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## Volvo Cars IPO

A case study of Geely's decision and process to list Volvo Cars on Nasdaq Stockholm<sup>1</sup>

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### ABSTRACT

On 29 October 2021 Volvo Car AB began trading on the Nasdaq Stockholm exchange. The listing was the culmination of 5 years of attempted corporate actions, pivoting through an aborted IPO attempt in 2018, an abandoned merger with its parent Geely Auto in 2020, and finally the successful listing itself. When it went public, the company was immediately one of the largest publicly traded entities in the Nordic region. The household nature of the brand, scale of the listing, valuable subsidiaries, strong majority owner, relations with China at a time of global trade tensions, and the dynamic evolution the company was undergoing as it raced towards electrification led to many profound questions. This paper seeks to investigate how Volvo Car AB navigated the unique listing process for the Swedish market, whilst maximizing its value for shareholders old and new at a time when close competitor Tesla had become the most highly valued vehicle OEM in the world.

Key words: Swedish IPO, corporate finance, raising capital, foreign ownership, automotive OEM

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# 1. Introduction and case background

On 29 October 2021, Volvo Car AB began trading on the Nasdaq Stockholm exchange. The listing was the culmination of 5 years of attempted corporate actions and comprises various interesting factors to explore, including the dynamics within the Swedish public exchange market and how Volvo Car navigated this process, as well as how the company, the owner, the investors, and the general public viewed its valuation given the household nature of the brand, scale of the listing, valuable subsidiaries, strong majority owner, relations with China at a time of global trade tensions, and the dynamic evolution the company was undergoing as it raced towards electrification.

This thesis aims to serve as a foundation for a case study in an academic setting, with the intention of shedding light on the Swedish IPO process through the lens of a well-known automotive manufacturer as well as one of the most notable IPOs in Sweden to date. It seeks to answer questions including but not limited to what various parties considered in this IPO, the steps leading up to an IPO, how a company's history and ownership can affect the IPO, how valuation is determined given market uncertainty and unprecedented equity valuations, and so forth.

Most of the data from this case thesis is retrieved from publicly available sources as we have cited in the reference list, as well as through the authors' interviews with key personnel from various parties, including Volvo Car, SEB (Joint Global Co-ordinators), DNB (equity researchers), AMF (cornerstone investors), Finansinspektionen (regulators), and Mannheimer Swartling (lawyers). Our aim was to piece together the considerations from each party in order to present an unbiased image of the process, as well as the specific nuances thereof. We acknowledge that there are additional parties involved with potentially differentiating views and thus our scope is limited to the resources that we had.

This paper is comprised of four main sections – 1. The history of Volvo Cars, Geely Holdings, and the Automotive industry, 2. The IPO Process, including the advantages and

disadvantages of going public, 3. The valuation of Volvo Cars and a discussion of its future ambitions, and 4. A timeline of how the process played out. We believe that through this structure, we can best answer the key questions in a clear and concise manner.

## 1.1. A History of Volvo Cars

We have split Volvo Cars' history into five segments – its founding and initial global expansion under SKF, its journey under the AB Volvo Group, its divestment and rapid decline under Ford, its redemption and growth journey under Geely, and finally, the circumstances leading up to and during the initial public offering that occurred on October 29, 2021. The purpose of this section will be to provide context on the key events that shaped Volvo Cars into what it is today. Please see Exhibit 1 in the appendix for a more concise timeline of events.

### 1.1.1 Founding and under SKF

Volvo was founded in 1927 in Gothenburg, Sweden, by two employees of the Swedish bearing and seal manufacturer Svenska Kullagerfabriken AB (SKF). Assar Gabrielsson, a former clerk at the Swedish parliament, was initially appointed as a sales manager, while Gustaf Larson, a fresh graduate of KTH Royal Institute of Technology, was hired as a civil engineer. The two were previously acquaintances at AB Galco, a mechanical workshop in Stockholm, and thus they spent many hours discussing their mutual interest in car manufacturing.

At that time, one of the operational problems within SKF was the inability to ensure quality ball bearing testing prior to production. Many competing ball bearing manufacturers bought into vehicle manufacturing companies as a result – so that they can test the ball bearings on their own automobiles. Partially driven by his own interest in car manufacturing, Gabrielsson also saw the potential synergies of creating an automobile manufacturing subsidiary with SKF and thus proposed a plan to build passenger vehicles with the spare SKF parts.

Supported by Sven Windquist, the founder of SKF, Gabrielsson and Larson quickly got the approval as well as the financial support needed from the company and immediately got to work. Eventually, on April 14<sup>th</sup>, 1927, the first Volvo car – the ÖV4 – rolled off the assembly

line in Hisingen, Gothenburg, and fulfilled the duo's dream. AB Volvo, latin for "I roll", became the name of this new SKF subsidiary. See Exhibit 2.

Despite the quality of the ÖV4, sales in the first year were low at AB Volvo - with a total of 297 cars sold. The main factor for the low sales can be attributed to the strict safety standards that must be adhered, thus slowing down production significantly. As such, AB Volvo was operating at a loss and became a financial burden for SKF. During this financial crisis in 1929, SKF was close to divesting the young subsidiary to Nash Motors Co., an American car manufacturer founded by former General Motors president, Charles W. Nash. This divestment was narrowly avoided, however, when Björn Pritz, a senior member in SKF and a supporter of Gabrielsson, persuaded the board to hold off the sale in exchange for a perpetual royalty agreement with AB Volvo.

This later proved to be a wise decision, as in the same year, AB Volvo was able to operate at a small profit. (Hökerberg, 2000) However, this would not be the only time competing automobile manufacturers show interest in this innovative Swedish company. Over the next several decades, Volvo established itself as a leading automotive manufacturing powerhouse. With the introduction of trucks and buses to the lineup in the 1930s, Volvo began to find commercial success in Europe. After the second world war, the brand began to receive recognition worldwide. In 1935, SKF eventually decides to float Volvo's shares on the Stockholm Stock Exchange as an exit and thus AB Volvo became an independent company, though the ties between the two firms remained strong.

### 1.1.2 Under AB Volvo

As part of AB Volvo's ambitious growth agenda, the group has pursued both organic and inorganic growth. In 1935, Volvo acquired Pentaverken, an engine manufacturer. This was followed up by the acquisition of Svenska Flygmotor in 1942, a Swedish precision engineering firm. Both acquisitions increased Volvo's internal capabilities in car manufacturing and in the development of other product offerings. In 1950, Volvo acquired the construction and agricultural equipment manufacturer, Bolinder-Munktel. By this time, Volvo has become a conglomerate with strong product recognition and a diverse portfolio of subsidiaries. Its aggressive expansion plans and vision for worldwide success has become part of its DNA.

This expansion plan was later complemented by an element of fear, as AB Volvo's new CEO Pehr Gyllenhammar believed the passenger vehicle manufacturing part of Volvo was too small to survive on its own in the future. Thus, during the 1970s, AB Volvo acquired a 33% stake in Dutch auto manufacturer DAF. After the oil crisis of 1973-1974, AB Volvo assumed an even greater control of DAF and changed DAF's name to Volvo Car B.V. Around the same time, AB Volvo also tried to combine its operations with SAAB-Scania, a rival automotive group. This merger would have made AB Volvo one of the largest European manufacturing companies at the time (New York Times, 1977), but the deal was eventually called off by the latter party - despite approvals from AB Volvo's labor unions. SAAB was speculated to have also been in talks with Lancia during that time, an Italian auto manufacturer owned by Fiat.

At the end of the 70s, AB Volvo restructured its operations and converted its car operation into a separate subsidiary. This paved the way for AB Volvo's partnership with French carmaker Renault, who bought a minority stake of 9.9% in the subsidiary in 1979. Even though this stake was eventually sold back to AB Volvo in the 80s, AB Volvo and Renault deepened their cooperation by finding synergies in purchasing, R&D, and quality control. The cooperation also led to cross-ownership in the 90s and ultimately, in 1993, a Volvo-Renault merger was announced. (Pederson, 2005) The Volvo-Renault deal would have potentially lifted AB Volvo out of the earning slump in the early 90s but was shot down last minute by AB Volvo board members due to a provision granting the French government the right to increase its ownership of the joint company to beyond the contracted 65%.

### 1.1.3 Under Ford Motor Company

Around this time, AB Volvo began a series of divestment to become profitable again. In 1999, AB Volvo made the monumental decision to focus its future on the commercial vehicle sector and thus announced a sale of the Volvo Cars subsidiary to American car manufacturer Ford Motor Company for US 6.45 billion or SEK 50 billion. This deal was viewed as a home run for both Ford and Volvo – Ford needed a distinctive European brand in the medium-priced luxury market to go along side its evolving Premium Automotive Group (including Jaguar, Lincoln, Land Rover and Aston Martin) while Volvo needed the capital to expand its new commercial

vehicle strategy. Ford's stock price jumped 3.6% on the announcement (Simison, Coleman, & Latour, 1999) and thereafter the AB Volvo brand was split in two: Volvo Group and Volvo Cars.

Despite the theoretical fit, Volvo Cars performed poorly under Ford's ownership. From Volvo Cars' internal perspective, the poor performance was driven by Ford's inability to leverage Volvo's heritage and leadership in safety – In other words, Ford had tried to establish its own values in the company and failed to recognize Volvo Cars' unique strength. Thus, while Volvo Car's market share did increase in the U.S. as a result of the acquisition, it also faced stiff competition from German car makers, BMW and Mercedes-Benz, who held on to their European values.

Eventually, when the global financial crisis of 2008 hit and consumer consumption fell drastically, Ford was under heavy pressure to divest its stake in the loss-making subsidiary in order to stay afloat. As a group, Ford reported a record high USD 14.7 billion loss during the year (Ford Motor Company, 2008) and both of its largest competitors, GM and Chrysler (together constituting the “Big 3” automobile manufacturers at the time) filed for Chapter 11 reorganization (Wang, 2011). In addition to its local American woes, the Swedish state has also expressed severe concern regarding the mass lay-offs that were happening at the Volvo Cars manufacturing facilities in Sweden. On December 2008, Ford finally announced the sale of Volvo Cars to China's largest private-run car maker Zhejiang Geely Holding Group for a total enterprise value of USD 1.8 billion, financed by 1.3 billion in cash and the rest with financing from Chinese institutions. (Volvo Cars, 2008)

#### 1.1.4 Under Zhejiang Geely Holding Group Co.

In stark contrast to its negative performance under Ford's “active” ownership, Volvo Cars flourished under Geely's more hands-off approach. Over the course of a decade, Geely poured more than USD 11 billion into the once-struggling company to support research and development and instigated an early shift towards the electrification of Volvo Cars' product offering. Geely also leveraged its later acquisitions of car companies to provide new technologies to Volvo Cars and opened up the Chinese middle-class consumer market.

Despite the immense support it provided on various fronts, Geely was careful with its influence. Geely believed in Volvo Cars' innate ability to innovate, as well as its heritage as a forerunner in safety engineering. As such, the local Swedish management team had the freedom to grow and operate the company as they see fit, whereas Geely mostly provided the capital and resources rather than instructions and guidance. In some ways, Geely treated Volvo Cars much like a partner rather than a subsidiary.

As part of the resources provided, Geely assisted Volvo Cars in together acquiring 100% of Polestar (50-50 joint venture between the two groups), a Swedish high performance car company, in 2015. (Volvo Cars, 2015) Volvo Cars and Polestar share a long history, as Polestar used to be a racing team that uses Volvo vehicles back in 1996. Since the acquisition, Polestar has utilized Volvo Car's twin engine electrification technology to develop next generation performance cars whereas Volvo Cars has been able to diversify its product lineup. See Exhibit 3.

In 2017, Geely and Volvo Cars announced that Polestar would be a standalone brand focusing on electric vehicles and that they will jointly invest EUR 640 million in the company to support "the development of Polestar's product, brand and industrial development." (Volvo Cars, 2017) Through this investment, Volvo Cars is also able to gain access to the newly developed technology needed to electrify its own brand.

### 1.1.5 Public offering

By 2018, Volvo Cars has grown to reach EBIT levels of SEK 28.6 billion, compared the negative EBIT a decade ago. At the start of the year, Geely considered floating a portion of its shares on the stock exchange and hired Citigroup, Goldman Sachs and Morgan Stanley as joint co-managers (Reuters, 2018) to explore the option. Though the exact reasons were not explicitly stated by Volvo Cars and Geely, investors – including Swedish pension fund AMF, one of the cornerstone investors who later participated in the 2021 IPO – were not surprised, as they have speculated that the capital needs stemmed from the anticipated high R&D expenses needed for the full electrification of Volvo Cars' lineup.



However, by September, Volvo Cars announced that the plans for the IPO have been postponed, as the consequence of Swedish-China trade tensions as well as a general downturn in automotive stocks that dragged the Stoxx 600 Auto and Parts index 15% lower. (Volvo Cars Drops IPO, 2018) External observers, on the other hand, claim that it is due to the valuation of Volvo Cars not reaching the USD 16 – 30 billion level desired by Geely. This theory would be in line with the asymmetric information model, which states that if the owner of a company knows they are currently undervalued, they will postpone their equity issue. (McDonald & Lucas, 1990)

Almost 2 years later, at the start of 2020, the market started to catch onto a favorable trend shift towards electric vehicles. Tesla, an American all-electric vehicle manufacturer with only 4 car models in its lineup, broke the record for the highest valuation of any American manufacturer at a market capitalization of USD 86 billion. Just 5 months later, this valuation more than doubled to USD 206 billion, making it the most valuable automaker by market cap. On a demand level between 2020 and 2021, the share of electric vehicles in car sales spiked from 5% to 16% in China, 2% to 5% in the US, and 10% to 17% in Europe. From Volvo Cars' perspective, this was a prime time to consider floating its shares again. (International Energy Agency, 2022)

In October 2021, after a record year of 143 listings in Europe, Volvo Cars was listed on the Stockholm Nasdaq, having floated 377,358,490 class B shares at a price of SEK 53 – equating to SEK 20 billion raised and thus valuing the entire company at SEK 158 billion – the lower end of what Geely expected back in 2018. (Volvo Cars, 2021) The full IPO process will be documented in section 4 of this paper.

