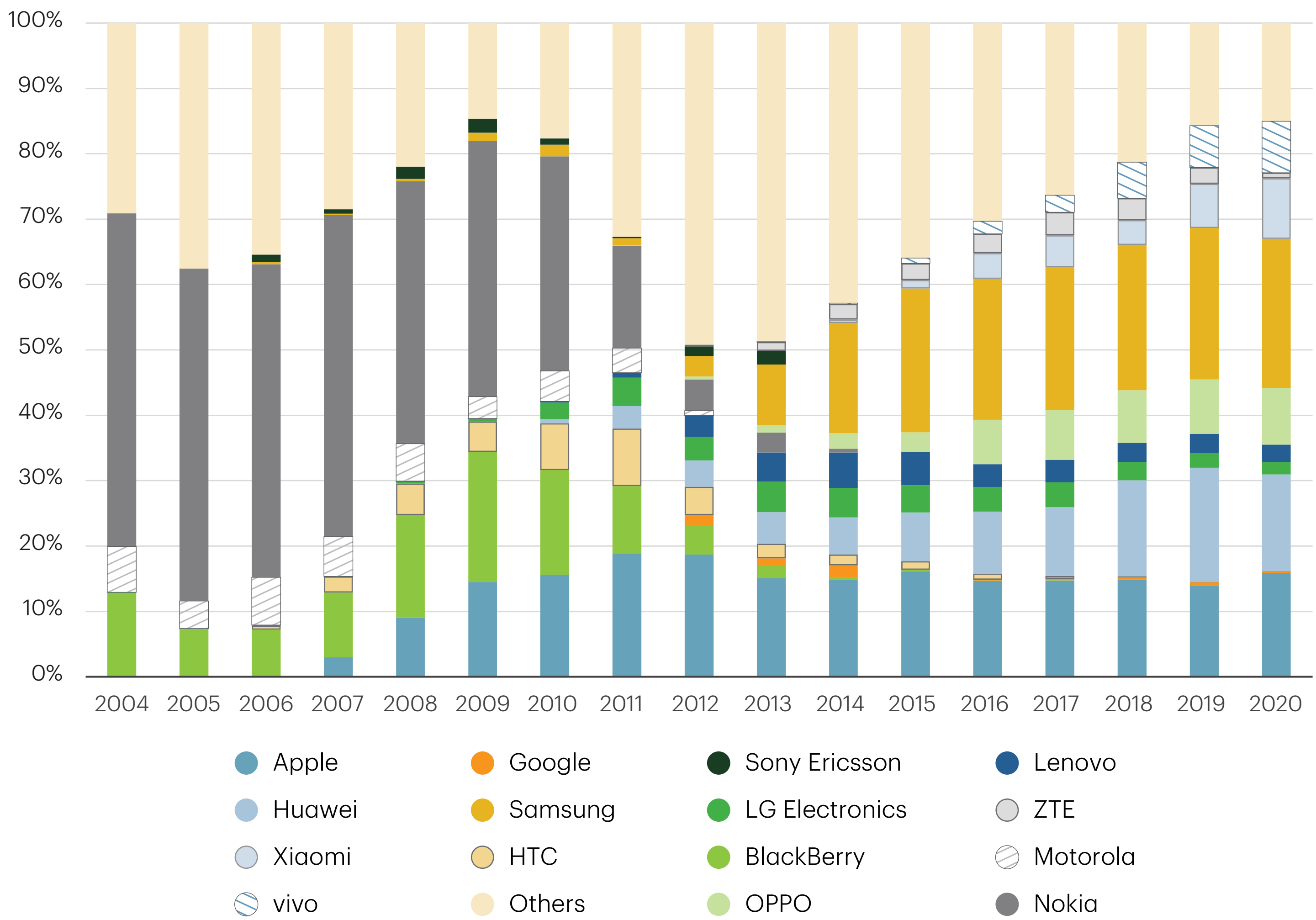
[6] Custom baskets of 77 companies supplying to Apple and Huawei. Cap-weighted, monthly return in US$, maximum single stock weight is 7%. Rebalance semi-annually.

