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Abstract

This thesis aims to determine the intrinsic share price of Shopify, Inc. as of 31st December 2020 by researching its business model, business and financial risks and applying various valuation models. Special attention is devoted to determining the sustainability of the business model and future plans of this rapidly growing company, which allows identifying the key value drivers. A thorough consideration of competitiveness and barriers to entry, together with the analysis of financial risks, is made to assess the overall uncertainty about the future cash flows of the firm and is followed by a detailed 10-year forecast of the firm's activities. Based on these findings, various valuation models are selected based on their applicability, and an in-depth analysis of capital structure is made for final adjustments for options and restricted share units.

Zusammenfassung

Diese Arbeit zielt darauf ab, den intrinsischen Aktienkurs von Shopify zum 31. Dezember 2020 zu bestimmen. Sowohl das Geschäftsmodell als auch Geschäfts- und Finanzrisiken werden hierbei untersucht und verschiedene Bewertungsmodelle angewendet. Besondere Aufmerksamkeit wird der Bestimmung der Nachhaltigkeit des Geschäftsmodells und der zukünftigen Pläne dieses schnell wachsenden Unternehmens gewidmet. Es werden die wichtigsten Werttreiber identifiziert und die Wettbewerbsfähigkeit sowie Eintrittsbarrieren unter Berücksichtigung von finanziellen Risiken dargestellt. Um die Gesamtunsicherheit über die zukünftigen Cashflows von Shopify zu bewerten, folgt eine detaillierte 10-jährige Prognose der Aktivitäten des Unternehmens. Basierend auf diesen Ergebnissen werden verschiedene Bewertungsmodelle auf der Grundlage ihrer Anwendbarkeit ausgewählt und eine eingehende Analyse der Kapitalstruktur für abschließende Anpassungen für Optionen und eingeschränkte Aktieneinheiten durchgeführt.

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Nomenclature

APV	Adjusted Present Value
B2B	Business to Business
B2C	Business to Consumers
CAC	Customer Acquisition Cost
CAGR	Compound Annual Growth Rate
CAPEX	Capital Expenditure
CAPM	Capital Asset Pricing Model
DCF	Discounters Cash Flows
DDM	Dividend Discount Model
EBIT	Earnings Before Interest, Taxes
EBITDA	Earnings Before Interest, Taxes, Depreciation, and Amortization
EV	Enterprise Value
FCFF	Free Cash Flow to Firm
GDP	Gross Domestic Product
GMV	Gross Merchandise Value
GP	Gross Profit
G&A	General and Administrative
IPO	Initial Public Offering
LTIP	Long-Term Incentive Plan
P/E	Price to Earnings
MCA	Merchant Cash Advances
MS	Merchant Solutions
M&S	Marketing and Sales
PPE	Property, Plant and Equipment
RSU	Restricted Share Unit
R&D	Research and Development
SaaS	Software as a Service
SMBs	Small and Medium-size Businesses
SS	Subscriptions Solutions
TIE	Times Interest Earned
TV	Terminal Value
T&LL	Transaction and Loan Losses
WACC	Weighted Average Cost of Capital
WAEP	Weighted Average Exercise Price

1. Introduction

1.1. Motivation

Global e-commerce sales growth has more than doubled since the pandemic started: 27.6% in 2020 vs 12.5% in 2019 (Chevalier, 2021). Many entrepreneurs and small and medium-sized businesses have been either completely forced to go online due to lockdowns and layoffs or viewed it as perfect timing for setting up an online sales channel.

The existence of e-commerce platforms, such as Shopify, came in handy as it allows people with no programming knowledge to build online stores. They provide all the necessary services for an online business: from hosting and website-building to integrated payment systems and inventory management tools. No wonder the number of merchants on Shopify grew from 1 million in 2019 to 1.7 million in 2020, and its stock price more than tripled (Shopify Inc., 2021) (Google Finance, 2021).

E-commerce platforms are the next significant phenomenon. It is a logical step forward from just e-commerce businesses. The magnitude of their importance in business is comparable to the importance of social media platforms in personal life. It is, therefore, essential to study this phenomenon, and a good starting point is an in-depth analysis of such a company: investigation of its business model, determination of its key value drivers, the influence of the corporate structure, and evaluation of financial stability.

The motivation behind the analysis of Shopify is the following: it is a market leader and the best representative of an e-commerce platform because it was designed specifically for serving e-commerce businesses, unlike other companies, which were created for blogging, like WordPress and Wix, or domain registration and hosting, like GoDaddy.

1.2. Research question

The central research question of this thesis is the following: what is the intrinsic value of Shopify's share of stock as of 31st December 2020?

To answer this question, various sub-questions need to be answered first:

- What is Shopify's business model?
- Who are Shopify's competitors, and how competitive is it against them?
- What are the company-specific risks and their implications?
- What are the industry-specific risks and their implications?
- How does Shopify finance itself, and what are the financial risks?

- Is there a threat of bankruptcy?
- What are Shopify's plans?
- What companies are comparable to Shopify and can be selected for the peer group?

The answers to these questions are the logical steps toward finding the intrinsic value of Shopify's equity.

1.3. Methodology

Since Shopify is a relatively young company, not every approach is fit for valuing the company. I dismiss the DDM because the company pays no dividends and has no plans to do so in the future; I dismiss APV and comparables methods based on profits (such as P/E) because the company mostly bears losses and is actively trying to reach the necessary profitability scale. Preliminarily, I plan to use the DCF model based on perpetuity and EV/EBITDA, I plan to use EV/EBITDA multiples and transaction multiples to find the intrinsic value of the company.

2. About the company

2.1. Introduction to the company

Shopify was founded by entrepreneurs Tobias Lütke and Scott Lake in 2004 (Shopify Inc., 2016). The entrepreneurs wanted to start selling products online by using the available at that time e-commerce platforms and tools, but because these platforms offered underdeveloped products and an unsatisfactory range of services, they decided to develop their own e-commerce platform, which they launched in 2006 under the name Shopify (Cole, 2014).

Since its launch, Shopify has developed a virtually complete e-commerce ecosystem. You can build and customize e-commerce websites with no programming knowledge via Shopify, then you can create and upload products via Shopify applications that are capable of being integrated with the suppliers of products that you want to sell, you can create and manage various marketing campaigns to promote your products via Shopify, you can capture transactions via Shopify, you can manage your inventories and ship your products via Shopify, you can provide customer support via Shopify – you can build your business and fully manage it using the services of only one company – Shopify – which it is suitable for small to medium-sized businesses and big enterprises alike.

2.2. Corporate structure

Shopify has a lot of direct and indirect subsidiaries, the exact hierarchy has been changing over the years, and on top of that, in different years, Shopify disclosed a different number of corporate entities, highlighting only the main or recently purchased entities. However, the most important thing is that all the subsidiaries are either directly or indirectly wholly-owned (Shopify Inc., 2021).

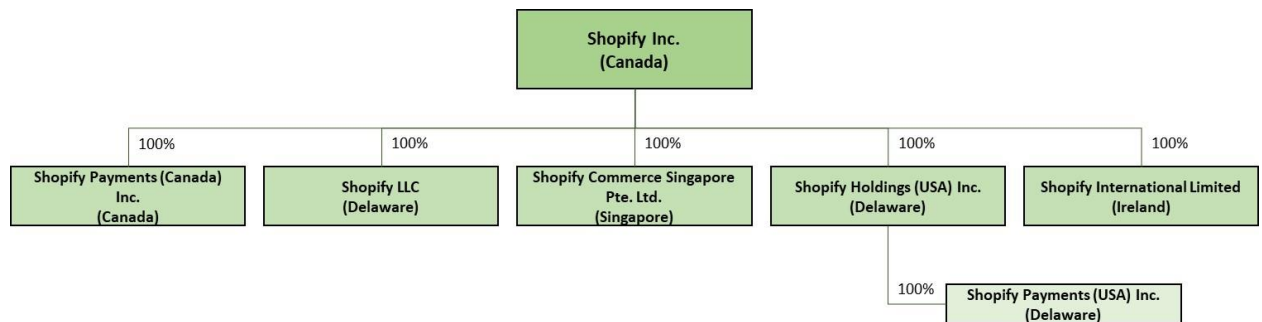


Figure 1. Shopify's corporate structure
(Shopify Inc., 2021; own research)

2.3. Evolution of corporate structure and business history

A corporate structure can indicate what a company's business strategy, as well as an international strategy, is. Shopify started as a Canadian software-as-a-service (SaaS) company that provided e-commerce solutions mainly for computers. Since the advent of smartphones, the demand for adaptations of the website for mobiles and development of mobile applications has been increasing, therefore, in 2012, Shopify acquired a local software development company Select Start Studios Inc. (S3), specialising in mobile software development to benefit from their brainpower (Berkow, 2012). This marked Shopify's entrance of the second out of two main device markets: computers and mobiles.

Shopify also started mainly as a back-end specialised company, meaning they were good at creating efficient systems and algorithms that were necessary for the development of sophisticated e-commerce products but not at making these products look good. That is why in 2013, Shopify acquired a local design agency Jet Cooper (Lindzon, 2013). From that point, Shopify has become a fully rounded local SaaS company.

In 2009 Shopify incorporated Shopify Payments (Canada) Inc. (Canada Business Directory, 2021). This was the first step towards developing a payment processing infrastructure and becoming almost an all-in-one e-commerce solutions provider. Although Shopify is a

Canadian company, 80% of its merchants were based in the US (Lindzon, 2013). To provide a better service to its customers, Shopify decided to go international by incorporating Shopify Payments (USA) Inc. in 2010 (Dun & Bradstreet, 2021).

In 2010 Shopify raised 7 million USD in Series A funding from several venture capital firms to finance the development of its products and reach new markets. These investors were Bessemer Venture Partners, FirstMark Capital and Felicis Ventures (BrainStation, 2010). In 2011 Shopify raised 15 million USD in Series B funding from the same venture capital firms together with one more – Georgian Partners – to further finance growth (Lutke, 2011). In 2013 Shopify raised 100 million USD in Series C funding to finance the expansion of the offline retail offering. The investment was led by Insight Venture Partners, OMERS Ventures and all of the 4 previously mentioned venture capital firms (Shopify Inc., 2013).

In 2013 Shopify finally launched Shopify Payments – an integrated payment system that allows merchants to process transactions without having to recourse to third-party payment providers. Shopify Payments is the major contributor to the merchant solutions revenue stream, which in 3 years had become the most dominant source of Shopify's revenue (Shopify Inc., 2017). This marked an expansion in the payment processor market and becoming virtually a complete e-commerce solutions provider because businesses offering digital products, such as e-books, were now able to run their business fully and exclusively relying on Shopify.

In 2014 Shopify launched Shopify Plus – an enterprise solution for high-volume sellers, which extended Shopify's product set and broadened its customer base – prior to that, Shopify was focusing on servicing mainly SMBs (Shopify Inc., 2014). This made a huge impact because, even though the number of high-volume merchants on Shopify is very low, a disproportionately large portion of revenue comes exactly from these merchants (Shopify Inc., 2021). Traditionally big companies had to spend hundreds of thousands of dollars to create and maintain the online store infrastructure, but with Shopify offering a ready sophisticated and customizable infrastructure, even the largest companies, like Gymshark, Red Bull, Nestlé, Louis Vuitton, Tesla, shifted to Shopify Plus (Novicio, 2021).