Almost a year later in June 2022, Geely and Volvo Cars also decided to float approximately 6% of Polestar, the now pure play EV manufacturer, on the New York Nasdaq via a special purpose acquisition company (SPAC). The listing raised USD 890 million, which is expected to further fund the R&D of both Polestar and consequently, Volvo Cars. See Exhibit 4 for a detailed breakdown of Polestar's SPAC. Today, Volvo Cars is focused on its vision to become fully electric by 2030, and with the required capital now in place, it is a matter of time before the goal is reached. (Polestar, 2022)

## 1.2 A History of Zhejiang Geely Holding Group Co.

Zhejiang Geely Holding Group, more often referred to as just Geely, was founded in 1986 by Li Shufu (Eric Li) in Taizhou city, Zhejiang province, China. The name Geely means “auspicious” in Chinese, which reflects the hope Li had for the company. In the beginning, Geely was a refrigerator parts manufacturer, but 8 years later it shifted to motor vehicle manufacturing following the acquisition of a failing state-run firm. The mission of the company then became “making good cars that common people can afford.”

The first vehicles rolling off the production line were motorcycles. Due to the low cost and efficiency of these vehicles, it grew to be widely successful in China. With a win under its belt, Geely then began to move into automobiles and consequently, in 1998, the first Geely car was introduced. Three years later, in 2001, Geely received a license from the Chinese government to produce vehicles, making it the first private car maker in China to be officially authorized. In 2005, Geely broke another record and became the first Chinese automaker to be listed on the Hong Kong Stock Exchange (Ticker: HK0175).

When Geely acquired Volvo Cars in 2010, it did so with the intention of expanding its offering to the Chinese market. At the time, the only other significant foreign investment Geely has made to date was a joint venture with Manganese Bronze Holdings, the manufacturer of the classic London Taxi cars, which Geely also brought back to China. This initial import-centric mindset soon shifted to a forward-thinking and entrepreneurial view, which is reflected by Geely’s establishment of the China Euro Vehicle Technology Centre (CEVT) in Gothenburg, Sweden, in 2013. The center was to be jointly run by Volvo Cars and Geely Auto to develop modular architectures and key components for the next generation of vehicles, not just in China, but around the world.

The years following the Volvo Cars acquisition can be defined as a period of exponential growth. In 2016, Geely established Geely New Energy Commercial Vehicle, a subsidiary focusing on the development of electric vehicles. Following which, Geely created Lynk & Co as a joint venture with Volvo Cars, as well as acquiring stakes in several additional foreign car

manufacturers, notably Lotus, Terrafugia, and Daimler, over the course of 3 years. See Exhibit 5 for an overview of Volvo Group's holdings and Exhibit 6 for Volvo Cars' group structure.

Geely today is more than an auto manufacturer, as it invests in various technologies and even financial institutions. (Exhibit 7) However, Volvo Cars is very much a part of the group's core and Geely is sure to maintain its majority stake in the renown Swedish car manufacturer in the near future, as evident in its reluctance to give up voting shares during the 2021 IPO.

### 1.3 A History of the Automotive Industry

The automotive industry's origin is rooted in the development of gasoline engines in the 1860s and 70s. Most players in the field then were small family shops that self-produced the vehicles. However, when the era of mass-production came about in the 1900s, only a few of these manufacturers survived, largely due to the inherent high costs associated with making each individual vehicle. (Rae & Binder, n.d.)

Besides gasoline powered vehicles, steam and electric vehicles were popular in the 1890s. In fact, it wasn't until 1920s that the non-gasoline vehicles phased out – steam-powered vehicles largely due to how expensive the engines were and electricity-powered vehicles due to the limited battery storage capacity.

By the early 1900s, the United States became the birthplace of the full-scale mass production technique, supported by its large population, high standard of living, and long distances. Henry Ford, the eventual founder of the Ford Motor Company, was among one of the early pioneers who envisioned designing “a car for the great multitude”. Following his vision, he designed and mass-produced the widely successful Model T. This paved the way to what is now known as assembly-line mass production – a method whereby each “station” was focused on just one task, and thus efficiently churning out large quantities of product at the same general quality standard. This method eventually made its way to Europe and was also implemented by the likes of Herbert Austin, André-Gustave Citroën, and Louis Renault – founders of the respective namesake motor companies.

At the end of the 1920s, the industry began a period of rapid consolidation as the effects of the Great Depression set in. Smaller manufacturers were going out of business due to the lack of demand, and thus, after an era of intense M&A activity, the market was left with giants that had the majority of the market shares. For example, in the United States, the “big 3” were General Motors (GM), Ford Motor Company, and Chrysler. Whereas, in France, it was Peugeot, Renault, and Citroën, and in the United Kingdom, it was Austin, Morris, and Singer.

Close to two decades later, the production capabilities of the industry were put to the test, as World War II broke out. Car manufacturers were tasked with providing the military with vehicles, including trucks, jeeps, and even tanks. Countries that historically had weaker production also ramped up significantly, as manufacturers received funding from their respective states to build military vehicles – with Germany being a prime example.

At the end of the war, there was a massive expansion of motor vehicle production worldwide. In the 35 years following, the total world output of vehicles increased almost ten-fold. Most of this growth occurred outside of the United States, as Japan grew to be a leading producer with brands known for its build-to-last nature, such as Nissan, Honda, and Toyota. Individual countries, especially in Europe, also saw the rising up of smaller manufacturers as well. For example, Fiat in Italy, Volvo and SAAB in Sweden, BMW in Germany, Tata Motors in India, and Hyundai in South Korea.

Towards the end of the 1990s and at the beginning of the 2000s, the world grew to be more international, and thus the automotive industry also saw an increase of M&A activities as firms sought to utilize the economies of scale, gain access to design and manufacturing techniques, and find entry into international markets. This resulted in a market consolidation similar to the 1900s and the 1920s. For example, Chrysler acquired AMC in 1987 to build jeeps, merged with Daimler-Benz in 1998 for the manufacturing techniques, and invested in Mitsubishi and Hyundai in 2000 to enter the Asian markets.

By the late 2010s, the global industry was led by some of these large manufacturers such as Toyota, Volkswagen, Hyundai/Kia, General Motors, and Ford. (Exhibit 8) As most of these

firms are in the same markets, it became harder and harder to distinguish the strengths and weaknesses of each brand. As such, the industry began shifting away from competing on economics of scale. Instead, companies began competing on the transformation from gasoline-powered to electricity-powered, driven largely by consumer demand and regulatory initiatives, such as the EU 2030 Climate Target Plan.

This trend has also seen the birth of pure-play electric vehicle manufacturers such as Tesla, Polestar, Lucid Motors, and NIO, among others. The record-breaking valuation of these firms in the early 2020s have incentivized many of the traditional “legacy” manufacturers to transform and head towards this direction. At the time of the Volvo Cars IPO, almost all large manufacturers have at least some hybrid car models, if not pure EV, in their lineup.

## 1.4 Motivation and Considerations for the Initial Public Offering

According to Volvo’s press release on May 2021, Volvo Cars has four mid-decade business ambitions. First, it is to sell 1.2m cars globally, with at least half being fully electric vehicles. This would also include maintaining an EBIT margin of 8-10% despite potential capital expenditure and operating expenditure increases. Second, a full electrification of the company through pure EV sales, with 50% of its lineup being battery electric vehicles (BEVs) by 2025 and 100% by 2030 – this also includes bringing production capabilities completely in-house by 2025, via vertical integration. (Exhibit 10) At the time these goals were published in H1 2021, Volvo already had 25% EV sales, albeit through plug-in hybrid electric vehicle sales (PHEVs) rather than BEVs. Third, the improvement of future car models through core computing power and software upgrades, 50% of which should be developed in-house by 2025. Fourth, to reduce average CO2 emissions per car by 40% between 2018-2025 and to be fully climate neutral by 2040. (Volvo Cars, 2021)

In addition to these internal goals, it also aims to further develop Polestar and Lynk & Co., the joint ventures established with Geely where Volvo Cars holds 48.1% (post Polestar-IPO stake) and 30% stake respectively, to become leading EV manufacturers by 2025. It also is aiming to further roll out its car subscription service – “Care by Volvo” in an effort to penetrate online sales and create an additional revenue stream.

With these combined ambitious growth targets, Volvo Cars needed to therefore ensure a strong balance sheet with significant amounts of cash to fund research and development, especially due to the volatile cash flows of the auto industry. As such, Geely had a crucial decision to make: how should it fund Volvo Cars' ambitious transformation? And depending on the how, when? While the decision to raise capital is straightforward and unanimous, the decision to raise capital via a public offering as opposed to debt or further equity injections from Geely is multi-faceted.

#### 1.4.1 External debt financing

For Geely, the main opposition to raising external capital was losing control as the majority owner. As aforementioned, Volvo Cars played an essential role in Geely's long-term vision to become a world-class automaker, which makes it all the more important for Geely to have the final say in major decisions in the partnership. While Geely was open to bringing on additional investors and to drive engagement from the retail community, it was clear that it wanted to maintain its power as the owner of the group and not lose control. Financing the expansion through debt, rather than equity, would prevent this potential problem.

During the previous years under Geely, Volvo Cars has actually financed its growth targets of 800,000 vehicles sales in 2020 through large loans. In 2010, the group received a SEK 3.55 billion loan from the European Investment Bank. Two years later, it received an additional EUR 922 million loan from the China Development Bank (part of which was used to pay down the first loan), with maturity in 2020. One year after that, Volvo Cars received a third loan, amounting to USD 800 million with maturity in 2021.

Not only did the loans help Volvo Cars come close to its sales target, it also created a large tax-shield over the years, offsetting the tax obligations stemming from the exponentially increasing revenues during the bullish 2010-2020 decade. However, when sales slumped in 2020 due to the effects of lower consumer spending driven by Covid-19, management began to grow wary of the potential dangers of having high leverage, especially in a rising interest rate environment. As companies often make the choice of financing instruments as if they have target levels of debt in mind (Marsh, 1982), other financing options seemed to be a less risky way to go, given uncertainties surrounding 2021 and beyond.

### 1.4.2 Internal equity injections

Since 2010, Geely has been continually pouring capital into Volvo Cars directly and through investing in their joint ventures, such as Polestar and Lynk & Co. Unlike getting access to external financing, internal equity injections are limited to the assets and equity on Geely's balance sheet. Equity injections from Geely specifically is also subject to foreign exchange risk. Thus, in 2021, Geely came to the realization that while funding Volvo Cars internally can retain Geely's ownership stake, the level of cash flow and the constraint of it being the only financing option simply is not enough for the proposed transformation Volvo Cars is planning to undergo. Geely can raise additional external capital through its own status as a publicly traded company, but that will come at the cost of losing ownership in the parent company.

As a potential solution, the idea of merging Volvo Cars and Geely's Automobile subsidiary was explored. Volvo Cars and Geely Auto would merge its engine development and manufacturing assets, supplying the entire group with next-generation combustion and hybrid engines. Geely Auto will be able to use Volvo Cars' brand to enter into the European market and vice versa. Financially, this will buoy Geely Auto's valuation upwards through the injection of assets, and grant Volvo Cars access to the capital markets in Hong Kong and even Stockholm, via a dual listing.

Plans for the merger were soon scrapped, however, when the management agreed that Geely Holdings should maintain an ecosystem of entities. This merger would be considered an anomaly within the group and does not necessarily enable further benefits from the current partnership structure. As such, Geely began to explore the option of publicly listing Volvo Cars, and if it were possible to retain firm ownership while raising capital.

### 1.4.3 External equity injections

This desire to maintain control caused controversy during the initial IPO discussions with investors, as Geely wanted to maintain a complete grip on the company by floating only common non-voting shares and retaining all the preferred voting shares. This would imply a 98% control of the voting rights (the other 2% belonging to AMF and Folksam, having invested between 2016-2019), despite Geely having only 83% equity stake in the company. As investors were apprehensive about buying

shares in a company they have no influence over, Geely relented and thus convert all shares into common shares, which resulted in Geely retaining 84% of both capital stake and voting rights.

While the loss of minor control was disappointing for Li Shufu, the pros of an IPO outweighed the cons in this instance. For example, by being listed as a public company, Volvo Cars receives a stamp of quality approval from the regulators, which opens up the door to more debt financing at lower cost of debt due to lower perceived risk. With diversified ownership, the firm also gain access to lower cost of equity, driving up the market capitalization. In other words, the IPO itself can add value to the firm as investors, customers, creditors, and suppliers place their trust in a company that has gone through thorough vetting. (Maksimovic & Pichler, 2000)

In addition, the IPO also creates a platform whereby it can raise additional capital in the future, as well as the chance to initiate share-buybacks in times of low market valuation. This was important to Volvo Cars, as it has grown to be a large global market player. Supported by the life cycle theory of Chemmanur and Fulghieri, Volvo Cars was at a point in its development where having additional levers of external financing and the agility to change its capital structure was crucial to its growth. (Chemmanur & Fulghieri, 1999) Lastly, though minor, through increased media attention and scrutiny from an IPO, the risk of potential agency problems can be significantly reduced. (Ljungqvist, 2004)

Regarding the amount to float, Geely had to find a balance between the Swedish regulatory requirements and its capital needs. According to the Swedish Securities Market Act (lagen (2007:528) om värdepappersmarknaden), a company must distribute a sufficient amount of shares to public hands to ensure liquidity exists. The rule of thumb is generally 25% and 500 qualified shareholders. (Nasdaq, 2022) This amount, however, would turn out to be massive, given how big Volvo Cars' perceived market capitalization is. Fortunately, Volvo Cars received an exception from the authorities and only had to float "a reasonable amount", which would be approximately 17.9%, if considering the full exercise of overallotment options and the conversion of existing preference shares from institutional investors AMF and Folksam. As a whole, if the total value of the offering amounted to the projected SEK 23bn, it would bring in more capital than what Geely can inject internally, and without the risks that comes with bringing in leverage.