Handset

Smartphones have become an indispensable part of our daily lives. We have witnessed an amazing technological innovation journey over the last 20 years. First generation mobile phones were voice only. With the debut of 2G in the early 1990s, wireless phone technology expanded to support text messaging. Then 3G carried data in addition to text messages and phone calls, allowing users to surf the internet and stream music at a much faster speed.

Next, 4G LTE (Long-term Evolution) enhanced those capabilities with greater speeds and reliability. Now 5G brings a suite of new technologies, with much faster speed, larger frequency range and reduced latency, meaning shortened times for phones to execute the commands requested when the screen is touched. These advances are essential to new technologies such as AI, the Internet of Things and cloud computing.

Figure 6: Smartphone Market Share Trend Between 2004 and 2020

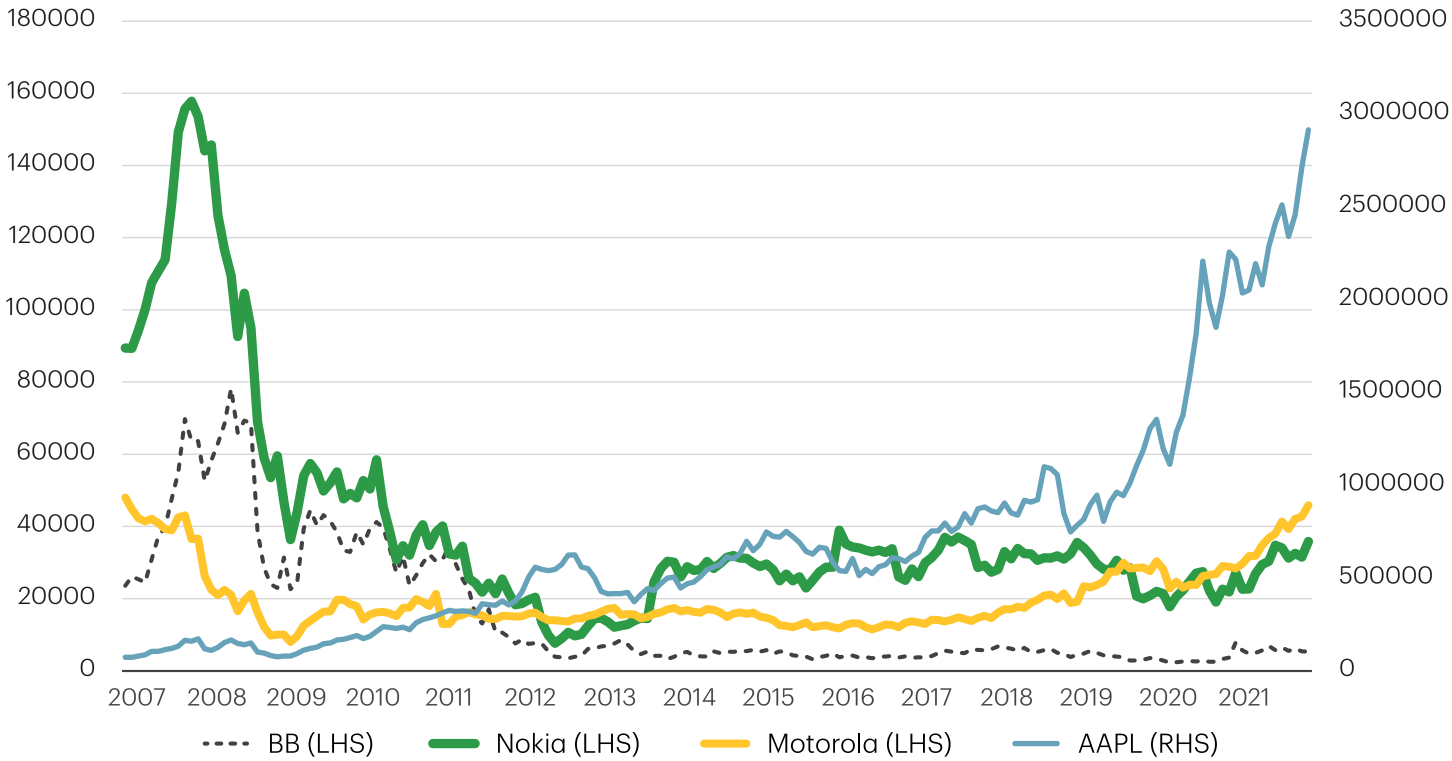


Source: TDAM, Bloomberg Finance LP. As of February 28, 2022.

While Motorola was one of the first mobile phone manufactures, Nokia took over as the dominant market leader in the 2G era. BlackBerry also grew rapidly with its offering, especially among corporate users. When Apple arrived at the scene in 2007, Nokia and BlackBerry's market leadership gradually shrank, and both have now completely exited the smartphone market. Why have Apple and Samsung become the global leaders in the smartphone market, while Motorola, Nokia, BlackBerry and many others have failed?

Figure 7: Market Capitalization Trend for Apple, BlackBerry, Nokia and Motorola from 2007 to 2021

Market Cap for AAPL, BB, Nokia and Motorola US$ mm



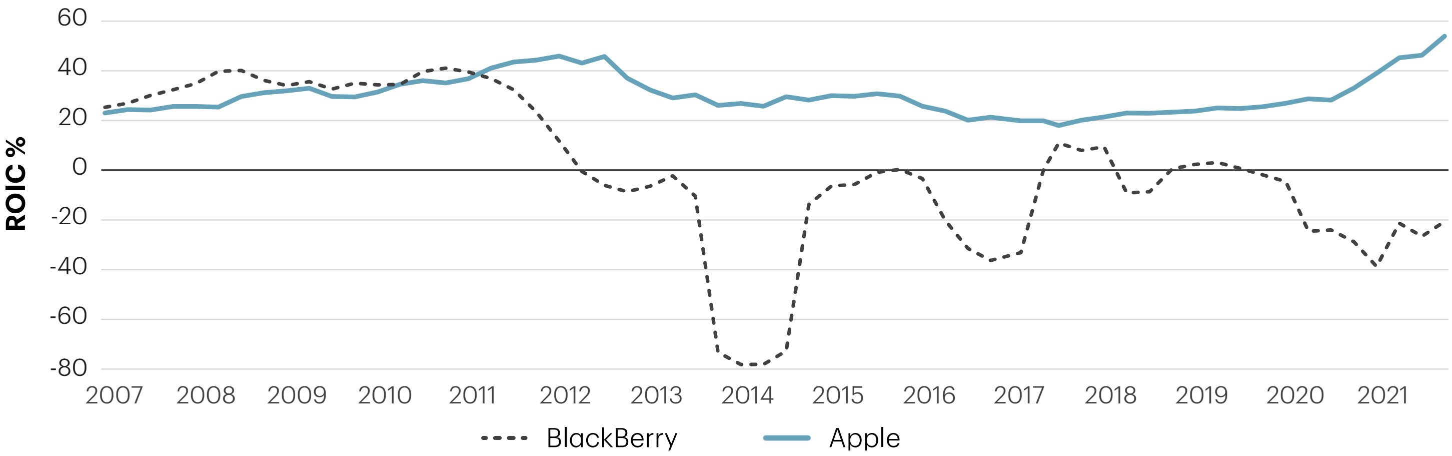
Source: TDAM, Bloomberg Finance LP. As of February 28, 2022.