In 2015 Shopify went public by listing on New York Stock Exchange and Toronto Stock Exchange, raising over 100 million USD to finance international expansion. The initial public offering was a success, Shopify stock rose by 65% in one day – from 17 USD to 28 USD (Armental, 2015).

In 2015 Shopify incorporated Shopify International Limited in Ireland (Ireland Business Directory, 2021). This business unit was devoted to servicing and billing merchants from non-US, -Canada, -Puerto Rico countries (Shopify Inc., 2021). In 2017 Shopify also incorporated Shopify

Commerce Singapore Pte. Ltd. to service and bill merchants based in Asia (Singapore Business Directory, 2021). The sheer gross merchandise volume (GMV) that 609 thousand merchants generated, 37% of which were not from North America, necessitated global expansion to boost efficiency (Shopify Inc., 2018). This clearly shows that the company morphed from a local SaaS provider to a multinational enterprise.

In 2019 Shopify launched Shopify Fulfillment Network to expand further and better its ecosystem. Its fulfilment operations were expected to decrease the delivery time and lower the shipping costs, which would make Shopify's merchants more competitive and, in some cases, also more profitable. In order to achieve this goal, Shopify acquired 6 River Systems for 450 million USD to take advantage of their cloud-based software and robots (Shopify Inc., 2019).

In 2020, due to the pandemic, Shopify experienced tremendous growth, which shows up not only in the financial results of the company and stock price increase but also in the sheer number of merchants that are using the platform – in 2019, Shopify had around 1 million merchants, while at the end of 2020, Shopify had around 1.7 million merchants (Shopify Inc., 2021).

2.4. Leadership team

Shopify has 7 C-level executives, most of whom have been with the company since the beginning or joined in the early stages of development (Shopify Inc., 2021). Shopify is largely associated with Tobias Lütke, who is the chief executive officer, the chairman of the board and one of the founders of Shopify.

Top Executives:

Name	Role	In position since
Tobias Lütke	Chief Executive Officer	2008
Harley Finkelstein	President	2010
Amy Shapero	Chief Financial Officer	2018
Toby Shannan	Chief Operating Officer	2010
Joseph Frasca	Chief Legal Officer	2014
Brittany Forsyth	Chief Talent Officer	2010
Jean-Michel Lemieux	Chief Technology Officer	2015

Board of directors:

Name	Role	In position since
Tobias Lütke	Chairman of the Board	2008
Robert Ashe	Lead Independent Director	2015
Gail Goodman	Board Director	2016
Colleen Johnston	Board Director	2019
Jeremy Levine	Board Director	2011
John Phillips	Board Director	2010

*Table 1. Executives and board
(Shopify Inc., 2021; own research)*

2.5. Shareholder information

As of 8 April 2021, Shopify had 105 million Class A subordinate voting shares (with one vote per share) and 12.5 million Class B multiple voting shares (with ten votes per share) (Shopify Inc., 2021).

Class B comprise around 10% of total shares outstanding and are fixed and held by individual insiders – 97% of Class B shares are directly or indirectly owned by Tobias Lütke, John Phillips and Catherine Phillips (through Klister Credit Corp.) (Shopify Inc., 2021).

Around 90% of the total shares outstanding are in free float (Finbox, 2021). Approximately 60% of total shares are held by institutions and 30% by the general public (Nasdaq, 2021). Institutional ownership is very dispersed, with the largest institutional holdings reaching 3-5% of total shares outstanding (Yahoo Finance, 2021). Shopify's stock is dually listed and is traded on New York Stock Exchange and Toronto Stock Exchange under the trading symbol "SHOP" (Shopify Inc., 2021).

Holder	Number of subordinate and multiple voting shares held	%	Votes %
Tobias Lütke	8 305 643	7.02%	35.19%
Klister Credit Corp.	3 964 000	3.35%	16.94%
Morgan Stanley	6 034 734	5.31%	5.31%
Baillie Gifford and Company	5 494 689	4.84%	4.84%
FMR, LLC	4 646 708	4.09%	4.09%
Jennison Associates LLC	4 631 821	4.08%	4.08%
Capital World Investors	4 399 695	3.87%	3.87%
Vanguard Group, Inc. (The)	3 451 731	3.04%	3.04%
Price (T.Rowe) Associates Inc	3 152 132	2.77%	2.77%
Sum	44 081 153	38.37%	80.13%

*Table 2. Shareholders
(Shopify Inc., 2021; Yahoo Finance, 2021; own research)*

3. Business Model

3.1. Customer value proposition

Shopify's customer value proposition is that it is a platform that allows to start, run and grow a business. Shopify provides all the necessary e-commerce features to achieve these goals: it reduces the barriers to entry by radically simplifying the process of creating an online store and starting selling online, it provides the infrastructure to manage orders, shipping and payments, and it gives businesses the opportunity to scale and sell their products internationally.

Before Shopify, a small business owner with no programming expertise that wanted to start selling on the web, in general, would have to use simple website builders that were geared towards creating information pages and blogs, not e-commerce websites. The difference is structural, and even with plugins that add e-commerce features, it was virtually impossible to achieve the standard online store layout. Moreover, the plugins were underdeveloped, untuned and unsophisticated, and as a result, some features would break down. Even contemporary companies that expanded into e-commerce services, while having the basis of a regular website builder, experience the same breakdowns – this shows how important initial structure is. That is why e-commerce solutions were unpopular, and it was a common practice to buy or rent a server and hire programmers to

build, maintain and upgrade the website and integrate it with a payment processor or directly a merchant account in the bank. Large companies resorted to the latter option with no hesitation, employing an army of programmers to oversee an overwhelming number of pages and products.

Shopify was about e-commerce from its inception, and it stayed focused on achieving functional seamlessness and non-redundant offering because they are unpolluted with non-e-commerce features. The single most significant achievement of Shopify is reducing barriers to entry. The fact that a business owner could now directly build and oversee an online store not only increased responsiveness but also brought the cost down significantly. The cheapest Shopify subscription plan costs 29 USD per month (Shopify Inc., 2021). Alternatively, to achieve the same result that a business owner can archive using the cheapest Shopify plan, he would need to buy a domain name, buy a server, integrate the two, set up a domain-based email address and connect it to the website, write the code or hire a programmer to create a website, to integrate it with the payment system, to create and maintain a database for storing customer-related information, to add, delete or update products, to maintain and oversee the website, buy additional software to collect and analyze statistical data. With Shopify, a business owner not only saves a huge amount of money but also time because he can update his online store as easily as his Facebook profile.

Initially, Shopify's target market was SMBs, in part, it was due to the fact that they were unserved the most (big companies could serve themselves), in part, it was due to the fact that large businesses require much more sophisticated and customized products to be willing to switch, while Shopify was extremely standardized. However, after covering all the basic needs of a small business, such as a sufficient variety of website themes, product creation tools and localization functions, Shopify started to develop more sophisticated solutions which would suit sophisticated enterprises. After the launch of the Shopify Plus plan, Shopify's target market became any e-commerce business. However, Shopify is trying to go even further by launching the Shopify Capital program, where small businesses can apply for a short-term loan to finance payroll employees, inventory and marketing campaigns with very little bureaucracy and no credit checks (Shopify Inc., 2021). This opens the door for entrepreneurs who can create sales but just lack the resources to start the process.

Shopify's mission is "Making commerce better for everyone" (Shopify Inc., 2021). Achieving the necessary scale and level of development, Shopify can serve its purpose and make commerce better for small, medium-sized and large businesses.

3.2. Decomposition of earnings

In order to evaluate a firm's direction, a clear understanding of where the money comes from is needed. In this subsection, I am going to decompose Shopify's earnings to demonstrate which offerings generate the most amount of revenue and which geographical locations are the main sources of revenue.

In 2020 Shopify generated 2.9 billion USD in revenue. Shopify differentiates between two revenue streams: "a recurring subscription component we call subscription solutions, and a merchant success-based component we call merchant solutions" (Shopify Inc., 2021). In 2020, subscription solutions generated 908 million USD, while merchant solutions generated 2 020 million USD.

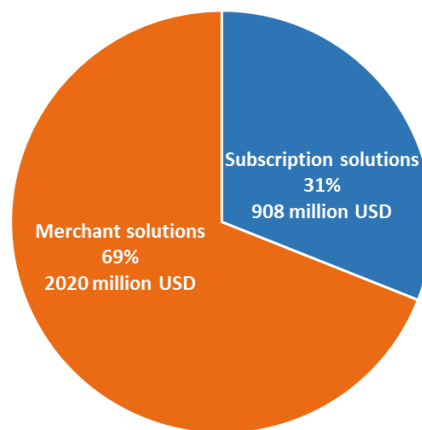


Figure 2. Revenue streams
(Shopify Inc., 2021; own research)

Subscription solutions. Subscription solutions revenue streams are mainly comprised of different subscription plans on the Shopify platform, such as website-building tools and Point-of-Sale offerings. It also includes a number of fixed payments but which are associated with subscriptions, for example, the purchase of domains, premium website themes and certain applications.

The menu of subscription plans is designed to target different levels of sophistication of the business owners and different levels of development of the business. The cheapest plan, called Shopify Light, costs 9 USD and allows to embed buy buttons – it is not a regular plan because it involves an externally hosted website. Basic Shopify costs 29 USD per month and is the least sophisticated: it allows minimum staff, minimum inventory locations, limited statistics, limited certain discounts, higher transaction costs and no localization options. This plan is suitable for

beginners who just need the minimum to test the viability of their ideas, therefore, adjustments for international markets and tons of statistics are unnecessary. The second level is the Shopify plan which costs 79 USD. This intermediate plan already starts to include some basic reports and statistical tools, and localization options, such as international domains and automatic display of the price in the local currency. This plan is suitable for successful local businesses that are trying to scale and need to test the reaction of international markets to their products. The third level is the Advanced Shopify plan for 299 USD, and it allows to have significantly more inventory locations staff and also offers unique features, such as third-party calculated shipping rates, setting different prices for the same product in different locations and in different currencies. This plan targets successful international businesses that sell their products worldwide. Shopify goes even further with the Shopify Plus plan (from 2000 USD) by offering multistore management tools for businesses that run many stores, more customization options and even a devoted manager to have direct contact with Shopify at all times.

Shopify subscription plans are designed in a way that not only allows one to target businesses at any stage but which also ensures a high merchant retention rate by allowing one to scale from a start-up to a multinational enterprise without the need to leave Shopify platform and Shopify does believe that this plays a big role in their success (Shopify Inc., 2021). Shopify also notes that the retention rate is much higher with a higher-priced subscription plan, meaning the more successful the business is, the more likely it is to stay on the Shopify platform (Shopify Inc., 2021). This is extremely important because high-volume “successful” merchants contribute the most to the second revenue stream – merchant solutions. It is very interesting how with these two different revenue streams, Shopify equalizes the importance of all businesses: subscriptions solutions revenue is mostly relying on cheap plans, which are purchased by the unsophisticated majority (because the number of more successful businesses decreases exponentially), while the merchant revenue stream is mostly relying on the minority of high volume merchants (Shopify Inc., 2021).

Merchant solutions. Merchant solutions revenue stream is mainly comprised of transaction fees but also includes shipping and fulfilment fees and revenue from merchant cash advancements and loans. The idea of the merchant solutions is to boost users’ convenience by offering additional features that can be used within the boundaries of one centralized platform.