With the decision to list thus being certain, there are only three questions left – where, when and how should Geely list Volvo Cars?

During discussions of the scrapped Geely-Volvo merger, management had considered a dual-listing of the firms in both Hong Kong and Stockholm. (See Exhibit 9 for Volvo Cars' management team and board) However, with Geely now as a separate entity, listing on Nasdaq Stockholm seemed a lot more logical than on the Hong Kong Stock Exchange. When companies decide where to list, they often consider factors such as the main shareholder geography, listing process and approval timeline, accounting standards, type of exchange, listing and compliance costs, and the number of shareholders. Volvo Cars was no different: the management did consider that while listing in Hong Kong or another foreign exchange such as New York may positively impact valuation as well as increase brand awareness (Steinbach, 2018), Volvo Cars was the national pride of Sweden and had access to much more resources and support locally.

A key example of this was the relationship Volvo Cars had with its anchor investors, AMF Folksam, Swedish pension funds AP1, AP3, AP4, as well as Alecta Pensionsförsäkring. During the entire listing process, the anchor investors acted as a sparring partner for the firm – helping solicit interest from external parties and giving feedback on topics including valuation and timeline.

In addition, Volvo Cars was familiar with the accounting and regulations of its home market. Many professionals in Volvo Cars' finance team had worked with Swedish companies and Swedish GAAP all their lives, and thus preparing for the listing in Sweden would be far less complicated than in other geographies. Lastly, for Geely, it was an opportunity to reduce the negative perception that Volvo Cars was not Swedish owned.

As for the when - during 2021, a record number of companies went public, driven by record high market valuations. This supports the market-timing theory – that high IPO activity may follow periods of high underpricing, as firms are valued at multiples that cannot be attributed solely to organic growth. Therefore, entrepreneurs/owners are more inclined to sell shares after valuations in the public markets have increased. (Ritter & Welch, 2002) Volvo Cars is no different. As the

primary reason of the public offering was to raise additional capital, it would make sense for the firm to take advantage of the optimal market environment. (Pástor & Veronesi, 2005)

As such, Volvo Cars did list in Nasdaq Stockholm via a traditional initial public offering process during 2021, but Polestar was publicly listed a year later in Nasdaq New York via a special purpose acquisition company (SPAC). The listing process of the traditional IPO in Sweden will be covered in depth in section 2 of this paper, but for now it may be sufficient to conclude that the discrepancy in listing location between Volvo Cars and Polestar was largely due to the prevalent market conditions, i.e., timing, as the global financial market made a U-turn at the start of 2022, which was then exasperated by the effects of the Russia-Ukraine war and the European energy crisis. This on its own is an interesting phenomenon that may also support Baker and Wurgler's prediction that when investors are overoptimistic, firms respond by issuing equity in a window of opportunity, setting up the overall stock market return to be lower in the following year – though it may be difficult to pinpoint the exact causes of the market U-turn. (Baker & Wurgler, 2002)

Lastly, regarding the how. Geely and Volvo Cars ultimately decided to list Polestar on Nasdaq New York via SPAC largely due to three main reasons. The first reason is the price certainty associated with the SPAC process. By listing via SPAC, Geely and Volvo Cars are able to negotiate a capital commitment and a binding valuation for Polestar several months prior to the merger. In addition, an IPO done via SPAC can be executed in as little as three to five months, compared to the traditional IPO timeline of nine to 12 months. This was especially important for Volvo Cars, as Stockholm experienced an "IPO fatigue" towards the end of 2021 and the company was worried about a potential slowdown in the global capital markets.

Second, Polestar wanted to be listed in a market where pure EV makers are valued at a significant premium based on comparable transactions. Nasdaq New York was home to several pure-play EV companies, such as Lucid, NIO, Xpeng, and Tesla. These peers have reached sky-high valuations over the 2020-2021 period, and thus Polestar was more inclined to be in an exchange that was familiar with its business. Though Volvo Cars and Polestar are listed on different exchanges, the motivation behind both listing seems to support the market-timing theory as mentioned earlier. (Ritter & Welch, 2002)

The third reason and final reason for its choice of listing was due to the sponsors. SPACs inherently holds execution and regulatory risks, due to the compressed timeline. (Bazerman & Patel, 2021) However, due to the relationship Polestar has with the Gores Group and Guggenheim Partners (together Gores Guggenheim – the SPAC sponsor), the firm felt confident in the successful execution of the IPO. See Exhibit 4 for the SPAC structure.

## 2. The IPO Process

This section is approached through three parts – a discussion on the pros and cons of going public, an overview of the listing process in Sweden, and the regulatory requirements for listing.

### 2.1 Advantages and Disadvantages of Going Public

The motivations for Volvo Cars to go public have been discussed above, though here we would like to outline more general considerations which a firm should take into account when embarking on the process of listing their equity on a stock exchange. Though there are advantages to this corporate action, there are also risks which should be taken into account (Newman, 1985).

#### 2.1.1 Cost

##### 2.1.1.1 Direct Costs

Arguably the largest consideration is the sheer cost involved in taking a company public. These costs should be considered in two ways: the not-insignificant cash costs, and the time commitment required by the senior executives at the issuing firm. In terms of direct cash costs, the following should be taking into account: the fees paid to legal and accounting advisors for the preparation of the prospectus, adhering to the new accounting standards to which a public company is held and any necessary corporate restructuring required in becoming a listed entity; the fees levied by the investment bank for managing the IPO process and sourcing investors – typically charged as a percentage of the deal size; the initial and ongoing costs of more thorough regulatory adherence as often the standards to which public companies are held are above those of private companies; the listing fees paid to the exchange or exchanges upon which the company will be listed.

##### 2.1.1.2 Time and resources invested in the IPO

Even more-so than the direct cash costs, great weight should be placed on the time which a listing process will require of the issuer's senior executives. Indeed, this was echoed by Volvo Car's Deputy CFO Joakim Alpsten who flagged the scale of the project as being "huge ... requiring the mobilisation of the whole company" in addition to "an army of legal advisors, accountants, tax advisors, and 11 banks". The IPO can take as long as 12 months from when it is put in motion, and will detract from the executives focus to a great extent. Executives must: assemble a team of internal and third-party advisors to assist with the IPO, consider the valuation to be placed on the company's stock, consider in which manner and where they intend to list, negotiate the terms of the offering with their legal and financial advisors, clear the offering with regulators and competition authorities, and advertise their offering to potential investors through an investor roadshow. Thus, the IPO process will preoccupy senior executives extensively for 6-18 months and therefore the opportunity costs of this operational pressure should be taken into account. What could these executives have pursued to the benefit of the shareholders if not this? Finally, of note, if that if market conditions were to change and the IPO were to be abandoned, this cost of time cannot be regained.

### 2.1.2 New operating environment

After the completion of the IPO, the environment in which the company operates will also become significantly more complex. Reporting standards, including annual and quarterly reports, are elevated and any failure to adhere comes with more severe reprimand from the relevant authority. Furthermore, there are enhanced disclosures required around company ownership, with significant shareholders required to disclose their holdings and significant changes in these holdings to the securities regulator. Finally, the nature of a public company, having a diversified shareholder base of 'strangers', brings about the need for timely and controlled disclosure of certain pertinent information, so all shareholders (and potential shareholders) are in a position to act on the new information on fair terms. This requirement likely brings about the need for a significant investment in the Investor Relations and Public Relations area of the business, to ensure the share price is buoyed by satisfied investors.

### 2.1.3 Control and Flexibility

Related to this final point, is the loss of control and flexibility inherent in a public company. Regarding control, an IPO will result in new shareholders diluting the stake of previous owners and result in the board representing a wider group of interests. Whilst a privately held company is in a position to make agreements with its few and familiar shareholders in a flexible manner, the public company must devote time to ensuring a clear and transparent process is in place for shareholders to make decisions on the company's future. This added challenge naturally makes it more difficult to attain shareholder consent than during its time as a private concern.

### 2.1.4 Advantages

Having considered the broad range of disadvantages and challenges which a company takes upon itself when electing to go public, it may seem as though it is an unwise course of action. Though naturally, there are crucial advantages to be had when trading as a public concern.

First and foremost, is the ability to raise capital. For a public company, the scale at which equity capital can be raised is difficult to match in the private world. The array of global asset managers, pension funds, insurance funds and others who will have efficient access to the company's stock after a listing facilitates capital raising at the levels required by a company of a certain size. Furthermore, the liquidity of this capital reduces the liquidity premium which would be placed on privately raised funds, thus resulting in a lower cost of equity financing (all other factors being held equal). This is seen in the case of Volvo, as the electrification of their product line will require a significant capital injection.

The role which public perception plays should not be understated. A company which is publicly traded has a higher profile by virtue of it being listed. This factor was described by Volvo Car Deputy CFO Joakim Alpsten as a "type of quality stamp" which garners "exposure, from the investors, consumers and society in totality".

Flexibility is another great advantage following a listing. If the issuer wishes to adjust their capital structure, they are in a position to commit to a follow-on offering of their stock efficiently, or engage in a share buy-back. This tailored balance sheet should facilitate borrowing on optimal

terms, thus further reducing the cost of capital on the debt side. These levers may be available to private companies, but in a much less elegant fashion. Furthermore, the existence of listed equity facilitates the use of stock to finance future acquisitions should the company wish to expand inorganically.

## 2.2 The Listing Process in Sweden

Familiar to many readers will be the standard IPO process in the US – a deal underwritten by one or more banks (that is to say, an agreement between these banks and the issuer that guarantees that the listing will be completed at a certain price, regardless of market conditions). However, in Sweden, this is virtually unheard of. In fact, several features of the Swedish approach are closely related with the broader European approach to IPOs, and quite distant from their more well-known American counterparts. The process was elucidated to us through conversations with Volvo Cars and with one of their banking advisors, SEB, and is described below.

The discussion around going public can be initiated in many different manners – perhaps from the management of the to-be-listed entity itself, from the owners of this entity (whether individuals or another company), or from investment or coverage bankers who work closely with the entity. Typically, in Sweden, there will be a long-standing relationship between such firms and their banks. After many years of conducting business together, through debt facilities, trade financing or deposit taking, there is a sufficiently strong relationship and extensive sharing of information for the banks to deeply understand the business of the potential issuer, its drivers, its challenges, and its potential. This long-running relationship allows the bank to be able to advise the issuer in a highly-informed manner as to when an appropriate time to list their equity may be.

Ultimately, it is the responsibility of the owners to decide whether to go public. Doing so is a major milestone in the life of any company, and exposes them to all of the advantages and disadvantages discussed above. Furthermore, there is the risk of dilution of the existing owners, should new equity be issued (as indeed was the case in the Volvo Car AB IPO). Once this decision has been taken, an RFP (request for proposal) will be sent to a select number of banks, beginning an extended period of investigation, long prior to any formal public announcement.

The investment banks contacted will be expected to provide a pitch to the issuer explaining their view on the IPO, their potential valuation for the company, their understanding of the equity story, the quality of their equity analysts, their ability to support the stock through market making activities after the issue and more. This process is typically led by the corporate finance teams of the advising banks. The issuer will then assess the proposals received and establish a syndicate of banks to assist with the issuance consisting of Joint Global Coordinators (JGCs) who will be responsible for most of the process and Joint Bookrunners (JBR) who will primarily be responsible for placing the stock with their investor base.

An essential question in the IPO surrounds valuation: if an IPO is carried out, how will the company's valuation be set by the market. The price achievable ultimately arises from a single factor: investors' willingness to pay for a stake in this company. Thus, investors are engaged early in the process to explore how much the issuing company is potentially worth.

The investment bank engaged to assist with the IPO process will use their market knowledge and relationships to contact certain key investors who they feel may have an appetite for the issue in order to arrange so-called 'early look' meetings. These investors will receive extensive information from the issuer regarding financial forecasts, visits to company sites, meetings with company executives and more, all with a view to attracting interest in the IPO. The more immediate goal is to attain an agreement from these investors to act as 'cornerstone investors', that is to say, investors who will be named in the prospectus with a fixed legal obligation to take a position in the issue at the range quoted. In many cases these cornerstone investors will take between 30-60% of the full issue size. In addition, certain anchor investors may be identified at this stage, though this will be discussed later.

This stage of the process involved significant information sharing as potential investors would like to be as well-informed as possible, and investment banks will need to conduct thorough due diligence in order to prepare the issuance and establish a possible valuation range. At this end of this stage of the process, the curtains are thrown back and an Intention to Float is published. A prospectus is issued by the company's legal advisors and a valuation range is included following the valuation done by the investment bank integrating feedback and commentary from the early

look meetings. Equity analysts at the banking syndicate are briefed on the company, why it is a good candidate for an IPO and why the valuation range was established.

At this point, the equity analysts lead the process from the banking side, arranging meeting with the bank's investor base over a two-week period, and fielding questions on the company and its merits as a potential investment. As the date of the issuance approaches, management at the company will take similar meetings with investors, trying to drive interest in the issue and explain their equity story from their own perspective. Indications of interest will be taken by the banking syndicate allowing more fine-tuning of the price at which the stock will be issued.

On the day of a listing, the formal book building process will begin as investors place orders for an allocation of the company's stock. Anchor investors, significant players with a great interest in the stock, will place orders early in the day to de-risk the issue and provide assurance to other investors. Throughout the day, more orders will be taken by the bank sales team as the issue becomes fully subscribed. At this point, the company is listed, and the stock enters into a stabilization period, where the banking syndicate may influence the price of the shares until market forces gradually take over to establish an equilibrium price.

## 2.3 The Listing Requirement for Nasdaq in Sweden

The listing requirements for any security issued to the Nasdaq Stockholm exchange can be found publicly (Nasdaq, 2022), though some of the more pertinent elements have been included here with additional color.