As we see in smartphone history in **Figure 7**, innovation has been the driving force as the technology continues to advance. Apple and Samsung have been able to drive product leadership in a market which is not only fast-growing but also significant in size. Both companies have invested meaningfully in R&D to develop advanced products that delight customers. They have also vertically integrated where necessary to control their own destiny. Product strength has led to higher customer satisfaction ratings and resale value. Apple in particular has also effectively developed an ecosystem through the network effects with its other hardware (e.g., iPad, MacBook, Apple Watch) and software (iOS, Apple Pay) to lock in a larger share of the customer wallet and create high switching costs.

BlackBerry remained competitive in the early days of Apple's arrival but soon fell behind in its technology and product appeal. As can be seen in **Figure 8**, BlackBerry was able to maintain a high ROIC level until 2011, but as Apple continued to gain market share, BlackBerry became unprofitable soon after. As of January 2022, BlackBerry stopped supporting the operating system on its smartphones, marking the last breath in the long demise of a once iconic smartphone producer.

Apple and Samsung fit our investment philosophy of allocating to companies that continue to enjoy profitable growth. This growth is achieved through their technological leadership, product appeal, pricing power and continuous innovation, despite a highly competitive market.

Figure 8: Return on Invested Capital Trend for Apple and BlackBerry from 2007 to 2021



Source: TDAM, Bloomberg Finance LP. As of February 28, 2022.

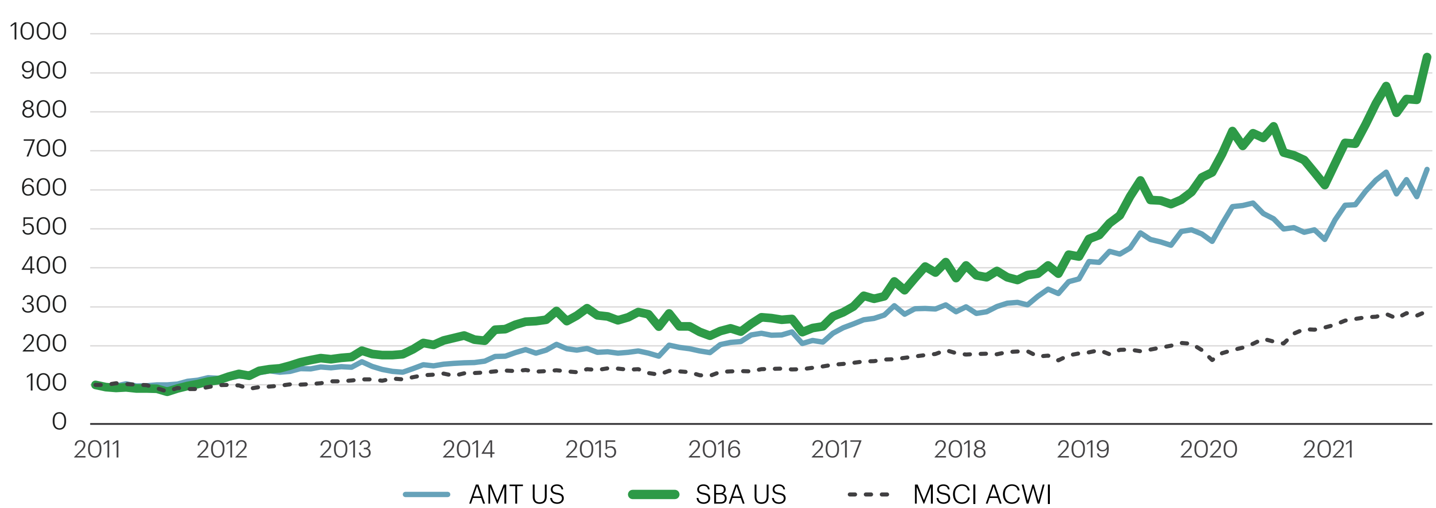
Infrastructure

The infrastructure group, along with the component suppliers, is a lesser-known group along the value chain, but it is one of the best performing groups from a Total Shareholders Return's (TSR) perspective. These companies are owners of wireless communication towers and they lease antennae sites (towers and rooftops) to wireless carriers and radio and TV broadcasters, which use the infrastructure to provide their services.