The main source of the merchant revenue stream is Shopify Payments. Shopify Payments processes transactions for a fee, therefore, it relies on the sales volume that goes through the stores on the Shopify platform or simply GMV. Shopify Payments allows merchants to install a competitive (in terms of transaction fees), the safe and reliable payment gateway to accept

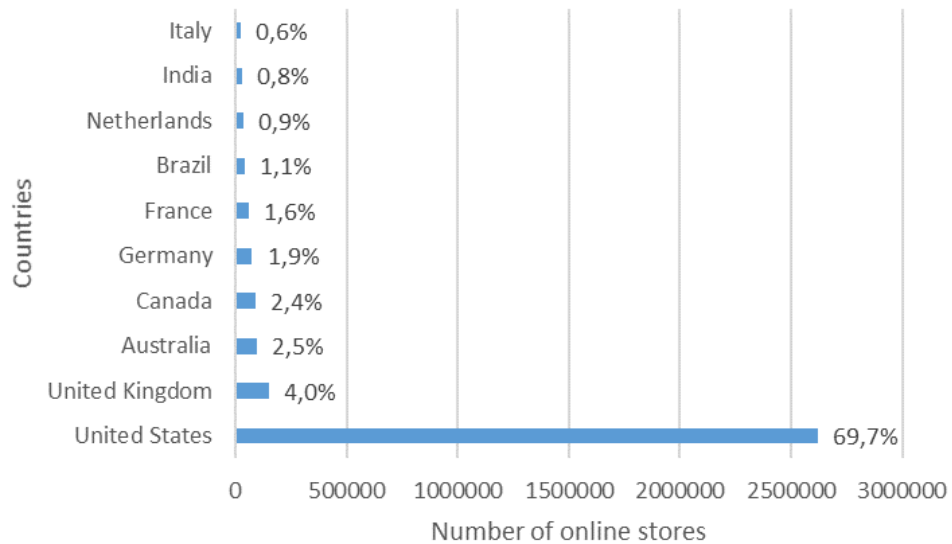
payments via credit cards without the need for using a separate third-party platform. Seamless integration that decreases complexity also boosts merchant retention rates (Shopify Inc., 2021). However, if merchants still decide to use third-party payment providers or use them jointly with Shopify Payments to increase the number of available payment methods, Shopify still imposes an additional transaction fee on top of third-party's transaction fees to incentivize the adoption of Shopify's services. The downside of that incentive system lies in the limited availability of Shopify Payments. As of now, Shopify Payments is available only in 17 countries, which means that merchants from 158 other countries inevitably have to recourse to third-party payment gateways (Shopify Inc., 2021). With no ability to decrease transaction costs (apart from switching to a higher-priced subscription plan), merchants are less likely to use the Shopify platform overall.

Another source of the merchant revenue stream is Shopify Capital. Shopify Capital is a program under which merchants can receive financing to accelerate their business growth. There are two types of financing: merchant cash advances and loans. Merchants who apply for cash advances essentially sell their future receivables at a discount – they receive a lump sum of money in their bank account, and Shopify retains a portion of daily sales (e.g. 10%) until the principal plus extra sum (borrowing cost) is remitted (Shopify Inc., 2021). A similar system works with the loan, but the interest is paid once in 60 days. Importantly, while there is no deadline for remitting the total amount through the merchant cash advances program, loans are given for a 12-month period. Shopify Capital offers financing from 200 USD to 2 000 000 USD (Shopify Inc., 2021). Shopify Capital programs are available in the US, the UK and Canada, where 50%, 8% and 6% of Shopify users reside, respectively (Shopify Inc., 2021).

A similar in nature (for Shopify) is the Shop Pay Installments revenue. It offers merchant's customers an option to pay for the product in instalments while ensuring that the merchant receives 100% of the payment at once (Shopify Inc., 2021).

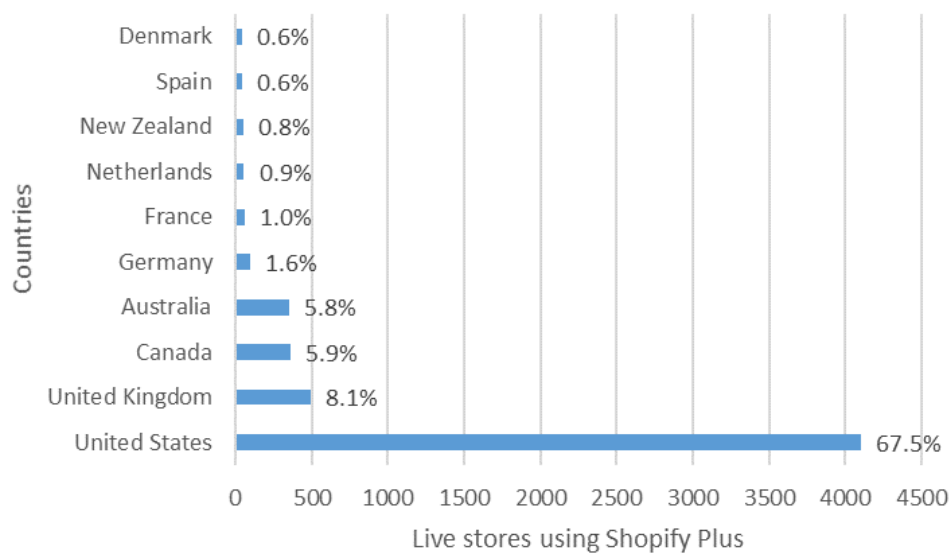
Other sources of merchant solutions revenue include revenues from advertising on Shopify App Store, fees for using Shopify Email, revenues from Point-of-Sale products and Shopify Shipping and Shopify Fulfillment Network (Shopify Inc., 2021).

Geographical locations. When it comes to the decomposition of revenue with respect to geographical locations, given that Shopify does not break down its revenue by country, the best option is to evaluate the proportion is to look at the number of online stores from each country. Although there are around 1.7 million merchants, there are 3.76 million live online stores on Shopify. Based on the data in the figure below, we can conclude that a substantial portion of revenue comes from US-based merchants (Dean, 2021).



*Figure 3. Number of online stores by country
(Dean, 2021)*

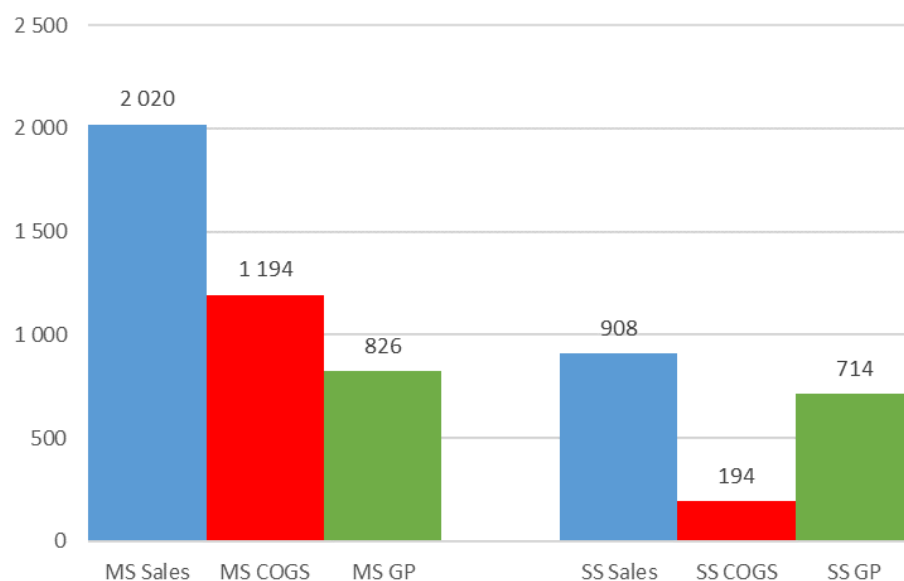
Another way to assess the geographical distribution of revenue is to evaluate the distribution of Shopify Plus users. Taking into account the fact that high-volume sellers like Shopify Plus users are contributors of a disproportionately large part of merchant revenue, the true distribution of revenue by country should be within the boundaries of the data presented in Figure 3 and Figure 4 (Shopify Inc., 2021). It is apparent that Shopify mainly generates revenue in the US. It is also evident that Shopify is much more popular in English-speaking countries.



*Figure 4. Number of online stores on Shopify Plus plan by the country
(Dean, 2021)*

Decomposition of profit and loss statement. The abovementioned revenue streams have significantly different levels of direct costs, and while merchant solutions revenue (MS Sales) is 122% higher than subscription solutions revenue (SS Sales), merchant solutions gross profit (MS GP) is only 16% higher than subscription solutions gross profit (SS GP). The reason for such difference lies in the fact that for subscription products, the infrastructure is already established, and most of the direct costs involve maintenance of the platform (hosting costs, third-party infrastructure costs, operations and support functions, etc.), however, when it comes to the merchant products, they are tied to some kind of action on the part of merchants, therefore, to secure each sale an active involvement (which is costly) on the part of Shopify is needed (payment processing, credit card fees, warehouse storage, shipping costs, etc.) (Shopify Inc., 2021).

This leads to virtually the same gross profit contribution. However, it is important to note that historically, while direct costs associated with subscription solutions stably stayed around 20% of the respective revenue stream, direct costs associated with merchant solutions have been stably decreasing as a portion of the respective revenue stream: from 72.3% in 2015 to 59.1% in 2020, therefore, merchant solutions revenue stream may become the dominant gross profit contributor in the future (Shopify Inc., 2021).



*Figure 5. Gross profit breakdown (in million USD)
(Shopify Inc., 2021; own research)*

There are four types of operating expenses: sales and marketing (S&M), research and development (R&D), general and administrative (G&A) and transaction and loan losses (T&LL).

In 2020, S&M amounted to 602 million USD and mostly involved advertising costs (240 million USD), employee stock-based compensation (40 million USD), partner referral payments and standard salaries (Shopify Inc., 2021).

R&D “consist primarily of employee-related expenses for product management, product development, product design, data analytics, contractor and consultant fees and corporate overhead allocations” and in 2020 amounted to 552 million USD, a large portion of which is related to employee stock-based compensation (154 million USD) (Shopify Inc., 2021).

Shopify (2021) also notes that S&M and R&D play significantly bigger roles in the subscription solutions revenue stream because the biggest driver of merchant solutions gross profit, Shopify Payments, does not require nearly as many resources for development and adoption. In part, Shopify Payments might not need a lot of advertisement because of the previously described incentive system. Although Shopify Payments is available in only a few countries, 85-90% of Shopify stores are located in those countries, therefore, for 85-90% of merchants, the incentive system is sensible. Another reason why Shopify Payments needs less advertisement is the fact that merchants inevitably face the necessity of integrating a payment gateway, and Shopify Payments is the first proposed option, hence merchants naturally stumble upon and discover it.

G&A mostly includes “expenses for finance and accounting, legal, administrative, human relations and IT personnel”, insurance and provisions for uncollectible receivables and in 2020, amounted to 245 million USD, a notable portion of which is related to employee stock-based compensation (45 million USD) (Shopify Inc., 2021).