Nasdaq Stockholm is a regulated market governed by the Swedish Securities Market Act (lag (2007:528) om värdepappersmarknaden) and subject to supervision by the Swedish Financial Supervisory Authority (Finansinspektionen). In order for any security to be listed by Nasdaq, a set of requirements must be met. The particulars of these requirements are determined by the nature of the security and the specific exchange upon which the issuer wishes to list. In this case the listing requirements below relate to the Main Market of the Stockholm Exchange.



The full set of regulatory requirements can be seen in the references, though some of the more pertinent items to the Volvo Cars case have been outlined here.

#### *Historical financial information*

Three years of annual financial reports must have been published or registered in Sweden (the country in which Volvo Cars was registered). These reports are required to contain sufficient information for investors to make a well-informed opinion about the company's shares as an investment. For Volvo Cars, this was not a difficult requirement to meet, given its history in Sweden.

#### *Business strategy*

There must be a clear business strategy and demonstrable ongoing operations. These must be carried out over a sufficiently long period as to allow investors to well-founded assessment of the development of business operations. Similar to above, Volvo Cars has fulfilled this requirement based on its successful history and scale.

#### *Profitability and working capital*

The issuer must demonstrate that there is profit-earning capacity at the group level, that is to say, that a profit was generated in the previous financial year. Alternatively, the issuer may demonstrate that it has sufficient working capital to be able to conduct planned operations for at least 12 months after the first trading day. Since Polestar was operating at a net profit, this might be a more difficult requirement to prove. However, Volvo Cars has been consistently profitable, and thus as a group, there were no issues.

#### *Liquidity*

As briefly highlighted in section 1, sufficient liquidity (supply and demand) must be available for the price discovery process to be effective. This is evaluated by two criteria – the number of shares distributed to the public and the number of shareholders. At least 25% of the Issuer's shares in the series must be issued to the public, and there must be at a minimum 500 shareholders (though exceptions can be made as long as there are at least 300). With sufficient liquidity being the aim, these criteria can be deemed to have been met in certain circumstances where the above criteria

have not been met, which was what happened in Volvo Cars' case due to how large the market capitalization would be.

Lastly, in addition to other checks relating to documents surrounding company formation, applicable sanctions, validity of the shares, assurance that shares are freely transferable, and that all shares in the series are admitted to trading are considered when a company decides to list on Nasdaq Stockholm.

### 3. Valuation: What was Volvo Cars worth?

Prior to the actual listing, various parties had tried to determine what the indicative valuation would be. The difficulty to pin down a narrow range mainly stems from the uncertainties surrounding electrification and the feasibility of Volvo Cars' future plans. Should Volvo Cars be valued at the higher Tesla-esque multiple? Or is it more comparable to legacy manufacturers such as BMW and Ford, who also has goals to electrify?

#### 3.1 Perspectives from various parties

From Geely and Volvo Cars' perspective, the answer would ideally be the former. As the two parties firmly believed in the rapid achievement of Volvo Cars' mid-decade goals, the question is less a matter of how, but rather a question of when. SEB, Volvo Cars' underwriter, also wanted to support this valuation – as opposed to pricing the equity close to the intrinsic value. (Chemmanur & Krishnan, 2012) However, it must also consider feedback from investors during roadshows as well as inputs from market soundings. Thus, while the interest is largely aligned, SEB needed to make sure the valuation was reasonable and achievable.

Existing investors AMF and Folksam already has a 1.1% stake each in the form of preferred shares that was subsequently converted to common shares as part of the public offering. For them, a higher valuation would present the opportunity of an attractive exit of their previously held stake at a later time. However, more likely, they may also be interested in acquiring more shares at a lower price, on top of their commitment as cornerstone investors, given their long-term holding strategy and their affiliation as pension funds of the blue-collared workers at Volvo Cars.

External equity research analysts, meanwhile, have less incentive to overvalue or undervalue the stock. Therefore, by performing their own valuations based on more conservative assumptions, they are able to determine whether or not to recommend clients to buy or sell the stocks at IPO and thereafter. Volvo Cars needs to convince the analysts during media days and press conferences that their financial targets are achievable and realistic.

## 3.2 Valuation Methodology

To determine the indicative valuation pre-IPO, we have chosen to use a sum-of-the-parts valuation that includes both a discounted cash flow (DCF) model as well as trading comparables to determine the approximate range for Volvo Cars, excluding Polestar. Polestar will then be valued via trading comps, as both Polestar and its peers are all relatively new market entrants, thus making it difficult to accurately forecast the growth expectations of these pure play EV companies. In reality, the actual intrinsic value of both Volvo Cars and Polestar is likely to differ from expectations – and this will be discussed at the end of the section.

### 3.2.1 Discounted Cash Flow – Volvo Cars

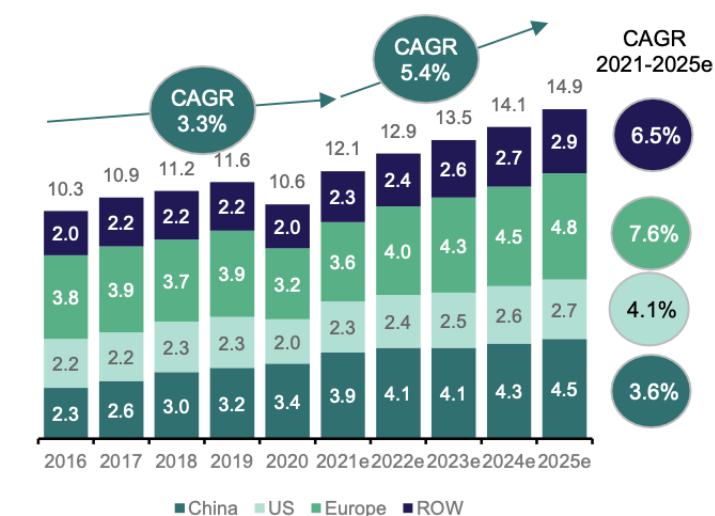
When it comes to the DCF model, the valuation is completely dependent on assumptions, specifically within sales growth, margins, capex needs, and working capital management. This requires a deeper dive into the operations of Volvo Cars and its growth plans. In addition, the terminal value growth rate and the discount rate also needs to be explored.

#### 3.2.1.1 Sales Growth

As briefly mentioned in section 1.3., Volvo Cars is currently undergoing rapid transformation to become a leading pure-play electric vehicle manufacturer. This process began in 2014 with the introduction of the Scalable Product Architecture (SPA), a platform enabling “weight reduction, design commonality, and manufacturing rationalization and hybridization” (Henry, 2016). Management’s ambition for the company going forward is to reach 1.2m annual car sales by 2025. Using figures from 2021, this would imply a CAGR of 11.73% over the next 4 years, when the global premium car market is only forecasted to grow at a CAGR of 5.4% – see Figure 1 below. As such, Volvo Cars will not only need to grow sales in line with the market, but they will also need to capture a larger market share of the premium vehicle market, as they stand only at 6%

market share. From our perspective, given that the historical CAGR of Volvo Cars' growth has been 6% between 2016 to 2020 and 8% to 2021 YTD, compared to the market's growth of 3.3% (thus Volvo Cars' sales grew at a pace of 142% faster than market), it would be more conservative to assume this same growth pace going forward in the next 4 years. As such, we would be more comfortable assuming an annual growth rate of 7.7%, with the potential of reaching 11.73% in the upside case.

Figure 1. Premium car market – regional unit sales (m)



Source: Company (prospectus)

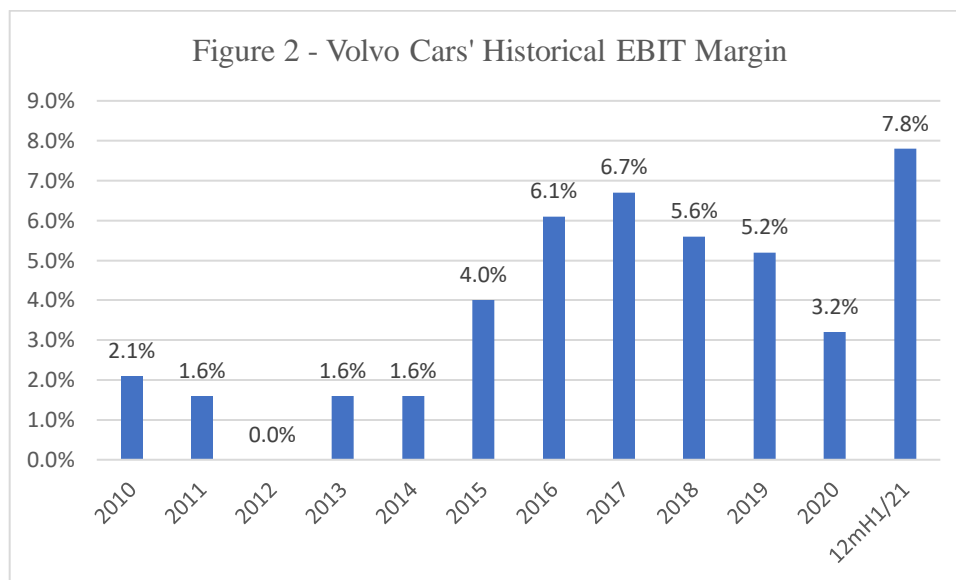
While one may argue that Volvo Cars will undergo significant transformation and thus merit a higher growth rate, especially as it was the first traditional auto original equipment manufacturer (OEM) to announce the transition goals, we believe that competing OEMs are also well capable to initiate their own BEV transformation. However, we do recognize the value of Care by Volvo, and thus would increase our growth rate assumption to 8.5% based on the additional offering of insurance, vehicle servicing, and extended warranties.

After the forecasted period, however, a long-term assumption of 2% may be more reasonable, given that it is more in line with Volvo Cars' European peers.

### 3.2.1.2 Operating Margins

Volvo Cars has provided guidance on EBIT margin developments. As first-generation fully electric vehicles yield lower margins than traditional combustion-engine vehicles, the first years of the BEV transformation are expected to also yield lower gross margins. However, Volvo Cars' 3 main operating costs: selling expenses (6.6% of sales), R&D expenditures (4.8%), and administrative costs (3.8%), are expected to improve, offsetting additional costs from the BEV transformation.

The costs associated with sales and distribution as well as general admin costs resulting from previous inefficiencies is expected to fall due to sales being moved online. By doing so, Volvo Cars is able to control prices and take ownership of pricing data, which will reduce the future need of large showrooms and floor plan financing. In addition, through using shared technology via the Geely ecosystem (for example, the China Euro Vehicle Technology Center), R&D expenditures can be lowered. Combined with the rapid achievement of economies of scale, we believe Volvo Cars can raise the EBIT margin in the short-to-mid-term. As such, we assume a 6.5% EBIT margin until 2024, before reaching 8% by mid-decade. This would imply levels comparable to similar western peers, including Ford, GM, BMW, Daimler, Stellantis, Renault, and Volkswagen. See historical EBIT margins in Figure 2 below.



### 3.2.1.3 Capital Expenditures

With respect to capex needs, Volvo Cars has said the two largest drivers are 1) the electrification process, which includes vertical integration of mainly battery supply and E-motors, as well as 2) industrial expansion. This is to support its 2025 goal of having 100% in-house capacity of key BEV components.

As far as Volvo Cars' production goes, there are no major investments needed to upgrade production facilities to produce BEVs. (Exhibit 11). All facilities are equipped with the capabilities to produce fully electric vehicles by mid-decade. However, building the supply of electric car components will need additional resources.

For example, the battery supply is expected to be provided by Northvolt, with whom Volvo Cars has a 50-50 joint venture with. This move to make battery manufacturing in-house is crucial for Volvo Cars, as it removes complexity with dealing external suppliers and also provide Volvo Cars with the most fitting and lowest cost batteries in the near future. Together, Volvo Cars and Northvolt will establish a R&D center in Sweden in 2022, as well as building a new Gigafactory in Europe for battery cell manufacturing from 2026 onwards. This will require a total investment of SEK 25-30bn from JV and a SEK 5bn equity investment from Volvo Cars into the JV. In addition, Volvo Cars is also planning to invest more capex in an initiative to build electric engines in Skövde, Sweden. This requires putting an additional SEK 700m into the electric engine laboratory in Shanghai, China, in order to develop and test the components.

When it comes to industrial expansion, Volvo Cars has said that the target of 1.2m annual car sales by 2025 could be reached without any major expansion. However, it does plan to invest around SEK 30 bn in industrial expansion – by building a third production plant in Europe.

As such, we believe in the assumptions communicated by the Volvo Cars management of setting capex at 8% of sales in 2024 and 2025, as this assumption takes in account all the additional capex needs of the company. However, we have assumed a slightly short-term higher capex from the investment in Northvolt, and thus we have set capex at 8.5% from 2021-2023.

#### 3.2.1.4 Working Capital

Historically, accounts receivable and inventories have matched accounts payable quite closely. Over the last 10 years, the net working capital to sales ratio was between -0.3% to 5.0%. Going forward, however, Volvo Cars anticipates a need of SEK 20bn in additional net working capital to fund the shift to online sales, full electrification, and new mobility services. A car sold online requires more of a just-in-time model, meaning instead of the vehicle sitting at a dealership, the vehicle parts will remain with Volvo, thus increasing the inventory/sales ratio and resulting in about 50-60 days of inventory/sales. As such, we have assumed a steep increase of NWC in 2021 at 23% of sales, followed by 22% in 2022, and -50 basis points per year over the next 3 years.

#### 3.2.1.5 Cost of Capital

As aforementioned, it is common for OEMs to operate with positive net debt, meaning that there is more cash than debt on the balance sheet. As such, when considering the WACC, we have assumed 100% equity (i.e., effects of tax on debt excluded), whereby the discount rate is calculated using the capital asset pricing model (CAPM) below.

$$R_E = R^{Riskfree} + \beta(\text{Market risk premium})$$

For the risk-free rate, we have taken the average between the 5-year treasury bill rate as of October 29, 2021 (1.18%) and the 5-year treasury bill rate as of October 28, 2022 (4.19%), which ends up being 2.69%. The reasoning for a blended rate stem from forward expectations during 2021 for interest rate increases globally to combat inflation. During the IPO preparation, Volvo Cars' underwriter, SEB, has assumed a similar risk-free rate, at 2.5%.