In the US, the market is dominated by three players: American Tower, Crown Castle and SBA Communications Corporation (SBA). In Europe, the infrastructure assets were owned in-house by the telecom service providers until recent years. These assets were spun off as separate entities or sold to incumbent tower owners to unlock value for the telecoms. Given the longer history of the US towers, we'll focus on American Tower and SBA, although the investment thesis works for both sides of the Atlantic.

Figure 9: American Tower and SBA Corporation Total Shareholders Return Compared to the Markets

Telecom Infrastructure players have consistently outperformed the market



Source: TDAM, Bloomberg Finance LP. As of February 28, 2022.

The tower companies are very well positioned to capitalize on the wireless story, which has been driven by exploding data usage with each generation of wireless technology and smartphone penetration. From 2G to 5G, more data is being transmitted and wireless carriers need to invest in more cell towers. For tower operators, that means higher density and tenancy, which translates to higher revenue and margins. American Towers has limited operating risks as contracts with telecoms are non-cancelable and contain fee escalation provisions, providing the company with a stable revenue stream. The cost structure is largely fixed, offering tower owners a significant amount of operating leverage.

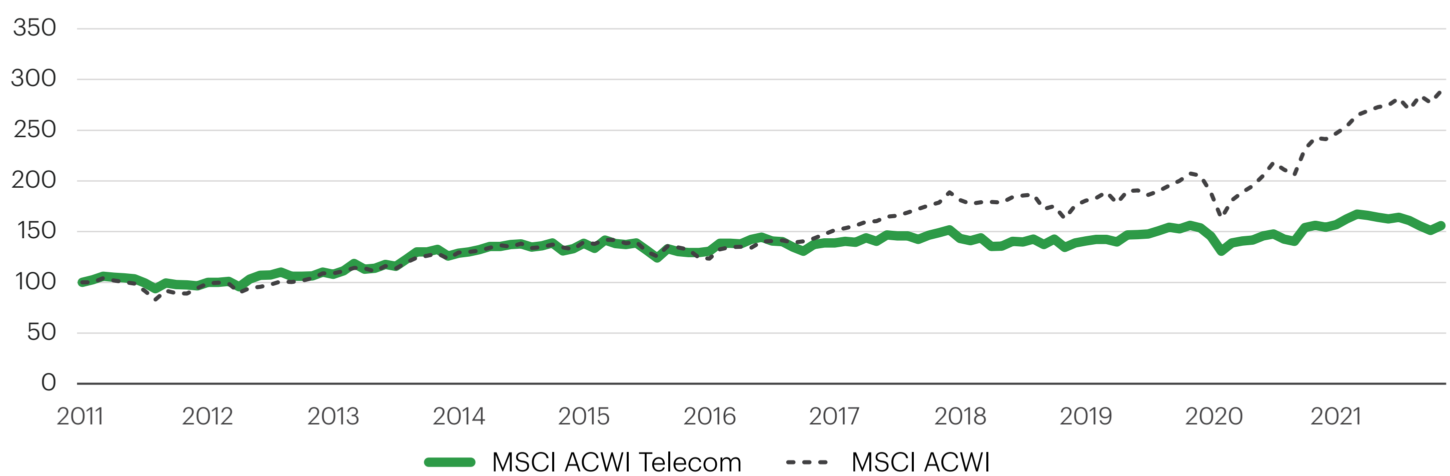
This is why successful tower operators have gained dominant market share, making smaller players less efficient. High initial capital expenditure requirements, carrier switching costs and increased zoning regulations present high barriers for new entrants, making this industry attractive for the incumbents. Unlike new technology in mobile handsets, new alternative transmission technologies such as femtocells and cellular antennas have not been able to efficiently duplicate tower capabilities on a wide scale. Given the attractive industry structure, stable business models and good operating track record, American Tower and SBA have been generating superior returns for investors and are owned in our US, Global and Infrastructure strategies.