T&LL mostly includes losses related to Shopify Payments, Shopify Capital and Shop Pay Installments and amounted to 52 million USD in 2020 (Shopify Inc., 2021). Shopify is exposed to transaction losses due to chargebacks or uncollectibility of loans or purchased merchant’s receivables. In contrast to M&S and R&D, T&LL is much more related to merchant solutions revenue stream, although, in absolute terms, this is still significantly less than 240 million USD in advertising expense.

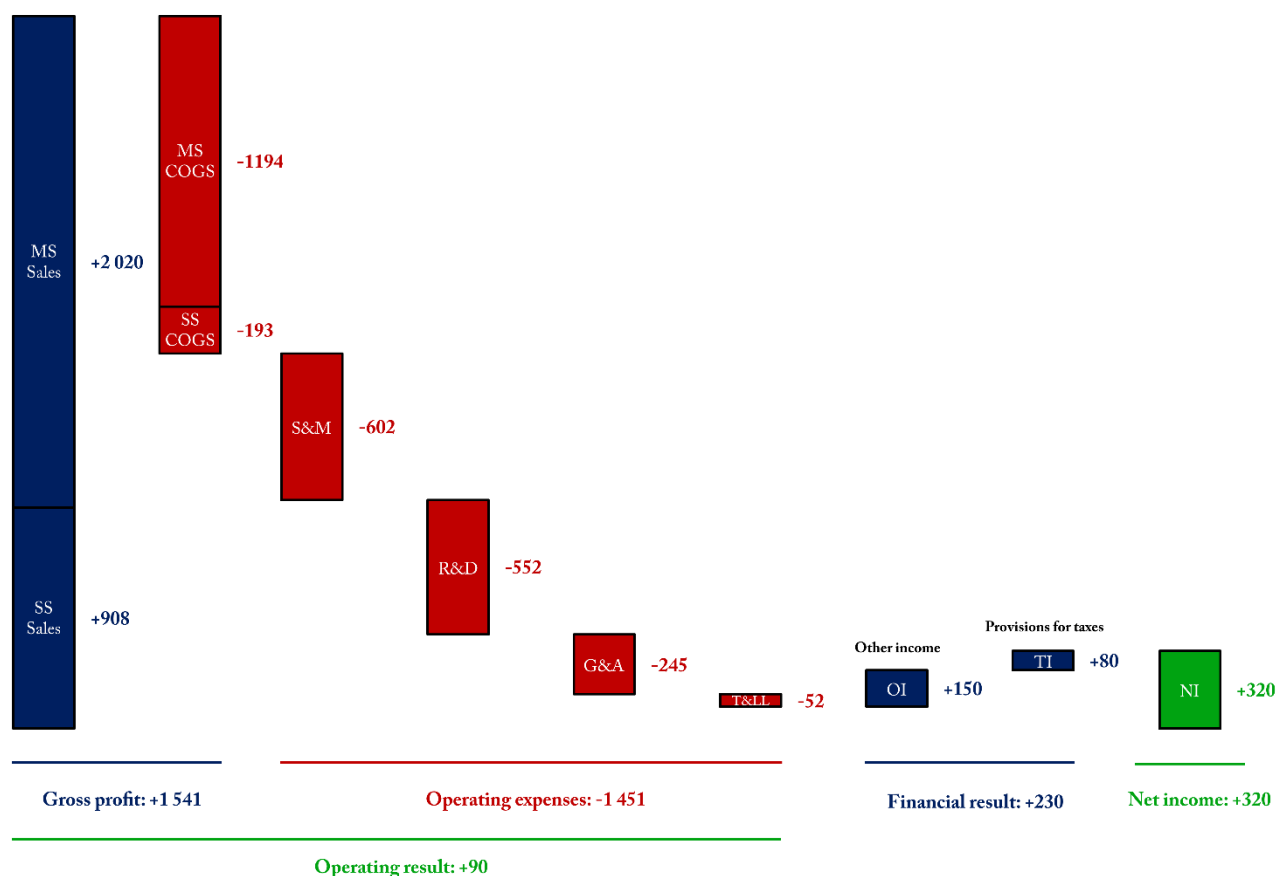


Figure 6. Decomposition of profit and loss statement (in million USD)
(Shopify Inc., 2021; own research)

It is important to note that 2020 is the first year when Shopify showed a positive operating income and net income. Although the company's revenue had been growing at a stunning rate (59% in 2018, 47% in 2019), a huge growth of 86% was largely caused by external factors, namely the COVID-19 pandemic, with everything moving online.

In the near future, Shopify (2021) expects an increase in merchant solutions' direct costs due to the expansion of its fulfilment network, which should also negatively impact the overall gross profit margin. When it comes to operating costs, Shopify (2021) plans to continue to increase investments in advertisement and referral programs and the development of new products and personnel, therefore, expecting an increase in S&M, R&D and G&A expenses, with a remark that R&D and G&A should decrease in relative terms as a percentage of total revenue.

3.3. Key resources

Shopify's first and main key resource is its human capital. Being a software company, Shopify needs to constantly adapt to the rapidly shifting demand, innovate, update its platform and

become sophisticated overall in order to not be left behind its competitors. The recent change brought about by the pandemic showed how valuable adaptability is. The landscape is always shifting, and Shopify has to keep up with the latest e-commerce trends, apart from its general plan of growth and development, because being relevant is what ensures a continuous inflow of new merchants. This incredible agility is achieved by highly skilled labour that not only can develop sophisticated products but also develop systems that are easily adaptable.

Shopify's second key resource is a third-party cloud storage and computing system – Google Cloud Platform (GCP) (Shopify Inc., 2021). Shopify uses cloud systems to host its services (Neufeld, 2018). The better the cloud system – the better the performance of the services and the lower is latency. Integration with GCP also brings synergies, as merchants' products should be better integrated into Google Search and will more frequently be displayed in results (Gagliardi, 2021).

Shopify's third key resource is its service provider agreement with Stripe, Inc. – a popular payment service provider. Shopify Payments system relies on Stripe, and given that Shopify Payments is the main source of merchant solutions revenue, partnership with Stripe is integral to Shopify's business (Shopify Inc., 2021).

Shopify's fourth key resource is Shopify's contracts with other payment providers, such as PayPal, 2Checkout, etc. Shopify has a wide range of different payment gateways that are integrated into its platform, which allows merchants to select those whose offering is suitable for their business.

Shopify's fifth key resource is its brand. Shopify's offering is unpolluted with unrelated to e-commerce services, therefore, Shopify is purely associated with selling and is an undisputed option on the top of an entrepreneur's list. Shopify is also known for its simplicity and effectiveness and is indirectly approved by thousands of social media influencers who host their websites on Shopify.

Shopify's sixth key resource is its customer service. One of the biggest factors affecting merchant retention rate is customer support, especially when it comes to technical issues. Shopify offers thousands of detailed articles explaining how each available feature works that are very easy to find. In the rare cases when something is unclear or unavailable, a customer can use four channels to resolve his problem: through a forum, chat, email or call.

Shopify's seventh key resource is its cloud-based software and collaborative mobile robots for Shopify Fulfillment Network. As previously mentioned, in 2019, Shopify acquired 6 River Systems to take advantage of their technologies and boost their warehouse speed and reliability.

3.4. Key processes

The first and the most important key process in Shopify is the simplification of complex features to the point that it ensures a user-friendly experience – Shopify not only provides tools that do not require programming knowledge but also simplifies them to the point that a business owner can run his whole business via a phone.

The second key process is complementary to the first one, and it is software development. Continuous innovation and the introduction of new and better products are vital for the survival and thriving of the company because the industry never stays in one spot.

The third key process is marketing. Due to the sole focus on e-commerce, Shopify can position itself as one thing and build an association with only one thing – e-commerce. Shopify does it effectively and occupies its niche. A narrow focus also simplifies marketing and makes it more cost-effective. Recruiting partners via referral programs are also a big part of a marketing strategy because not only is it infinitely scalable (win-win), but it also helps to get influencer approval and spread.

The fourth key process is payment processing. With Shopify Payments being the largest merchant solutions gross profit contributor, the ability to process payments effectively and efficiently is crucial (Shopify Inc., 2021).

The fifth key process is fulfilment. With Shopify's expansion into the fulfilment industry, efficient inventory and warehouse management, the most contemporary tracking and order processing are of utmost importance because the switching costs of a fulfilment provider are significantly lower compared to the switching costs of a payment processing provider or website host.

3.5. Conclusions and expectations

Shopify's business model relies on two revenue streams that currently generate approximately the same gross profit while deriving most of their value from the opposite ends of their merchant's distribution by size. This is clearly something that strengthens their position and adds to the stability of the earnings and sustainability of the business model.

Having a history of losses, the decisive factor for the sustainability of the business model is whether Shopify can generate profits in the future. As for many software companies, Shopify's profits depend on whether it can reach the necessary scale and whether it can do it before the accumulated deficit burns all the money. Most of the costs are attributed to the merchant solutions' direct costs, and although, as was mentioned, historically, they were decreasing, the company

expects an increase in the short to medium term due to its fulfilment network expansion – this is not a good sign. On the other hand, the company does expect operating costs to decrease in relative terms – the most important question is whether it can offset the relative increase in merchant solutions direct costs. In the short to medium term, it is very difficult to answer this question.

However, there is one factor that might render short- and medium-term perspectives irrelevant, and it is the amount of cash and equivalents. Since going public in 2015, Shopify has been able to raise huge amounts of capital. At the end of 2020, Shopify had 2.7 billion USD in cash and cash equivalents and 3.7 billion USD in marketable securities, which together comprised 6.4 billion USD in liquid assets. Considering the fact that it was mostly raised through equity and that the company's debt is relatively low (758 million USD in convertible notes), it is reasonable to take a long-term perspective (10+ years) and over the long term if we extrapolate from the past, we can observe a trend of significant revenue growth and relative costs reduction, which is in line with Shopify's management plans and expectations (Shopify Inc., 2021).

When it comes to geographical diversification, on the one hand, lack of dispersion means that Shopify is relying too much on a few markets, which increases its sensitivity to regulatory changes and country risk overall. On the other hand, it allows Shopify to focus on one or a few markets, which may lead to better local adaptation of its products for a particular market and give a competitive advantage – it is a higher-risk strategy.

Overall, Shopify seems to achieve the scale necessary for profitability, there are good reasons (cash) to believe that it can finance itself in the short and medium-term, and in the long term, relative costs should allow for sustainable profitability.

4. Business risks

In this section, various factors that influence Shopify's revenue are discussed in order to evaluate the riskiness of its business model. Also, a comparison between the biggest companies in the industries where Shopify products are positioned is made to draw a picture of the relative riskiness of Shopify.