The equity beta was pulled from Volvo Cars' peers – both the 1-year and the 5-year beta for comparable firms were at 1.3. As for the market risk premium, we used 7.1% as a base - the average premium from 2021 from a study done by PwC in 2022. (PwC Sverige, 2022) Then, we adjusted it by adding in the risk premium developments in 2022, which has since been exasperated

by the war in Ukraine. Thus, we end up with a 7.8% market risk premium. The resulting equity discount rate, and thus the WACC in this case, was 12.8%.

#### 3.2.1.6 Terminal Value

In our DCF model, we have assumed a terminal value in 2025 of SEK 133.5 bn. While Volvo Cars' goals do stretch out to 2030, we believe that many assumptions can change in the timeframe of 10 years, and thus a five-year forecast would be more accurate to forecast. In determining the terminal value, we have used the Gordon Growth Model with a long-term growth rate of the company's free cash flows of 2%, as covered in the sales growth assumptions section, and with the discount rate being the WACC, as detailed above. In practice, both the long-term growth rate and the WACC will shift over time, based on company performance, corporate structure, and macro-economic factors.

Combining these assumptions and applying to Volvo Cars' 2020 financials (excluding Polestar), we reach an enterprise value of SEK 85.4 billion from the DCF. After adjusting for a positive net debt of SEK 29 billion, the total equity value of the firm -excluding Polestar- via DCF results in SEK 114.5 billion, marking the lower range of our valuation. See Exhibit 12.

#### 3.2.2 Trading Multiples – Volvo Cars

The first step to determining Volvo Cars' value relative to its peers is to first understand the nature of the industry. From equity research reports, we see that the typical automotive OEM multiples include EV/Sales, EV/EBITDA, EV/EBIT, and Price/Earnings ratio. The decision on which multiple to use can vary based on what firm information are available, as well as recent sector trends and dynamics.

EV to sales multiple is typically used for early-stage or high-growth businesses that do not have positive earnings yet. As we will see later, this would be the ideal multiple for Polestar as well as many of its pure-play EV peers, as most companies were still operating at a loss during 2020. The question for Volvo Cars, however, was whether or not profitability and cash flow generation should be accounted for, as opposed to pure sales, given that legacy car manufacturers



typically have a more established track record and can compete on operating efficiency and margins.

The EV/EBITDA multiple strips out the cost of debt, taxes, depreciation, and amortization. This multiple is meant to provide a clearer picture of a company's financial performance. In the automotive OEM sector, however, the exclusion of depreciation and amortization can potentially skew the comparable results, as there is often high and cyclical capital expenditure within the industry. Volvo Cars, as an example, is currently in a period with relatively low capex, at 7.7% of sales (or SEK 18.6 billion) during 2020. However, 3 years ago it was at 12.8% of sales, at SEK 26.7 billion, and in five years, it is expected to reach 8% of sales, but at SEK 38.7 billion. Thus, when we map out Volvo Cars' peers, it may be difficult to synchronize each firm's investment needs and timeframe.

The EV/EBIT multiple would therefore be theoretically more accurate than the EV/EBITDA multiple in this industry. Similar to EV/EBITDA and unlike EV/sales, this multiple takes into account the operating efficiency of the company, i.e. operating expenditures relative to sales. In addition, it considers different tax rates as well, which allows for comparison with companies based on other countries. According to research analysts, however, Volvo Cars operates with relatively volatile and low profit margins, and thus using an earnings multiple incorporates too much risk. See historical EBIT margin chart in 3.2.1.2. A 100 basis-point change in the EBIT margin could result in a 20% difference in the EV/EBIT multiple.

The Price/Earnings ratio is also not without flaws. Given the prevalent bull market run up to the end of 2021, many have argued against using the P/E ratio, as they believe the entire sector was overvalued. In addition, the P/E ratio does not take into account the cash holdings and debt of the company, which can be quite significant for this industry, as we have mentioned previously. Automotive BEMs tend to hold large amounts of cash – more than debt – given the volatile cash flows within the sector. As case in point, Volvo Cars itself has net debt of **negative** SEK 29 billion in October 2021.

For the purpose of our valuation, we have chosen to use the EV/ forward sales multiple, as we feel that sales volume is much less sensitive to margin changes across the industry and would thus be a more accurate reflection of Volvo Cars' true intrinsic value. The forward sale estimates were derived from CapitalIQ and Bloomberg, and not from our internal analysis. Thus, the next question to answer was which peer should we benchmark against? From a deeper dive into the competitor market, we have determined that traditional Western peers such as Ford, GM, BMW, Mercedes-Benz, Stellantis, Renault, and Volkswagen are the most relevant due to similarities in operating geographies, market share, and product offerings, despite Volvo Cars being ahead of most these peers in the EV transformation. We did not deem pure EV players to be relevant for Volvo Cars' valuation, since as of 2020, Volvo only had 0.7% of the global pure EV market share.

The EV/ forward sales multiples of peers as of 2021 were quite high, with an average of 1.1x for 1-year forward sales, and 0.9x for 2-year forward sales. (Exhibit 13) This is mainly due to the fact that many of these peers were trading at record valuations during 2021. However, when looking backward from 2022, we see that many of these multiples dropped significantly over the course of one year, to 0.3x for both one-and-two year forward sales, as both EVs are reduced and as forward sales estimates grow to be more conservative, in line with macro developments and impacts on supply chain. Given this knowledge, we have decided to base our valuation at an average of the two-year forward sales multiples, resulting in 0.6x. We have not adjusted our sales forecasts, as we still believe our growth estimates are conservative. With 0.6x, we arrive at a multiples EV valuation of SEK 183.9 bn. Adjusting it for positive net debt results in an equity value of **SEK 213.0 bn**, which marks the higher range of our valuation. Note once again that this is excluding Volvo Cars' stake in Polestar.

### 3.2.3 Trading Multiples – Polestar

As we have previously discussed, Polestar would be more accurately valued using the EV/Sales multiple as well. Management estimates that Polestar's sales will grow at a CAGR of 83% of the next 4 years. On a broader scale, this translates to a total global market share of 0.2% to 2.3%, or an increase in annual sales volume from 29,000 units sold to 290,000 sold, supported by Polestar's plan to enter 20 new markets over the next 2 years. We believe that this growth level comes down to a matter of optimism. However, given our more conservative assumptions on

Volvo Cars' sales, as well as Polestar's affiliation with the Geely Ecosystem and thus the Chinese market as well, we will use management's estimate going forward, though acknowledging that it may be more of a "blue sky" scenario.

With regards to the multiple – we believe that of all the pure play EV peers listed on NYSE and Nasdaq, NIO, Li Auto, and Xpeng are the most relevant, given that they are roughly in the same growth phase as Polestar. As one can see in Exhibit 13, the trio is trading at an average EV/one year forward sales multiple of 10.0 x and EV/two year forward sales multiple of 6.1x. We, however, deem this too be overly bullish. Applying the same approach we used for Volvo Cars, we also looked at the EV/forward sales multiples in 2022 and discovered that there was a drastic decrease in valuation over this one year. The average EV/forward sales multiples became 1.4x and 0.7x for one and two year forward sales respectively. As such, we deem 2021's valuation to be quite speculative and unrepresentative of Polestar's true value. We therefore applied a blended 1- and-2 year multiple from 2022 to Polestar's estimated 2022 sales and reached a valuation of SEK 33.5bn, of which **SEK 16.1bn** is Volvo Cars' stake.

### 3.3 Valuation Summary

As the valuation of Volvo Cars is contingent on accurate assumption forecasts, the indicative value is highly subjective. The true intrinsic value will be based on various risk factors, investor perception, as well as non-controllable macro changes. For example, in a downside case, if the global supply chain crisis of 2020 reoccurs or has lingering impact, Volvo Cars would struggle in delivering its technology and materials to production facilities and thus become unable to fulfill orders and reach target sales levels. Further potential risks can include the loss of scale synergies from large changes in the Geely ecosystem, Polestar losing significant value post SPAC, political factors threatening Geely's ownership and technology sharing, and execution and adoption risks as Volvo Cars transforms.

In an upside case, Volvo Cars would be able to reach its mid-decade ambitions and maintain a healthy margin while increasing sales. Polestar would perform and continue to grow in valuation as a pure EV market entrant. In addition, a successful shift to online sale can also enable

further profitability by reducing unnecessary overhead costs. Lastly, new technologies developed by Volvo Cars or Geely can further increase the value of its fleet and services.

Macro environments can also shift quickly. A year after Volvo Cars' IPO, we noted that interest rates have increased significantly worldwide in an effort to combat inflation. Consequently, stock markets reached its peak at the end of 2021 before falling sharply. Thus, the Polestar SPAC may not have captured the same value as if they had listed a year before. Volvo Cars stock has also dropped, along with many of its peers, with many analysts revising the target share price.

With that in mind, we note that our valuation range of **SEK 130.6bn** (calculated as SEK 114.5bn for Volvo Cars from DCF and SEK 16.1bn from Polestar multiples) to **SEK 229.1bn** (calculated as SEK 213.0bn for Volvo Cars and SEK 16.1bn from Polestar both via multiples) is purely indicative and reflects the results of our assumptions. As a frame of reference, Volvo Cars and SEB had argued for a valuation between the range of SEK 253 – 361 bn in 2021, whereas other external banks had valued the group at SEK 143 – 322 billion during the same period. From our perspective and in hindsight, most parties had been overly optimistic regarding Polestar, though we deemed Volvo Cars' growth plans to be quite reasonable.

On October 29, 2021, the first day Volvo Cars was listed, the stock closed at SEK 65.2 per share, marking an enterprise value of approximately SEK 194 billion, as there was a total of 2,979,524,179 shares. A year later, on October 28, 2022, Volvo Cars stock fell to SEK 45.3 per share, marking an enterprise value of approximately SEK 135 billion. This can be largely attributed to the loss in value in its Polestar stake, which had fallen from USD 13 a share to USD 4.2 in the course of one year. See Figures 3 and 4 below.

Figure 3. Volvo Cars stock price development

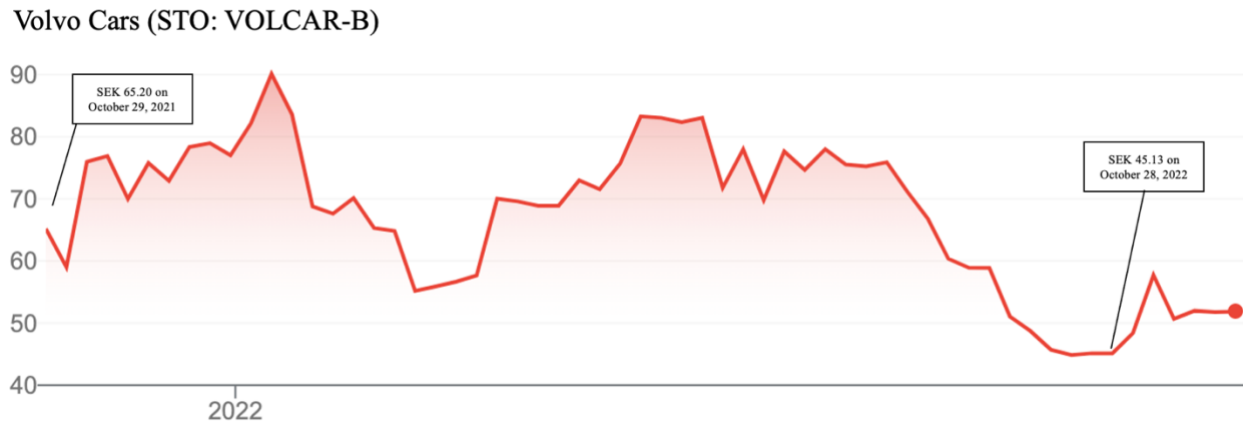
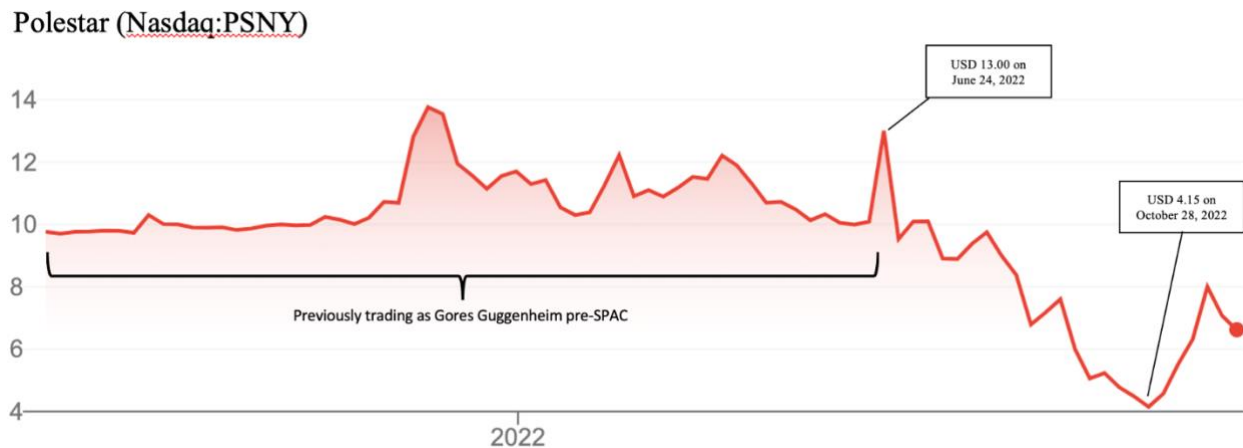


Figure 4. Polestar stock price development



## 4. Timeline of the Journey to IPO

After Volvo Cars was purchased by Geely from Ford in 2010, there was an initial round of investment in the faltering company. This investment created a firm financial base for the Swedish auto manufacturer though the company's independence was left intact. Relatively soon after the company returned to profitability in 2014 (with more firm profits in 2015), speculation about an IPO of Volvo Car began.