Telecom Service Providers

While telecoms are critical to enabling the adoption of mobile phones, the TSRs of this group of companies have been mediocre. The growth expectation that propelled the sector to peak share price in mid-2015 did not pan out and the sector went on a downward trajectory until it saw some recovery in 2021.

Figure 10: MSCI ACWI Telecom Service Index Total Shareholders Return Compared to the Markets

Telecom Services Industry has consistently underperformed the market since 2015



Source: TDAM, Bloomberg Finance LP. As of February 28, 2022.

The telecoms have been a consistent laggard as they have seen their Average Revenue Per User (ARPU) on a persistent downward trajectory over the last decade, with European players[7] at levels less than half of their US counterparts.[8] This can perhaps be explained by a less competitive landscape in the US with a more oligopolistic industry structure and a less hawkish regulatory regime.

However, the services provided by the global telecom industry are characterized generally as undifferentiated with little pricing power. New entrants and incumbents routinely grab market share through price leadership with little customer loyalty as switching costs are relatively low. In addition, with each generation of telecom services introduced, telecom providers have to invest heavily and incur capital expenditures to upgrade networks

[7] https://www.statista.com/statistics/691710/mobile-voice-arpu-evolution-in-europe/
[8] https://www.statista.com/statistics/183882/monthly-arpu-through-mobile-wireless-services-in-the-us-since-2004/

that have failed to drive top-line growth. In the early period of mobile phone penetration, telecom companies also frequently subsidized end users on their handset acquisition, eroding profitability. Many European players also took on debts to grow, resulting in stretched balance sheets. As such, it is not surprising to see that their free-cash-flow yield was halved between 2012 and 2017, before recovering. Our Fundamental Equities team has been underweight the telecoms across various strategies, as the industry structure is unattractive, has low barriers to entry and its products are undifferentiated with limited pricing power.

Figure 11: MSCI ACWI Telecom Service Index Trailing 12 Months Free-Cash-Flow Yield from 2011 to 2021

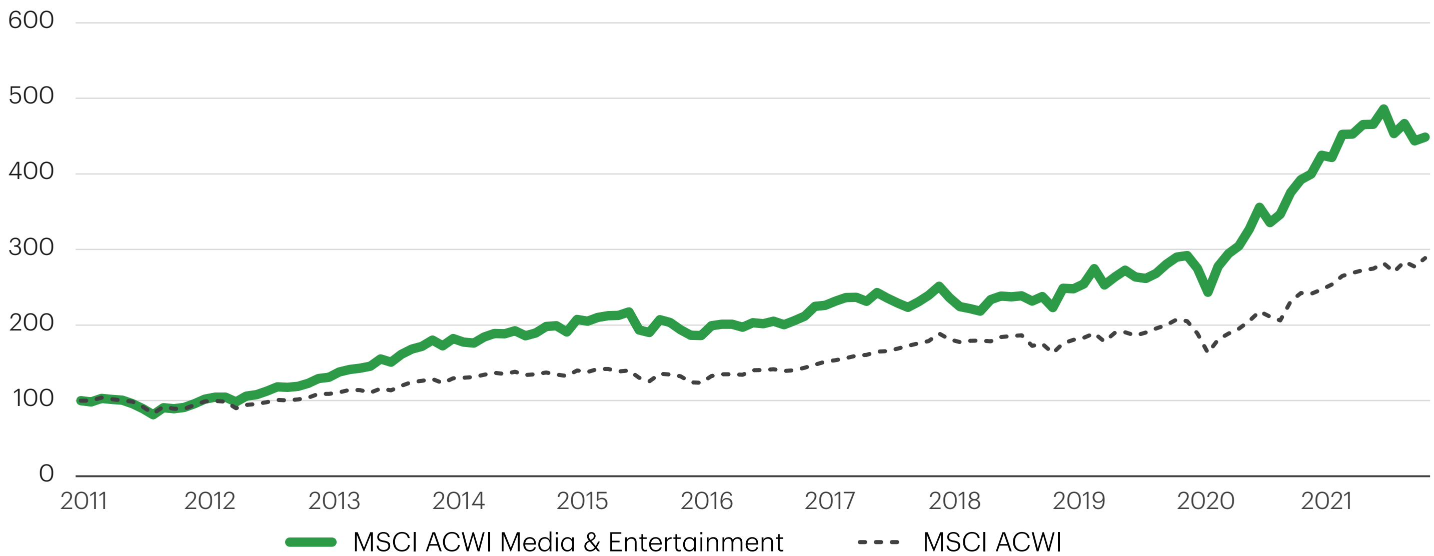
Source: TDAM, Bloomberg Finance LP. As of February 28, 2022.