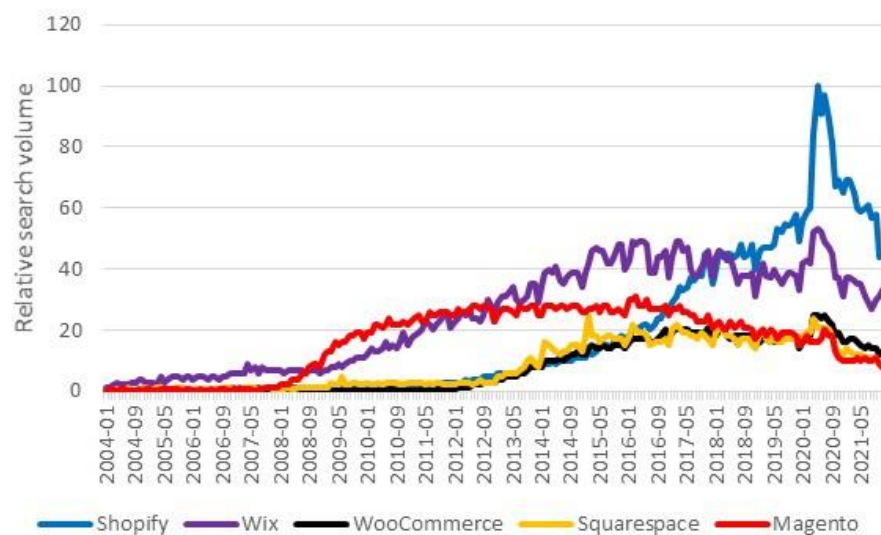
4.1. Competition

The analysis of Shopify competitiveness is not a straightforward exercise. The problem lies in Shopify's size. Although its niche seems to be narrowly defined – e-commerce – its product mix has grown beyond one industry: Shopify platform competes in the cloud-based web development industry, Shopify Payments – payment processing industry, Shopify Capital –

financing industry, Shopify Fulfillment Network – fulfilment industry, etc. In order to reduce the complexity, I am going to identify Shopify’s products that contribute to the gross profit margin the most, analyze which industry these products are competing in, compare them to the respective competitors’ products, and based on that, conclude what Shopify’s competitive position is.

Shopify platform. The best place to start is Shopify’s core business – the platform. In 2020 subscription solutions revenue stream contributed 46% to the total gross profit. Although the primary source of that revenue stream was the sale of subscriptions to the platform, other constituents of this revenue stream (themes, apps, domains, etc.), due to their complementary nature, are often purchased together with the subscription to the platform. Given that this is also true for other companies, it is better to conceptualize all of the subscription products as one package and compare it to the other companies’ packages.

According to Google Trends (2021), the most popular e-commerce cloud-based web development companies are Shopify, Wix, WooCommerce, Squarespace and Magento.



*Figure 7. Popular e-commerce cloud-based web development companies
(Google Trends, 2021; own research)*

As the major source of subscription revenue is low-volume businesses, the comparison between the platforms should be made with respect to the criteria that are most important to beginners and small businesses. Carney’s (2021) perfectly summaries these criteria, however, I am going to highlight nine of the most important ones: 1) coding knowledge, 2) ease of use, 3) the number of themes, 4) customization of themes, 5) cost of plans, 6) the number of apps, 7) support, 8) payment gateways, 9) marketing features.

WooCommerce and Magento offer open-source solutions, meaning users have almost no limitations when it comes to customization and apps, however, it also means that they almost inevitably have to deal with coding. Wix and Squarespace were initially for blogging and only with time started offering e-commerce solutions as well, therefore, fewer website themes are suitable for e-commerce and more importantly, the support team is less helpful when it comes to e-commerce issues. The detailed comparison is summarized below in table 3.

	Shopify	Wix	WooCommerce	Squarespace	Magento
Coding	no	no	no <i>but better to know</i>	no	no <i>but better to know</i>
Ease of use	easy	easy	medium	easy	hard
Themes	73	114	a lot of external	100+	a lot of external
Customization	good	good	excellent	good	excellent
Cheapest plan	\$29	\$28	free	\$12	free
Apps	5 763	54	a lot of external	25+	5 000+
Support	excellent	good	good	good	good
Gateways	100+	50+	100+	3	150+
Marketing features	excellent	excellent	good	good	excellent

Table 3. Comparison of Shopify, Wix, WooCommerce, Squarespace and Magento (Carney, 2021; Barraclough, 2021; Carmichael, 2021; Monaghan, 2021; Brandl, 2018; own table)

As it can be seen from the table, all companies offer quite decent solutions. WooCommerce and Magento were designed for maximum flexibility, not beginners, therefore, it is hard to consider them perfect substitutes. Wix and Squarespace notably lag only in the number of apps and gateways, in other respects, unsophisticated users will struggle to find the difference. Squarespace's only three available gateways are a significant deterrent for the users and also a big hindrance to global expansion.

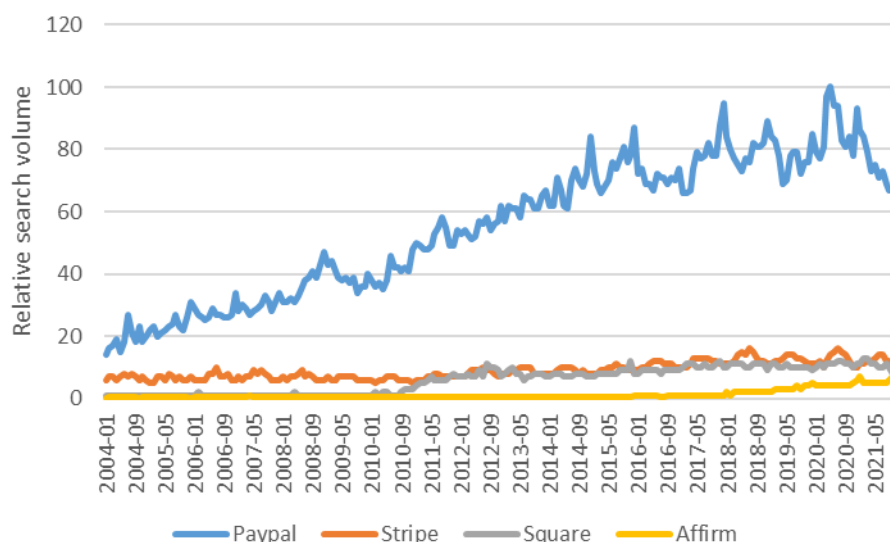
Overall, the competition is very high – each company has a solid foundation and product quality. Taking into account the global search volume of these companies shown in Figure 8, we can notice a downward trend between 2015 and 2020 for every company apart from Shopify. It

suggests that Shopify’s sole focus on e-commerce, strong brand and clever marketing is what really allows it to outcompete its rivals.

Shopify Payments. In 2020 merchant solutions revenue stream contributed 54% to the total gross profit. The primary source of revenue stream is Shopify Payments, and although the exact contribution is not officially disclosed, speculative estimates indicate that it is around 73% (Lee D. , 2020). Given that other merchants, products are either insignificant by their nature (e.g. Shopify Email) or have been recently introduced (e.g. Shopify Fulfillment Network), this is a reasonable assumption that will be carried on.

It is important to understand that Shopify Payments works only on the Shopify platform – unlike other payment processors, Shopify Payments cannot be connected to other platforms, e.g. Wix. As it was alluded to in the subsection “key resources”, Shopify Payments is not a standalone payment processor – Shopify relies on the service provider agreement with Stripe, Inc., meaning Shopify Payments users are essentially using Stripe, but through the Shopify platform and under the name Shopify Payments. This is why on the Shopify platform, third-party integration with Stripe is unavailable in countries where Shopify Payments is available (Community Moderator at Shopify, 2019). This means that Shopify Payments competes with other payment processors only within the Shopify platform.

According to Google Trends (2021), the most popular payment processors that are capable of being integrated into the Shopify platform are PayPal, Stripe, Square and Affirm.



*Figure 8. Popular payment processors in the US
(Google Trends, 2021; own research)*

Although third-party payment providers might give extra flexibility and access to extra features, e.g. ability to pay for marketing campaigns via PayPal, overall, all top payment providers

(including Shopify Payments) do their job equally excellently, therefore, comparison of features is irrelevant. What is relevant, though, is the incentive system created by Shopify. As was previously described, Shopify charges merchants additional transaction fees unless Shopify Payments is used, therefore, Shopify Payments outcompetes every other payment gateway within its platform. Given that Shopify Payments is available for almost all users (>85%) and that there are no plans to expand Shopify Payments beyond one platform, the conclusion should stay the same over time.

Shopify Capital. Given our assumptions, there is still 27% of merchant solution's gross profit to be analyzed, and although it accounts for only 14.6% of the total gross profit, the products that are generating this 14.6% may scale and in prospect, increase their contribution to the total gross profit tremendously. One of these products should be Shopify Capital. Given that it is the third oldest large-scale product (launched in 2016), and given its business model, it is reasonable to assume that the majority of the unexplained gross profit comes from this product.

As with Shopify Payments, Shopify Capital is only available to Shopify sellers, therefore, the competitiveness of that offer should be analyzed within the Shopify platform again. In the case of traditional credit providers, such as banks, most Shopify users (who are based in the US) would need to apply for a loan, go through the screening process, credit score checks, and bureaucracy and receive a certain interest rate. Shopify Capital offer is more appealing because they do not require a credit score, the application process is quick, repayment occurs automatically (Shopify retains a portion of revenue), and due to the significant involvement in and familiarity with the applicant's business, Shopify Capital offers lower rates (Prakash, 2021). Just like Shopify Payments offer, Shopify Capital was designed to outcompete traditional credit suppliers.

Shopify Fulfillment Network. Although launched only in 2019, Shopify Fulfillment Network (SFN) has tremendous potential for scaling. Given that Shopify acquired a fulfillment company 6 River Systems, that Shopify plans to allocate 1 billion USD over five years to SFN (Arcieri, 2020), that Shopify (2021) expects merchant solutions' gross profit margin to shrink in the near future, it is evident that SFN is scaling very rapidly, and it is reasonable to expect it to become a significant gross profit contributor in the long term.

As with Shopify Payments and Shopify Capital, SFN is offered only to Shopify sellers. SFN's biggest competitor in that industry is Fulfillment by Amazon (Lee J. , 2020). Although Shopify (2019) tries to achieve "timely deliveries and lower shipping costs", it will be extremely difficult to compete with Amazon's one-day delivery offering (Arcieri, 2020), which is why some merchants will inevitably choose Fulfillment by Amazon, especially if they are selling luxury products where the experience for the customers is much more important than price.

Conclusion. Shopify finds itself in a very competitive setting, but its current competitive position is quite strong. Although Shopify’s biggest products compete in different industries, the success of Shopify Payments, Shopify Capital, and Shopify Fulfillment Network is largely dependent on the success of the Shopify platform due to the fact that Shopify’s target market for the former consists of merchants that are already selling on Shopify, and when it comes to e-commerce platforms, the competition is very high.

4.2. Industry outlook

The analysis of competition indicates that, ultimately, Shopify’s success is dependent upon its success in one industry – the cloud-based web development for the e-commerce industry. The potential of the company is heavily reliant on the potential of the whole industry and also the changes that are bound to happen in this industry over time.

Global trends. The first thing to consider is the future of e-commerce overall. As Shopify is offering products for e-commerce businesses, the ability of these businesses to continue to sell more online determines whether e-commerce product relevance is going to grow or fall in the future. Experts predict that in the near future global retail e-commerce sales will continue to grow at a faster rate than traditional commerce growth, which means that the e-commerce share of total retail sales will continue to grow.