On 20 December 2016, the company issued a series of preference shares to a select list of Swedish institutional investors – AMF, Folksam, and AP1. This action raised SEK 5 bn (2.5 bn

from AMF, 1.5 bn from Folksam, and 1bn from AP1) and was perceived as the precursor to an IPO, with the company itself stating “today’s move is another step towards Volvo Cars’ long expressed ambition to act as a listed company” (Volvo Car, 2016). Joakim Alpsten, Deputy CFO of Volvo Car echoed this sentiment, saying that despite him joining the company after the preference shareholders were brought in (a function of the original aborted IPO attempt), it was his understanding that they would form a base of cornerstone investors in the then-future listing. Likewise, Anders Oscarsson, Head of equity at AMF shared the same belief: “What we bought was a preference share that gave us an interest and also a promise that when Volvo is listed, we can turn these preference shares into regular shares.”

It was not long before additional steps were taken to move towards a listing. On 10 May 2018, it was announced that Geely was assembling a syndicate for Volvo Car’s IPO. The company and its parent had placed an estimated value range of USD 16bn to USD 30bn on Volvo Car, with Eric Li aiming for a Tesla-esque valuation. The investment banks appointed as joint co-managers, Citigroup, Goldman Sachs and Morgan Stanley, were intending on a listing in September of 2018. The company stated at this stage that a final decision had not yet been made, though with the time and financial resources committed, the expectations for a listing were elevated. The conditions in the European IPO market were challenging at this time however, which may go some way to explaining the reticence on the behalf of the issuer to confirm their intentions. It was reported that neither Volvo Car nor Geely had engaged the preference shareholders prior to the news release, an unusual move given that issuing these shares was originally seen as being the first step on the road to listing. (Reuters, 2018)

On 23 July 2018, following initial feedback from investors, it was realized that the valuation would fall far short of the upper end of the range suggested by the insiders. Instead, it seemed that an achievable valuation range was to be in the USD 12bn to USD 18bn area (Bloomberg, 2018). On 10 September 2018, Volvo Car announced that it was no longer continuing with the listing on the Stockholm Stock Exchange, with CEO Håkan Samuelsson stating that “the timing is not optimal for an IPO right now”. This was in the context of escalating global trade tensions placing a significant weight on auto stocks (Yahoo, 2018). Of the three Swedish

institutional preference shareholders, only AMF was willing to move forward with the listing as well, with Folksam and API equally reluctant as Geely and Volvo Car.

Following the shelved IPO, there was a lull in news surrounding the corporate action, with the company instead focusing on research and development. On 7 October 2019, Volvo and Geely announced their intention to merge the combustion engine businesses of both entities as a separate stand-alone company (Volvo Cars, 2019). This coming-together was a precursor for a further announcement made on 10 February 2020 that a different path was being considered: a full merger between Volvo Car and its parent (Volvo Cars, 2020). The intention was for a dual listing on both the Stockholm and Hong Kong exchanges, allowing the combined entity to tap into investor capital in a manner which no other Chinese auto manufacturer had been able to prior, whilst also leveraging the existing listing of Geely. Initial reaction to the news was very positive, with Geely stock rallying 10% on the announcement (CNN, 2020).

The following year presented many challenges for the merger. One of the core issues was surrounding Geely's wish to list in Shanghai, and the exchange prohibiting them from making changes to their capital structure (Reuters, 2020). Though both parties remained hopeful going into 2021, Volvo Car CEO Samuelsson sowed some seeds of doubt when he stated that "Quarter one is more realistic next year. We have said we are looking at a combination and it could be done in different ways. Platform sharing and so on", thus moving the goalposts and laying a narrative which fell short of a full merger of the entities.

On 24 February 2021, the merger was formally declared to be no longer on the table, instead "launching a new entity to combine their powertrain operations and expand cooperation on electric vehicles". At this point, Samuelsson was questioned as to any intentions for an IPO for Volvo Cars, though he stated that there were no plans at this stage. Once again, Geely's equity reacted positively, closing the day 2% up (Reuters, 2021).

Mere weeks on from the announcement that the merger would not be going ahead, Bloomberg reported that Geely was once again considering an IPO of Volvo Car, targeting a valuation of USD 20bn (Bloomberg, 2021). During the spring, the company arranged for early-

look meetings with key investors, to take the temperature of the market for an IPO. This was not publicly disclosed and no formal Intention to Float was released, though the market had gotten wind of the company's planned actions. Further speculation was reported on in May, suggesting that the rumored listing was more likely than ever to materialize (Bloomberg, 2021). On June 30 2021, Volvo Car CEO Samuelsson re-stoked the fires when he raised the possibility of an IPO before year end, confirming that the intention was to appear on the Nasdaq Stockholm exchange (Reuters, 2021).

On 21 July 2021, Volvo Car bought out Geely's stake in the Chinese Joint Ventures between the two entities. The clearer ownership structure was seen by some as paving the way for an IPO, making Volvo Car an easier entity to sell to potential investors, due to the more transparent equity story (Reuters, 2021). Two days later Volvo Car announced their earnings for H1 2021 as SEK 13.2 bn, an impressive return to profitability after the pandemic year, a 200% increase on the H1 2019 earnings. The company stated that the results for the half were driven greatly by EV revenues – a fact which would inevitably help to buoy the company's Tesla-like valuation component in the event of a listing. The upbeat news provided Samuelsson the opportunity to laud his company's virtues saying they "stand stronger than ever and we are in the midst of a very substantial transformation... It has to be financed and access to the stock market is of course positive then" (Reuters, 2021). The IPO before year-end looked promising. By 15 September 2021, the market was anticipating an announcement as sources close to the company indicated that a second attempt at the IPO was soon to come.

In advance of the formal intention to float, a kick-off meeting was held with the company, their newly appointed banking syndicate, legal advisors, commercial advisors, and others involved in the IPO process. Here, the necessary tasks would have been coordinated between the various advisors, and information disclosed to allow for the production of investor materials and a deal prospectus. The equity research analysts were later briefed on Volvo Car's financial forecasts and had the opportunity to pose questions to senior management before authoring their analyst reports prior to the commencement of the book building process.



The day of the formal announcement finally came on 4 October 2021. The Intention to Float declared that the company's aim was to raise SEK 25bn by listing upon the Nasdaq Stockholm Exchange. At this point, it was unclear whether the issue would consist of newly issued shares or those of the existing owners, though it was clarified that the Swedish institutional investors which has taken preference shares in 2016 (later refinancing them in 2019) would remain involved with the company (Bloomberg, 2021) acting as anchor investors. The prospectus declared that the issue price would be in the range of SEK 53 to 68 per share.

On 25 October, following additional feedback from investors, the decision was taken to scale back the IPO to raise SEK 20bn rather than the original SEK 25bn. Furthermore, it was clarified that the majority of shares to be issued would consist of new capital. This coincided with the announcement that the price of the new shares was confirmed at the lower end of the target range: SEK 53 (Bloomberg, 2021). It was felt by the company that this was the amount which the "market could take" (Joakim Alpsten). Together, this resulted in a valuation of the company at USD 18bn, rather than the originally desired USD 20bn, though at the high end of the USD12-18bn range established in the aborted 2018 IPO attempt. The smaller share issue disheartened some analysts, claiming that the smaller institutional investor base and lower liquidity in the name would not be considered a positive factor. However, CEO Samuelsson was confident that the reduced issue would still be sufficient to fund the company's needs going forward.

Furthermore, the decision was taken to remove the A-share / B-share divide which was initially proposed. With many Nordic publicly listed companies, there is an dual share-class structure, with A-shares often holding 10 times the voting rights of B-shares. There were concerns that with Geely already having such a large stake in the company with regard to capital, a preferential voting structure further benefiting them could have been to the detriment of minority holders. Geely, understanding this concern, and still being the majority holder of voting rights regardless of the structure, elected to roll all shares into the B-class, thus eliminating any perception of preferential treatment vis-à-vis the minority holders. For them, this also softened the controversy that Volvo Cars was not Swedish owned, despite being very much of Swedish heritage.

Though initially intended to begin trading on 28 October, the issue was pushed back one day to 29 October. At 09:00 that morning, Håkan Samuelsson was joined by the executive management team in the Volvo Cars Studio in Stockholm as he rung the traditional Nasdaq opening bell. Throughout the day, Volvo Cars welcomed more than 200,000 new shareholders, as many sought to become part owners of one of the most well-known companies from Sweden. By the end of the first trading day, the stock was up 22%, trading at a price of SEK 65.2 and valuing the company at nearly USD 22bn (Reuters, 2021), which marked the successful end of its IPO journey and the passing of another key milestone in its ambitious transformation journey.

## 5. Closing Comments

As a summary, in our thesis we have sought to explore how Volvo Car navigated the unique listing process for the Swedish market while maximizing its value for shareholders during an unprecedented time surrounded by record-high numbers of IPOs, the lingering effects of the Covid-19 pandemic, and the strong trend towards a circular economy via electrification in the automotive industry.

To do so, we have taken a deep dive into Volvo Car as a company, which includes exploring the key events that shaped the company into what it is today, the capabilities and resources it possesses in the present, and finally the ambitious growth plans and the capital it needs in the future. We have also considered its motivation for an IPO and compared this to academic theory. In addition, we have sought to explore the actual listing process via an IPO and the specific nuances involved with listing in the Swedish market. Lastly, we have explored the valuation of the company via a combination of our own assumptions and management's guidance and benchmarked this against what happened in reality.

Our thesis is not meant to be an all-comprehensive guide on Swedish IPOs, but rather serves as a foundation for a case study highlighting the specific challenges and decisions that Volvo Car faced and undertook during the process. As such, we would like to suggest further research topics to consider.

First, we believe that Volvo Car's listing motivation is very specific to the company, which may not be reflective of all companies that list in Sweden. It would be of interest to benchmark this particular process to other automotive OEM IPOs that may happen in the future, as well as IPOs in other industries. To our knowledge, there has been few published academic articles that explore a specific company's Swedish IPO process in great detail. Thus, we believe this case thesis would act as a foundation to be built upon.

Second, we have noted that the global valuation levels for public equity fluctuated greatly between 2021 and 2022 due to reasons listed above. We noted that this had a significant impact on both Polestar and Volvo Car. However, it may be worthwhile to explore to what extent this impacts the valuation. In other words, from the decrease in valuation over the course of one year, how much of this is attributed to the general market and how much is attributed to Volvo Car's performance? In a similar light, it may be of interest to review how the market perception of Volvo Car's value evolves over time and whether or not it reaches its mid-decade and end of decade goals.

Lastly, we would like to point out that Volvo Car Group has many holding companies (Exhibit 6). Thus, there is further room to take an even deeper dive into the company. The difficulty, however, is that the information and financials from these subsidiaries are not publicly available. Had this data been available, it would have enabled a more accurate sum-of-the-parts valuation and the route towards the strategic agenda of the group may be better defined. Should Volvo Car present some of its subsidiaries (Lynk & Co for example) to the public in the future, it may also be interesting to look in retrospect at how much of a role this played in the IPO process.

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# Exhibits

## Exhibit 1. Volvo Cars – Historical Timeline

Year	Event
1927	Founded in 1927, and first car rolls off the production line
1944	In 1944 the 'Little Volvo' was launched, and Volvo becomes an international company
1953	The Volvo Duett was launched as "two cars in one" – for both work and leisure
1955	First exports to the US in August 1955
1959	Volvo engineer Nils Bohlin invents the 3-point seat belt
1964	The plant in Gothenburg (Sweden) opens, which remains its largest production facility today
1972	Environmentalism is added to Volvo Cars' existing core values of Safety and Quality Invents the rear-facing child safety seat
1976	Releases the Lambda Sond, the world's first catalytic converter
1976	Becomes a safety benchmark in 1976 according to the US government
1977	Volvo 240 is awarded the American National Environmental Industry Award in 1977
1991	Invents the structural side-impact protection system (SIPS) In 1991 Volvo launched the Volvo 850, a car with four unique innovations
1994	Invents side impact airbags
1998	Develops the Inflatable Curtain – fitted along the headlining on both sides of the car
1999	Acquired by Ford in 1999
2002	In 2002 the first SUV (XC90) was launched and became a success
2008	Introduces the City Safety, a low-speed automatic-braking solution
2010	Acquired by Geely
2013	Develops a new powertrain family and architecture, the 4-cylinder replaces its 14-engine powertrain Established manufacturing facility in China, its first outside Europe
2014	Completes the 4-year in-house development of the SPA platform and launches the new-generation XC90
2015	Introduces OMTANKE, its sustainability framework, linked to UN's SDGs Launches the second-generation XC90, opening a new chapter for Volvo Cars Acquires the Polestar brand, and Polestar becomes an OEM of fully electric cars
2017	Announces its electrification strategy and becomes the first traditional auto OEM to announce plans to transition to fully electric cars Launches the first compact SUV (Volvo XC40)
2018	Engine production facility in Skövde (Sweden) becomes the company's first climate-neutral auto production facility Announces its M mobility brand – Volvo Car Mobility Joins forces with NVIDIA to develop proven, AI-based, central computer for the next-generation of Volvo cars First US manufacturing plant opened
2019	Announces its long-term sustainability ambitions: aiming to become a climate-neutral company and circular business by 2040
2020	Starts production of the XC40 Recharge, its first fully electric car Concludes its largest-ever restructuring programme, laying the foundations for new competences
2021	Completes various structural changes ahead of a potential listing Announces that LiDAR will become standard in its next-generation vehicles, as well as plans to list Lists on the Stockholm Stock Exchange