Content Providers

In addition to making smartphones more functional, the advancement of technology has also created demand for more content – such as news and entertainment - be it on social media, e-commerce platforms, gaming platforms, etc. This group of companies has produced superior returns for investors.

Figure 12: MSCI ACWI Media and Entertainment Index Total Shareholders Return Compared to the Markets

The Media and Entertainment Industry has consistently outperformed the market



Source: TDAM, Bloomberg Finance LP. As of February 28, 2022.

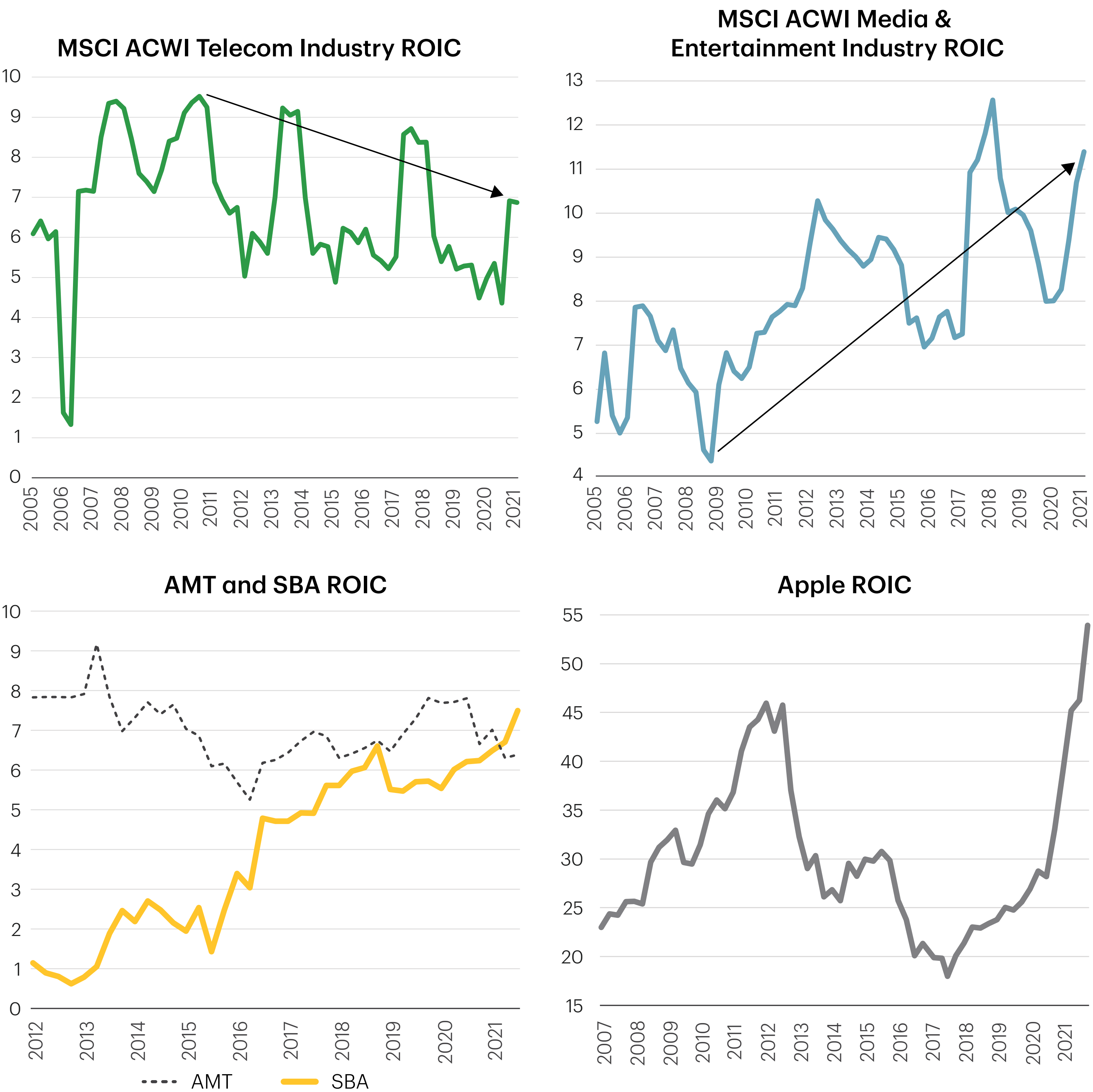
Successful companies in this segment tend to enjoy the Matthew Effect (winner takes most). Innovation drives product leadership, which brings top search results, which in turn drives better engagement and consistently higher market share. Growth begets growth as success funds new R&D initiatives to ensure continued product leadership. Given their asset-light business model, market leaders tend to enjoy strong ROIC and free-cash-flow-per-share growth. Breadth and depth of the portfolio as well as pipeline in the gaming segment are critical to ensure sustainability in the longer term. While one-hit wonders can produce outsized returns in a short period of time, it is not a winning formula for investors with a longer-term outlook and prudent risk management.