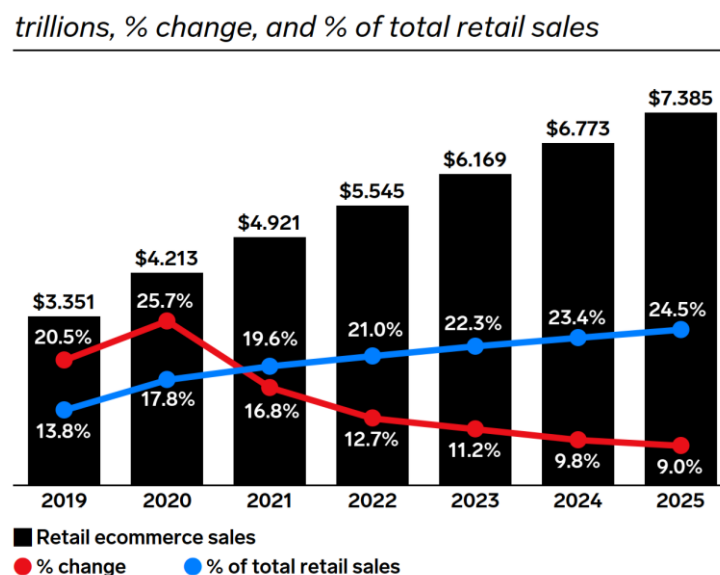
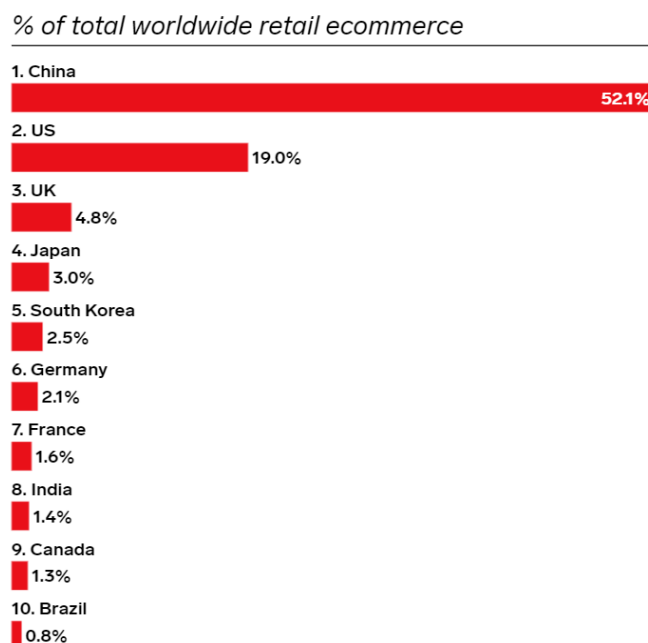


Figure 9. Retail e-commerce sales worldwide, 2019-2025
(Lebow, 2021)

We can observe in Figure 9 that despite a huge spike in e-commerce adoption in 2020 due to the pandemic, the growth rate is decreasing over time. It might signal the maturation of the

industry and get close to the point where all the products that can be sold online are being sold online. Some markets will mature faster than others, therefore, a geographical breakdown is needed to figure out where the opportunity lies.



*Figure 10. Top 10 countries, ranked by retail e-commerce sales share, 2021
(Lebow, 2021)*

We can observe in Figure 10 that, by far, the fastest rate of adoption is in China. On the one hand, it might signal that China has the best environment for selling online, and it is necessary to expand into China as fast as possible. On the other hand, it might signal that other countries have a greater unrealized potential because their ratio of e-commerce sales to gross domestic product (GDP) is much lower, for example, China's e-commerce sales to GDP ratio is 0.17, while the US's is 0.05 (The World Bank, 2021; own calculations).

Technology durability. The second thing to consider is technology durability, meaning whether an e-commerce platform will continue to be a relevant solution in the future or if there are any obstacles to that. The two biggest reasons for using e-commerce platforms are simplicity and accessibility, therefore, the changes in the world with respect to these factors may pose a threat.

Firstly, chasing simplicity, e-commerce platforms offer standardized products, therefore, the websites look quite similar. If most websites look similar in the future, then in order to attract more customers and outcompete the rivals, e-sellers will increasingly move to more customizable solutions, possibly to the traditional methods of creating a website.

Secondly, e-commerce platforms depend on online buyers' access to the internet and willingness to purchase goods online. If traditional internet shopping becomes outdated and people

move towards its better alternatives similar to the Metaverse, where an e-commerce platform might need to do completely different tasks using completely different software (Clark, 2021).

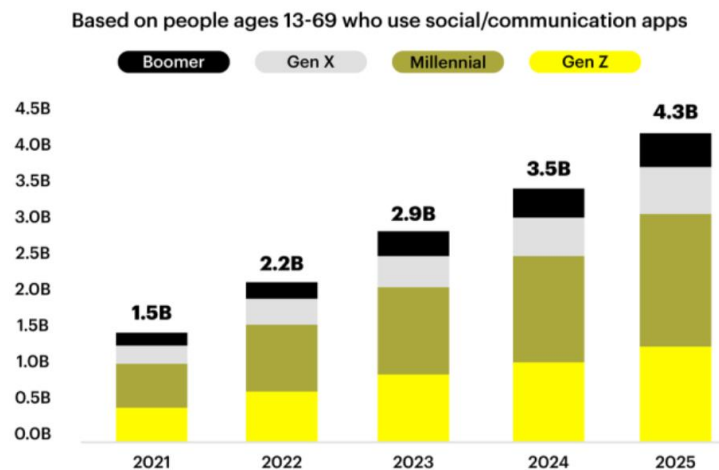
Overall, e-commerce platform technology seems durable, as there should always be unsophisticated merchants for whom a standardized product is an optimal solution, and the evolution of non-physical shopping would still leave room for e-commerce platforms – the question is whether a company can adjust to the new generation of technology.

Product evolution. Historically, e-commerce platforms evolved along with a number of dimensions, of which the most important are 1) website themes, 2) product types, 3) product presentation, 4) sales features, 5) sales channels, 6) payment methods, 7) customer support tools.

The first thing the merchant is facing on the platform is the website theme choice, which can be very challenging if the merchant's industry is not very popular. Different industries use different structures of the website and product presentations, therefore, a website theme created with a fashion store in mind may not be suitable for a tech store. In the future, e-commerce platforms will offer even more website themes and will start to fill the gaps in less popular industries.

When it comes to product types, currently, it is possible to sell physical products and a limited number of digital products. In the future, the range of digital products is expected to increase, as people sell online not only e-books and artworks but also courses, stock videos, music, sound effects, audiobooks, apps, workout plans, etc.

When it comes to product presentation, a simple picture will be perceived as just a thumbnail of the product to attract attention. 3D technologies, augmented reality (AR) and virtual reality (VR) will become an indispensable part of consumers' product research (Lockhart, 2021). Customers will demand a 3D product view to be able to rotate it on the screen and see all the sides, customers will demand AR to see whether the product fits the environment (e.g. a vase in the room), customers will demand VR to directly interact with the product. This technology is already available but is at the earliest stages of adaptation. Experts estimate that by 2025 the AR industry will be worth 4.3 billion USD (Global Deloitte Digital Study, 2021).



*Figure 11. Frequent AR consumers
(Global Deloitte Digital Study, 2021)*

Another determining factor is available sales features, meaning how the purchase is made. Currently, there is a traditional one-off payment, subscription to the e-product, payment in instalments, business-to-business (B2B) and wholesale features. In the future, more customer-friendly payment methods will be introduced, similar in nature to “buy now pay later”, and also B2B features will develop that are more complicated and require a lot of flexibility to create custom products (Sheikh, 2021).

E-commerce is largely dependent on social media, but if previously social media ads were trying to lead a potential customer to the website to close the sale, now a website can be integrated to some extent into the social media page. This became possible as a result of the e-commerce platform and social media companies partnering up and integrating their technologies to provide exclusive opportunities that a standalone website simply cannot offer (Vynck, 2015). In the future, all social media will be integrated with online stores, and people will be able to make purchases in online stores without leaving the social media page.

Speaking of payment, although merchants can offer a wide variety of payment methods to their customers, from the most traditional, like credit cards, to the most contemporary, like cryptocurrencies, the merchant can pay their bills via a very limited number of payment methods, usually just a credit card (Shopify Inc., 2021). In the future, both customers’ and merchants’ payment options should increase.

Lastly, communication with customers is vital for any business. There are different ways to offer customer support: via a phone call, email, chatbox on the website, etc. Currently, not all e-commerce platforms offer these tools, but in the future, not only should it become a necessary

minimum, but also more innovative and interactive ways to solve customers' problems should be developed.

Price. For more than a decade the prices for the platform's subscription plans have stayed the same, while functionality and usability have been improving (Empson, 2013). The introduction of more sophisticated solutions usually comes with an introduction of a higher-priced plan. It is also vital to consider the fact that many functionalities come through paid apps (with subscription fees), therefore, it is reasonable to assume that in the future, the price for the default plans will stay the same, but the real cost of a contemporary website should increase via an increased number of apps that offer specific solutions.

Legal. The greatest legal impact on e-commerce that can foreseeably happen will happen in the near future, in fact, it is already happening, and it is a governmental response to the pandemic – lockdowns. In an attempt to preserve the economy and alleviate the effect of the protection measures, some governments are even initiating platforms for businesses (UNCTAD, 2021). This environment forces the adaptation of technology and online retail and will most definitely positively impact e-commerce platforms.

Conclusion. Overall, the industry has huge growth potential. There is plenty of room for growth even in the developed markets, and current legal conditions catalyse that. The probability that this technology will be relevant in the future is extremely high, especially taking into account how the platforms are likely to evolve – they will simply outcompete any traditional alternatives due to the exclusive features, such as access to highly valuable integrated sales channels, i.e. social media.

4.3. Barriers to entry

Because e-commerce business such as Shopify Inc. is cloud-based, the barrier to entry is minimal. For Shopify, for example, CEO Tobias Lutke has previously admitted to building the Shopify programme himself. He used the free web application framework Ruby on Rails to make the programs depicting how easy it would be for any person to do the same. The programme framework Ruby and Rails is easily available anywhere; thus, the availability of the web development tools means that anybody with basic programming skills and access to sufficient financing to acquire a server can build a similar platform such as Shopify as Tobias Lutke did (Cole, 2014).

Lack of Resources. However, despite the ease of building the platform, there are other barriers to entry, including resource constraints. A lack of resources for a start-up e-commerce company can be a huge barrier to its entry into a new market. The reason for this argument is that

the resources and time needed for an e-commerce start-up to collect and analyse some data related to the market can be expensive. The process of making a decision to determine which market to venture into can be time-consuming and thus making it difficult for the company to operate in a number of markets at the same time (Kshetri, 2007). Most e-commerce entrepreneurs have ignored this fact, and they have ended up running their businesses on a trial-and-error basis. In some instances, this method can produce successful results, but it has also led to catastrophic results (Kshetri, 2007). The outcome of this trial and error approach could mean that sometimes a company may unintentionally be breaking the law of the country in which it operates. For instance, the company may fail to realise that they need to educate their potential customers about the company's rules and regulations and the customer's rights.

Legislations. As an e-commerce company operating in Canada and other countries around the globe, there are certain consumer rights that Shopify as a company must consider. In the United Kingdom and the rest of the European Union, for example, the consumer has a right to recall a purchase made online if it is within a fourteen-day window period (Kshetri, 2007). Consumer rights in other countries may vary, and these variations in consumer rights can affect the administration of any given company as the company must try to adhere to different regulations in the markets on a daily basis.

Rules and Regulations. In addition, another barrier to entry into a new market for Shopify is the rules and regulations applicable to different markets. Shopify as a company must take into consideration other requirements in some countries in which the company operates. Some countries demand that the layout of a website operating in their country must be a certain way (Kshetri, 2007). They are also concerned about the language of the website. This means that different countries or even states have specific regulations about the language that the company must adhere to regarding their set-up. These different rules and regulations could be difficult to understand and could require a considerable amount of time to decipher for a new entrant in the market.