Source: Company (underlying data), DNB Markets (compilation)

## Exhibit 2. Volvo Cars – Timeline of some of its models between 1927-2019 (Compiled by DNB)

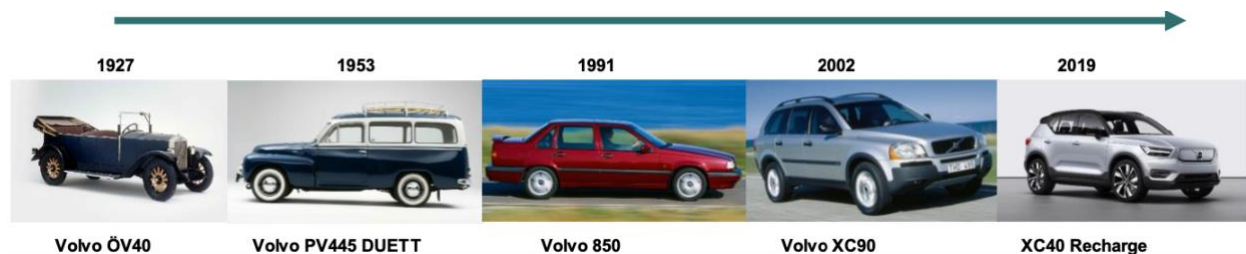


Exhibit 3. Polestar – Historical Timeline (Compiled by DNB)

Year	Event
1996	Founded
2005	Polestar Cyan Racing founded
2011	Becomes official performance partner of Volvo Cars
2015	Acquired by Volvo Cars
2017	Polestar 1 model announced
2019	Completion and opening Chengdu Polestar Production
2019	Polestar 2 model announced
2020	First customer handovers and showrooms opened
2021	Scaling up

Source: Company

Exhibit 4. Polestar – De-SPAC Overview (Compiled by DNB)

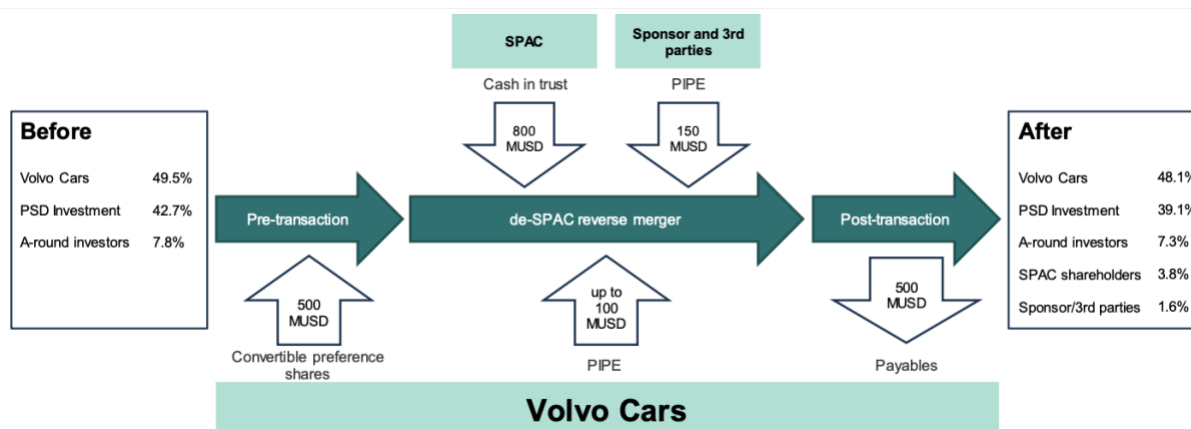
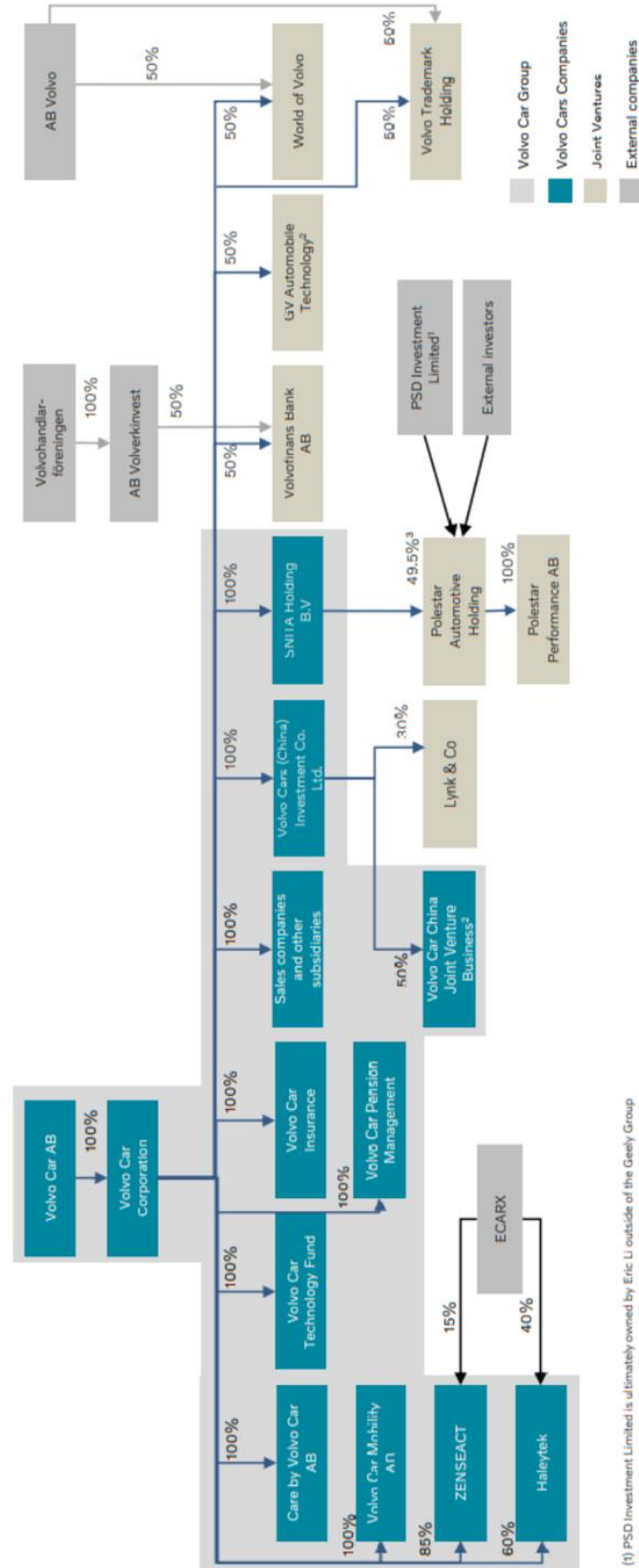


Exhibit 5. Volvo Cars Ownership and JVs (Polestar stake is pre-SPAC) (Compiled by DNB)

Assets	% Ownership	Description
Polestar	49.5% <sup>1</sup>	<ul style="list-style-type: none"> <li>One of the fastest growing pure-EV players</li> </ul>
LYNK & CO	30%	<ul style="list-style-type: none"> <li>Chinese-market focused auto company, also developing towards connectivity and subscriptions</li> </ul>
M	100%	<ul style="list-style-type: none"> <li>Mobility brand offering consumers on-demand access to car for shorter periods of time as an alternative to car ownership</li> </ul>
zenseact	85%	<ul style="list-style-type: none"> <li>Pure-play software and AI company with focus on unsupervised autonomous driving</li> </ul>
Tech Fund	100%	<ul style="list-style-type: none"> <li>Corporate venture capital fund investing Volvo Cars' funds in external start up companies to fill technology gaps</li> </ul>
LUMINAR	Minority stake (~1.3%)	<ul style="list-style-type: none"> <li>Software company developing LiDAR that enables autonomous driving and helps in the prevention of road accidents</li> </ul>



Exhibit 6. Volvo Cars Group Structure (Compiled by DNB)



(1) PSD Investment Limited is ultimately owned by Eric Li outside of the Geely Group

(2) 50 percent indirectly owned by Zhejiang Geely Holding Group Co. Ltd

(3) Including Volvo Cars Internal ownership through PSINV

Exhibit 7. Geely Group Overview (Retrieved from Geely Holdings)

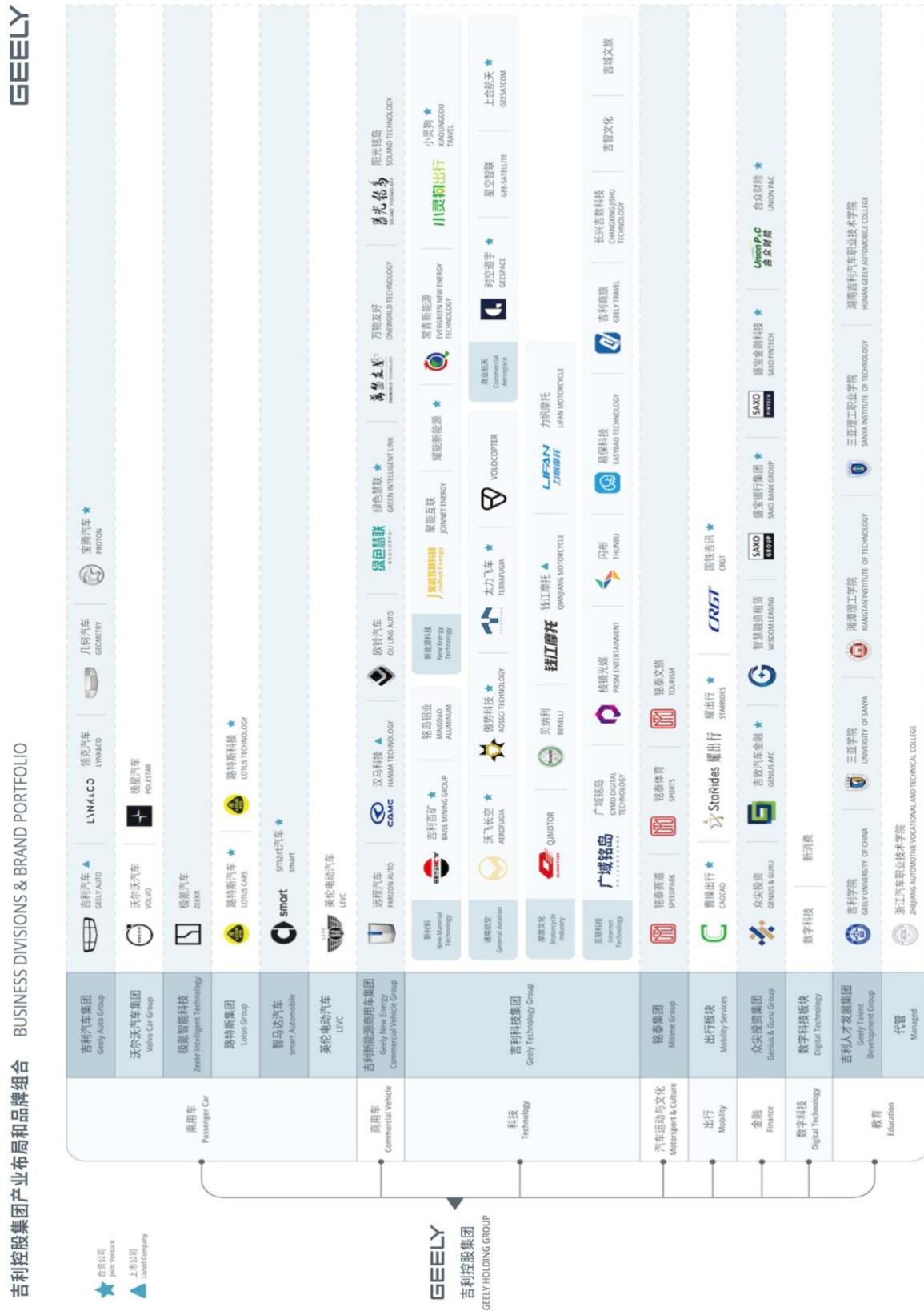
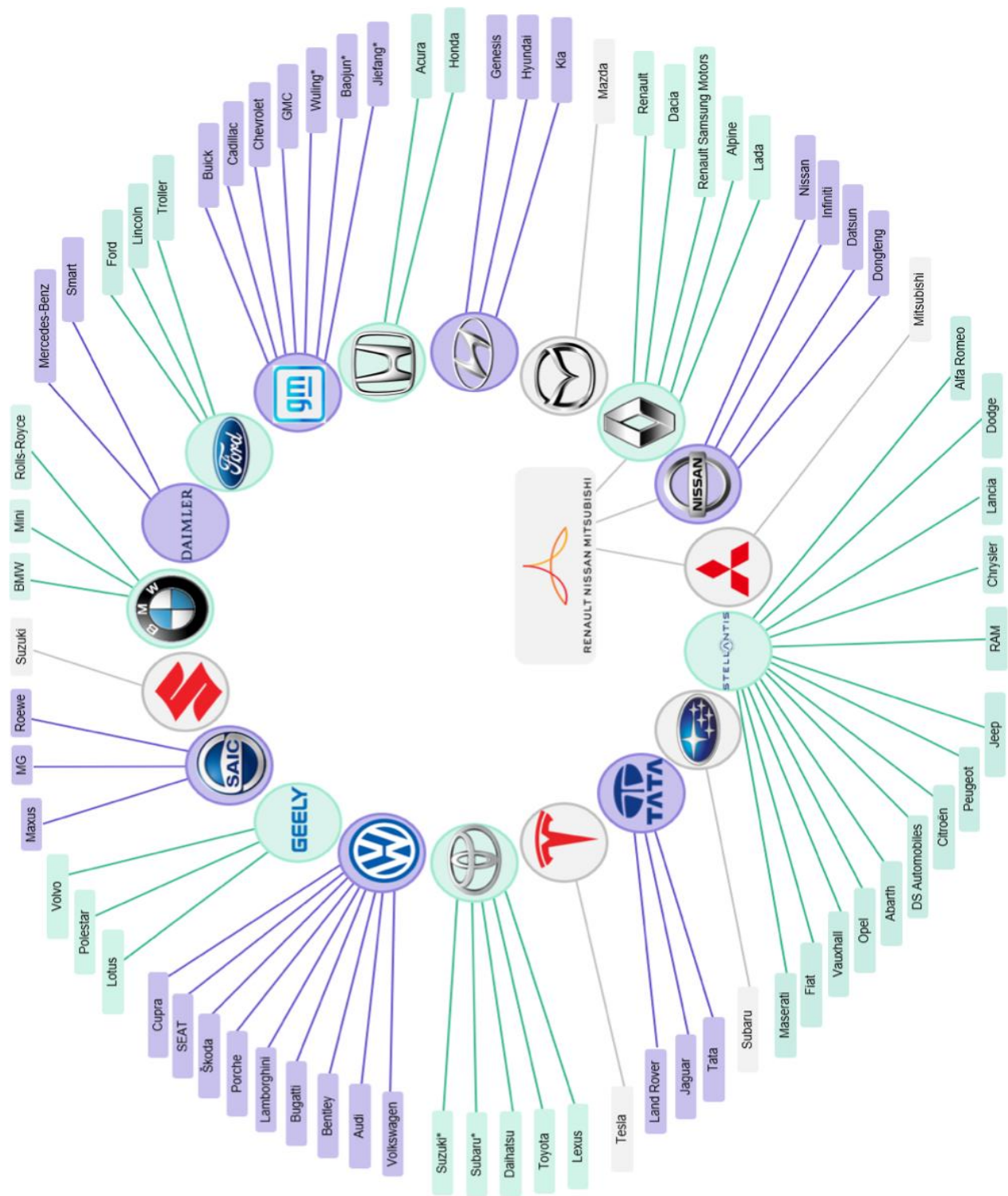
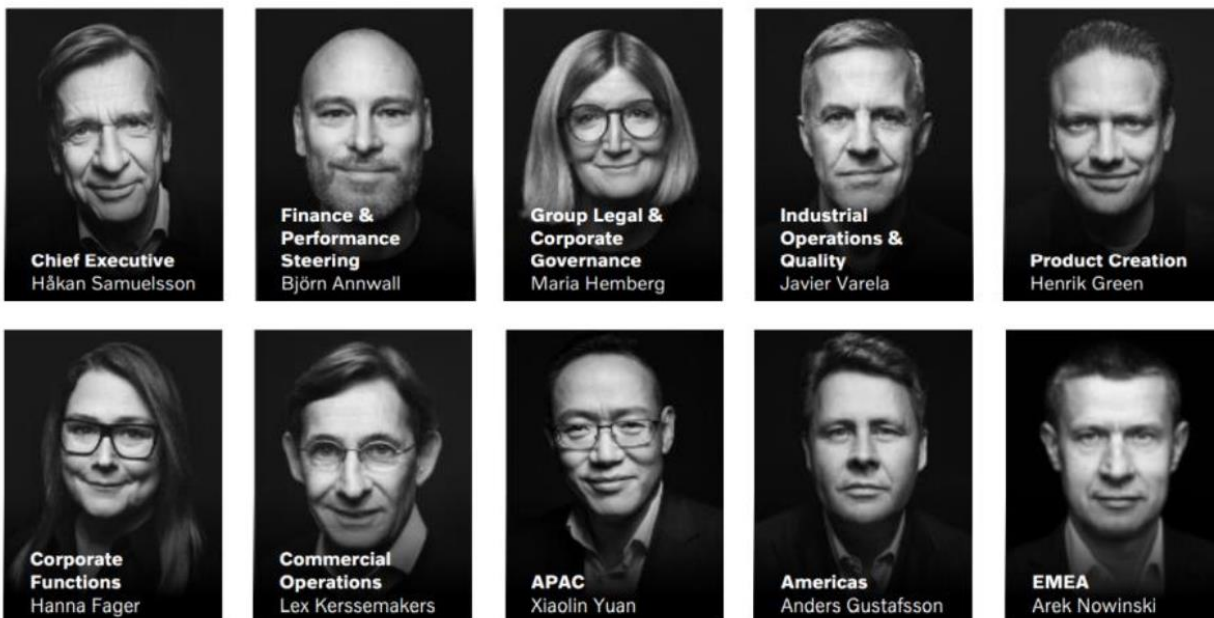