What should active managers be on the lookout for? One key consideration is keen competition and the constant emergence of new platforms and apps. Another key consideration are regulatory risks, which our Fundamental Equities team believes have become very tangible. While successful operators tend to gain clout in the marketplace, regulators become uneasy about monopolistic power and customer prejudice practices. Since this success is mostly achieved by superior technology and management's capability, it is unlikely to reverse by itself without government intervention. While the Chinese government's ability to alter the landscape so swiftly with a regulatory reset may not be engineered elsewhere, the political and regulatory scrutiny is likely to intensify in other countries.

Why an Active Approach Makes Sense

As we have seen in the case of the smartphone, new technology continues to bring disruption to the market. No one can stand still and rest on their laurels. New entrants like Apple in 2007 with the introduction of the iPhone eventually overtook early pioneers like Nokia and BlackBerry. This is why our investment philosophy favours companies that focus on efficient capital allocation with a keen discipline on ROIC and sustainable business models, which allows them to outperform their peers.

Figure 13: ROIC Trend for Various Smartphone Value Chain Segments



Source: TDAM, Bloomberg Finance LP, FactSet. As of February 28, 2022.

Investors must continuously evaluate how sustainable the competitiveness of incumbent companies is and the emerging key drivers for the future. 5G technology will bring new opportunities and risks. We believe that in-depth understanding of the value creation among different segments, industry structure, competitive positioning, management's vision and track record are crucial for identifying future innovators who can become front runners in their space. To ensure a portfolio is always best positioned to capture the growth potential of a theme, active thematic investing is key. It allows portfolio managers with deep research capabilities and insights to stay vigilant about incumbent companies which may fail and to seek out new disruptors as they appear.

Thematic Investing

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