Legal Issues. Another barrier to entry for Shopify is the legal issues applicable in different countries or markets. In most countries, their laws cover e-commerce using different legal frameworks that may include general consumer protection, e-commerce laws, contract laws, unfair competition laws, privacy, copyright laws and other legislation guarding against fraud. In addition, shipping products in some markets may involve regulations issues and labelling of consumer information rules. This means that foreign countries may require the company to include certain information regarding the products. It is mandatory to include specific information about the products, such as the kind of material used to make the product and specifics on how to take care

of the products, and technical issues such as voltage. What exact information needed to be included may vary depending on a specific market (Kshetri, 2007). This complicates matters further for the company, which may need to change the information on the tag to satisfy specific target markets and the authority in all the markets in the company is in operation. These specific requirements may complicate matters for the company and become a burden for the administration, especially if a company operates in large market numbers. In fact, a number of studies have confirmed the fact whereby they found that legal variations are some of the major barriers to entry and across-the-border trade. In one study, over 50% of entrepreneurs cited additional costs to ensure compliance with different nationality rules and regulations as a significant barrier (Kshetri, 2007).

Taxation. Another barrier to entry has to do with taxation despite the fact that this was the first matter that countries have tried to work together to promote the development of e-commerce. The growth of e-commerce has provided countries with opportunities to increase their tax volume. Thus, no country would allow the volume of goods crossing the border to go untaxed. According to Kshetri (2007), one of the most pressing taxes for entrepreneurs is the consumption taxes such as vat. Companies have cited problems with this tax because they must register with the foreign market authorities. In addition, these taxes tend to vary depending on the market, which presents a huge challenge for start-up companies.

4.4. Economy

The growth of a company may be limited by the overall economic growth and economic conditions of its core regions. Since the Global Financial Crisis, the global economy has experienced an almost uninterrupted 12-year growth until the crash of the markets in 2020 due to the pandemic (Google Finance, 2021). Some experts, like Bill Ackman (2021), expect the next period of economic boom to occur, while others, like Michael Burry (2021), think that the real correction has not come yet but will come very shortly. Since the precise timing and the effect of market crashes are unpredictable, future forecasts are optimistic.

As it was discussed previously, Shopify is heavily relying on the US market but also, to a noticeable extent, on the UK, Canadian and Australian markets. After the crash due to the pandemic, their economies are expected to rebound in 2021 and show 4-6% GDP growth, declining to a steady 1.5-3% growth by the year 2023 (O'Neill, 2021).

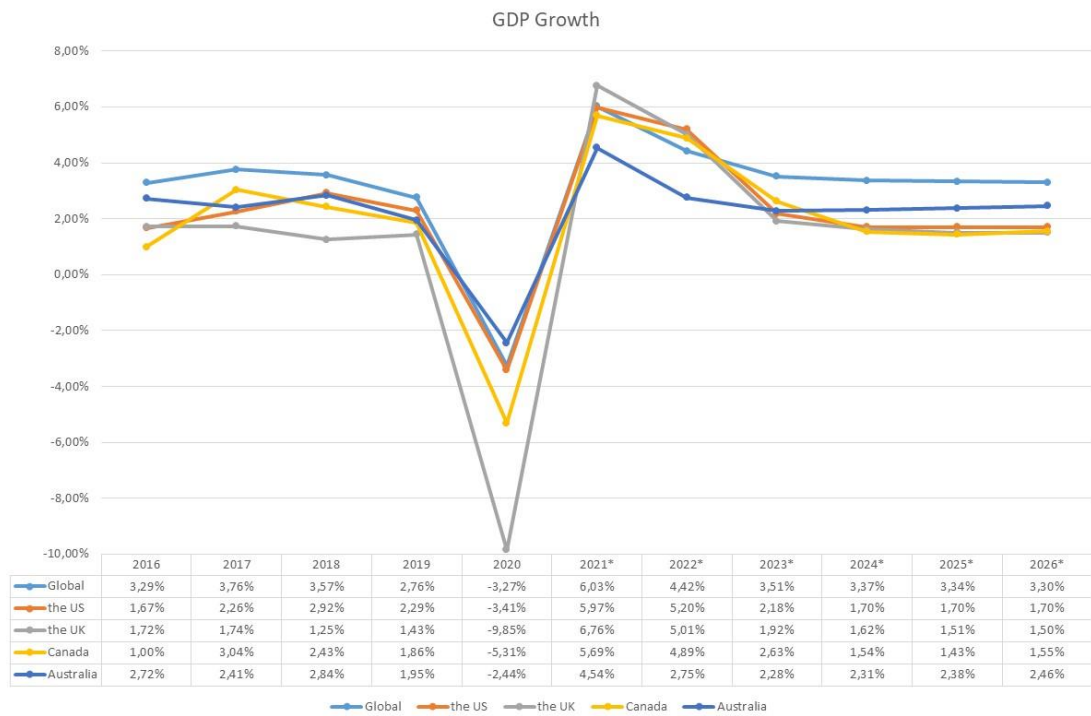
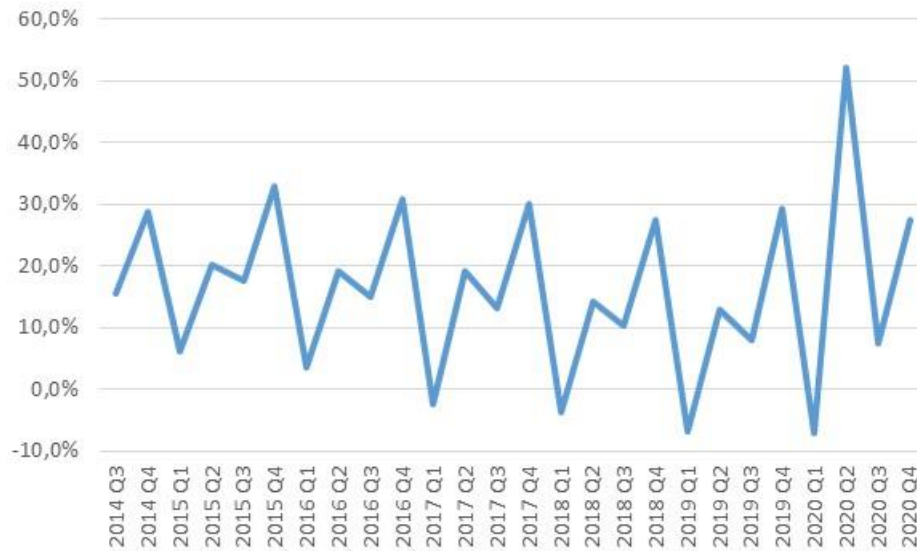


Figure 12. GDP growth
(O'Neill, 2021; own research)

4.5. Seasonality

Merchant solutions revenue stream depends on the level of sales generated by the online store, therefore, seasonal trends in the consumer behaviour can affect Shopify's revenue. Naturally, stores that sell consumer products and necessities have low seasonality because people need to buy these products consistently, while the amount of luxury and entertainment products consumed is largely dependent on social conditions. The majority of stores powered by Shopify sell retail and fashion products, therefore, seasonal trends are to be expected (Galov, 2020).



*Figure 13. Shopify's quarterly revenue growth
(Shopify Inc., 2015-2021; own table)*

Excluding the outlier second quarter of 2020, we can see that the fourth quarter gives the highest rate of growth, stably around 30% with respect to the previous quarter. With time, another important trend unfolds – the growth in the first, second and third quarters is decreasing fast. This is especially concerning when it comes to the fourth quarter, which in the last four years has been showing negative growth relative to the previous quarter.

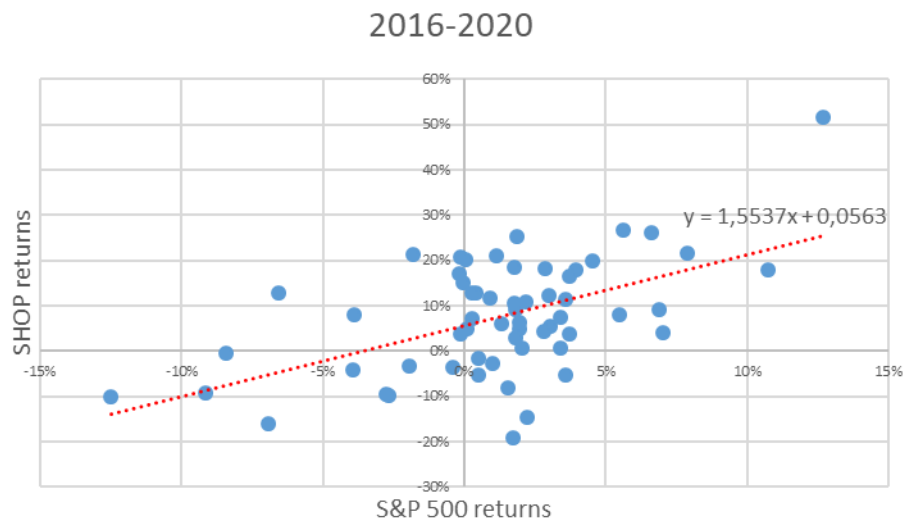
4.6. Sensitivity to business cycles

Shopify is a very young company with data limited to one business cycle, therefore, it is virtually impossible to analyse its sensitivity to business cycles by looking at whether the stock crashes more than the market or less and whether the overall growth happens in sync or not – a use of statistical tools is necessary. In order to evaluate Shopify's responsiveness to economic conditions, a standard Capital Asset Pricing Model (CAPM) (developed by William F. Sharpe in 1964) is used. The equity beta, β_E , is the ratio of covariance between the market returns, r_m , and a company's returns, r_i , to the variance of the company's returns, r_i , and it measures the company's sensitivity to the market.

$$\beta_E = \frac{Cov(r_m, r_i)}{Var(r_i)}$$

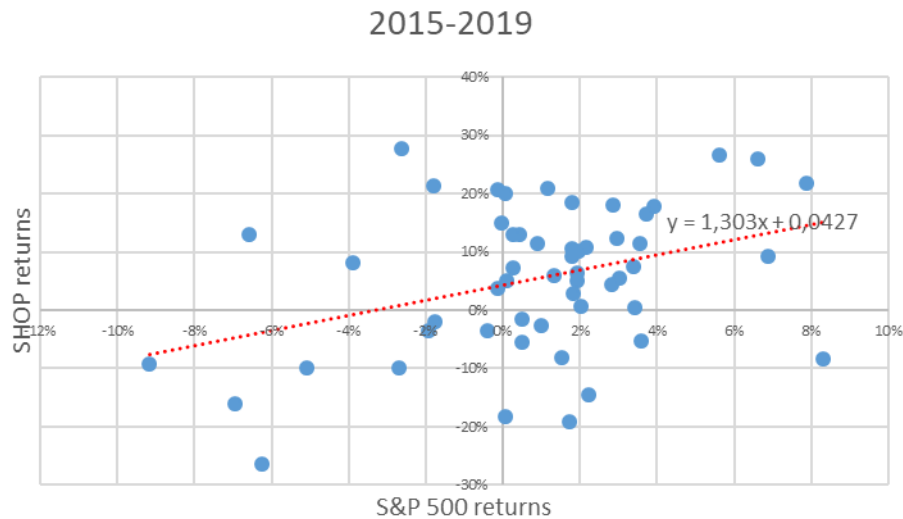
Equation 1. Equity beta

One of the leading financial networks, Yahoo Finance (2021), is using monthly returns over the last 5 years to calculate companies' beta. Using the same approach, the regression analysis shows that Shopify's levered beta is approximately 1.55.