Exhibit 8. Automotive Industry Key Players (Compiled by DNB Markets)



## Exhibit 9a Volvo Cars Management Team











## Exhibit 9b Volvo Cars Board of Directors (Compiled by DNB)





Exhibit 10. Volvo Cars Model Lineup (% indicates share of sales LTM Q3 2021) – Retrieved from DNB equity research report dated November 2021)

Body type		Model			Drivetrain availability		
					ICE	PHEV	BEV
SUV	74%	XC90	14%		✓	✓	To be launched in 2022
		XC60	29%		✓	✓	To be launched in 2023
		XC40	30%		✓	✓	Launched in 2020
Crossover	0%	C40	0%				Launched in 2021
Sedan	14%	S90	7%		✓	✓	
		S60	8%		✓	✓	
Wagon	12%	V90	3%		✓	✓	
		V60	8%		✓	✓	
					73%	24%	3%

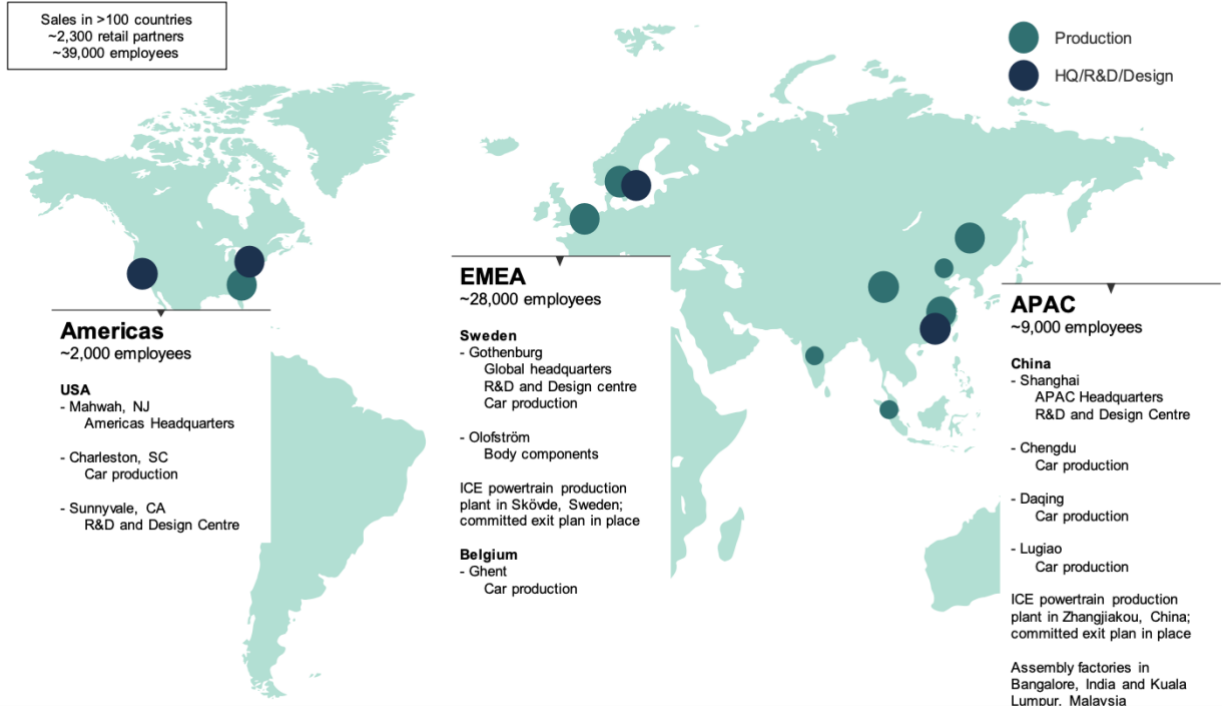
Source: Company (underlying data), DNB Markets (graph structuring)

Note: ICE = internal combustion engine, PHEV = plug-in hybrid electric vehicle, BEV = battery electric vehicle

Note: BEV versions of the XC90 and XC60 will have different model names

Exhibit 11. Volvo Cars Global Footprint (LTM Q3 2021) and mid-202 targets – Retrieved from DNB equity research report dated November 2021

		CHARLESTON	GHENT	GOTHENBURG	CHENGDU	LUQIAO	DAQING	GROUP
Capacity (k units)	2020	45	270	300	155	155	115	1,040
	Mid-decade	155	270	300	270	170	155	1,320
Fully electric mid-decade		✓	✓	✓	✓	✓	✓	
Additional major investment need		No	No	No	No	No	No	



Source: Company

Additional major investments = beyond those budgeted in its manufacturing plants

## Exhibit 12. Discounted Cash Flow

Volvo Cars Forecast (Excl. Polestar)	2020 (Historical)*	2021E	2022E	2023E	2024E	2025E	
Total Sales	260,352.2	282,482.1	306,493.1	332,545.0	360,811.3	391,480.3	
NWC	(48,811.8)	(64,970.9)	(67,428.5)	(71,497.2)	(75,770.4)	(80,253.5)	
Change in NWC		(16,159.1)	(2,457.6)	(4,068.7)	(4,273.2)	(4,483.1)	
Interest bearing debt	13,678.3	13,678.3	13,678.3	13,678.3	13,678.3	13,678.3	Assumed same level of debt as 2020
Interest Expense	(465.1)	(465.1)	(465.1)	(465.1)	(465.1)	(465.1)	
EBIT	9,889.3	18,361.3	19,922.0	21,615.4	23,452.7	31,318.4	
Less: Interest Expense	(1,180.1)	(465.1)	(465.1)	(465.1)	(465.1)	(465.1)	
EBT	10,316.8	17,896.3	19,457.0	21,150.4	22,987.7	30,853.4	
Less: Taxes	(557.7)	(3,686.6)	(4,008.1)	(4,357.0)	(4,735.5)	(6,355.8)	
Net Income	9,759.1	14,209.6	15,448.8	16,793.4	18,252.2	24,497.6	
+ Depreciation & Amortization	10,195.3	16,948.9	18,389.6	19,952.7	21,648.7	23,488.8	Assumed 6% of sales
- Capex	(10,010.6)	(24,011.0)	(26,051.9)	(28,266.3)	(27,060.8)	(29,361.0)	
- Increase in NWC	52.0	(16,159.1)	(2,457.6)	(4,068.7)	(4,273.2)	(4,483.1)	
FCFE	770.3	(9,011.5)	5,328.9	4,411.1	8,566.8	14,142.3	
Terminal Value						133,516.5	
Total		(9,011.5)	5,328.9	4,411.1	8,566.8	147,658.8	
NPV	85,405.1						
Net Debt Adj.	(29,061.0)	Net debt as of Oct 29, 2021					
EV	114,466.1						

## Sources

CapitolIQ - Based on restated financials as of Apr 5, 2022

\*Financial statements were restated as a result of hyperinflation in Turkey, and thus applies only to the Turkish business

## Exhibit 13. Trading Comparables (As of October 29, 2021)

	Market Capitalization (\$ billion)	FY Revenue (\$ billion)	EV/1-yr Fwd. Revenue Ratio	EV/2-yr Fwd. Revenue Ratio	Exchange (primary)	Year Founded	1 Yr Beta	5 Yr Beta
<b>Legacy OEM Peers</b>								
Ford	68.3	116.7	1.4x	1.2x	NYSE	1903	1.01	1.05
General Motors	79.0	120.9	0.8x	0.6x	NYSE	1908	1.13	1.23
BMW	59.0	102.2	1.4x	1.3x	XTRA	1916	0.86	1.23
Daimler (Mercedes-Benz)	95.4	159.4	1.2x	1.1x	XTRA	1886	0.93	1.57
Stellantis	56.2	141.1	0.3x	0.3x	BIT	1899	1.76	-
Renault	8.8	45.3	1.1x	1.0x	ENXTPA	1898	1.48	2.06
Volkswagen	127.7	229.2	1.2x	1.1x	XTRA	1937	0.84	1.4
Toyota	199.6	192.3	1.5x	1.4x	Tokyo	1933	0.9	0.62
Honda	41.4	93.4	0.7x	0.7x	Tokyo	1946	1.18	0.95
SAIC Motor	32.7	105.1	0.3x	0.3x	SHSE	1958	0.9	0.51
Hyundai	32.9	77.9	1.0x	1.0x	KOSE	1967	1.45	1.04
Geely	34.0	12.7	1.9x	1.5x	SEHK	1986	2.87	1.17
Kia	22.6	44.2	0.4x	0.4x	KOSE	1944	1.3	1.25
Tata Motors	21.2	30.5	0.9x	0.7x	BSE	1945	1.35	2.11
Nissan	16.2	55.3	0.9x	0.8x	Tokyo	1933	1.49	1.56
<b>Average</b>	59.7	101.7	1.0x	0.9x			1.3	1.3
<b>Median</b>	41.4	102.2	1.0x	1.0x			1.2	1.2
<b>Pure play EV Peers</b>								
Tesla	1118.8	31.0	21.8x	15.8x	NasdaqGS	2003	2.13	1.89
NIO	64.6	2.3	10.7x	6.4x	NYSE	2014	2.87	2.52
Li Auto	33.2	1.3	7.4x	4.8x	NasdaqGS	2015	1.64	-
Xpeng	39.9	0.8	12.1x	7.0x	NYSE	2015	4.33	-
<b>Average (Excl. Tesla)</b>	45.9	1.5	10.0x	6.1x			2.9	2.5
<b>Median (Excl. Tesla)</b>	39.9	1.3	10.7x	6.4x			2.9	2.5
<b>Source:</b> Compiled by casewriters based on CapitalIO, Bloomberg forecasts and casewriter calculations.								