*Figure 14. Beta regression based on monthly returns from 1 Jan 2016 till 31 Dec 2020
(Yahoo Finance, 2021; own data processing)*

There might be two problems with this result. Firstly, the pandemic is an extremely idiosyncratic event that affected e-commerce companies in a positive way (unlike the global market), therefore, the inclusion of 2020 returns may have distorted the analysis by underestimating the beta. Secondly, the expansionary monetary policy launched to counter the effects of the economic shutdown has successfully revitalized the economy, causing an almost universal increase in stock prices, and that extreme level of co-movement may have distorted the analysis by overestimating the beta (Ip, 2021). In order to verify the results, a 1-year step back is made.



*Figure 15. Beta regression based on monthly returns from 1 Jun 2015 till 31 Dec 2019
(Yahoo Finance, 2021; own data processing)*

Exclusion of the effects of the pandemic yields a smaller levered beta of approximately 1.30. This significant change indicates that temporary economic measures have indeed created an excess co-movement of stock, implying a higher interdependency than there actually is. Moving forward, a levered beta of 1.30 is used.

4.7. Country risk

An additional risk adjustment is needed when considering multinational enterprises, as revenue from certain countries may be less certain, which is not factored in the beta derivation model. One of the ways to derive a country risk premium is to compare its Credit Default Swap (CDS) Spread in relation to a stable country and then integrate a weighted average risk premium in the stock price (Damodaran, Country Risk: Determinants, Measures and Implications – The 2017 Edition, 2017).

In the case of Shopify, the revenue is predominantly coming from the US, but also the UK, Canada and Australia, comprising in total around 85%, with other countries contributing around or less than 1%, as discussed previously. Having said that, there is no need for an extensive investigation of country risk, as almost the entire revenue is coming from very low-risk countries. Moving forward, country risk is omitted.

Country	Estimated % of revenue	Country risk premium
The US	67.5%	0.00%
The UK	8%	0.59%
Canada	6%	0.00%
Australia	6%	0.00%
Other	12.5%	-

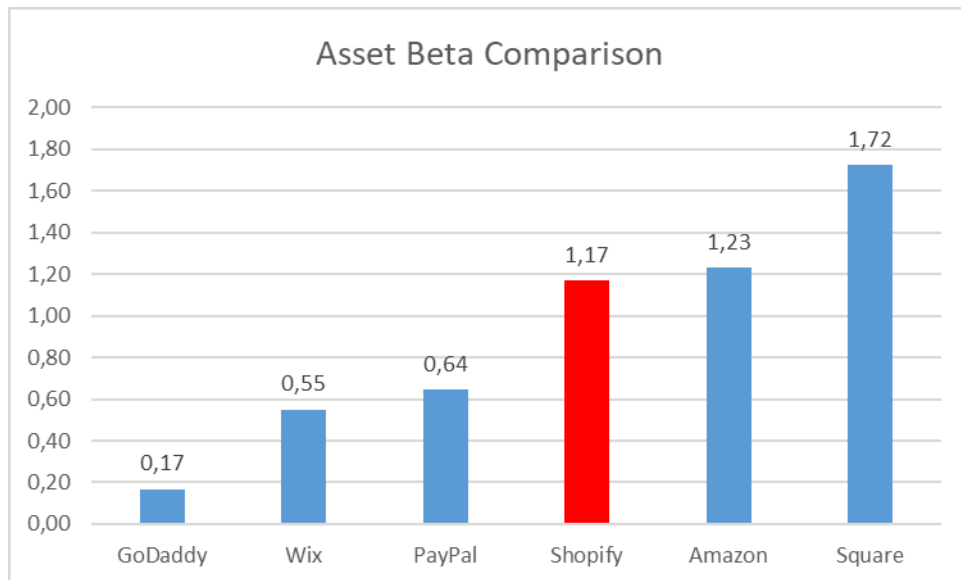
*Table 4. Revenue breakdown by country and country risk premia
(Damodaran, Country Default Spreads and Risk Premiums, 2021)*

4.8. Conclusion

Overall, Shopify is a risky company – it operates in a highly competitive environment, where any mistake can sink the company; the industry itself is changing very rapidly, and any lagging behind is likely to be unforgivable; high fluctuation of the revenue during the year is an additional uncertainty factor; and, finally, a quite high sensitivity to economic conditions also makes the revenue highly dependent on exogenous factors. In order to compare its business risk to the ones of competitors, the unlevered or asset beta, β_A , is used, where β_E is the equity beta, t is the effective 3-year average tax rate, D is debt, and E is shareholders' equity.

$$\beta_A = \frac{\beta_E}{1 + (1 - t) \times D/E}$$

Equation 2. Asset beta



*Figure 16. Asset beta comparison
(Yahoo Finance, 2021; own data processing)*

When it comes to Shopify competitors, some of them, like GoDaddy, have a much lower beta because their core business is domain registration and hosting, which is based on subscriptions and is very stable; some of them, like Square, have a much higher beta because their core business is payment processing, which is highly dependent on economic conditions. Shopify finds itself in the middle of the two extremes due to the fact that its business model is almost an equal combination of subscription revenue and payment processing revenue.

5. Financial risk

5.1. Capital Structure

The assessment of the capital structure of a company is integral to evaluating the company's second major risk component – financial risk. There are two ways to evaluate the financial standing of the firm: using market values or book values. In general, market values are used for calculating the cost of capital, while book values are used to evaluate the financial resilience of the company and risk detection, such as liquidity and solvency issues. Since Shopify's market value of equity exceeds the book value by more than one order of magnitude, usage of market values is going to greatly distort the analysis and underestimate the debt burden of the company (given approximately the same nominal and market values of debt), therefore, the book values of equity and debt will be used. Also, since all subsidiaries are either directly or indirectly wholly owned, no adjustments for minority interests are needed.

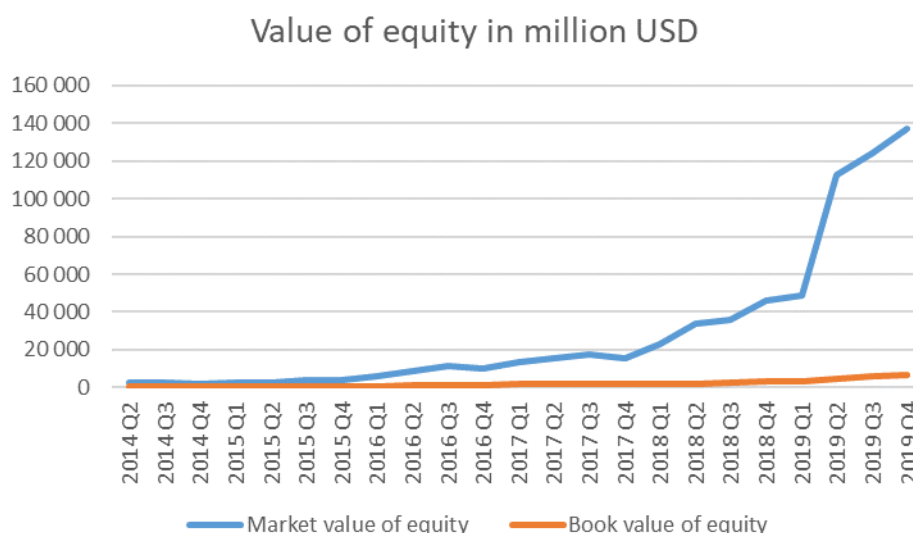


Figure 17. Market equity VS book equity
(Yahoo Finance, 2021; Shopify, 2015-2021; own data processing)

In order to analyse how Shopify finances itself, the proportions of each component of the capital structure need to be assessed, and one of the ways to do it is to find the debt-to-equity ratio. Historically, Shopify had zero debt, and only in the third quarter of 2020 has it issued senior convertible notes – that is why the debt-to-equity ratio is 0 at all points in time, apart from the last two quarters, where it was 0.12.

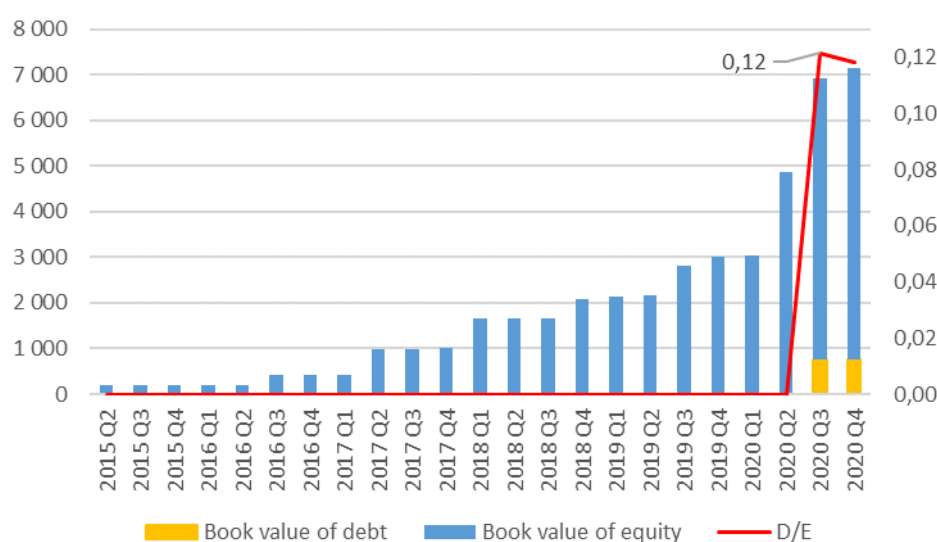


Figure 18. Debt and equity comparison
(Shopify, 2015-2021; own data processing)

However, Shopify (2021) made some adjustments that decreased the book value of the debt. Since the notes are convertible, they determined the liability and equity components. The main liability component was determined as the fair value of a comparable debt instrument without the conversion feature and amounted to 758 million USD. The main equity component represents the conversion option in the amount of 158 million USD. The conversion option value represents a significant portion of the total value and affects the debt-to-equity ratio. Given that this equity component is adjustable, the value of the liability and equity components might fluctuate. For the worst-case scenario, when the stock price exceeds the conversion price of 1440.09 USD, we can take the principal amount of 920 million USD for the upper limit (while decreasing the equity by the difference) (Shopify Inc., 2021). In this case, the debt-to-equity ratio will be 0.15.

Overall, the debt-to-equity ratio is very low, meaning the company is mainly financing itself through equity. Shopify did not disclose any plans on issuing more debt or the target debt-to-equity ratio, however, Shopify filed for a 7.5 billion USD offering in 2020 and a 10 billion offering in 2021, allowing it to issue various securities, including debt securities (Warburton, 2021). In 2020 Shopify (2021) raised around 3.5 billion USD, including 0.9 billion in senior convertible bonds, meaning that the proportion of the raised debt to the raised equity was around 0.35. Moving forward, 0.35 is assumed to be the target debt-to-equity ratio.

When it comes to equity, there are two components that need to be analysed: stock options and restricted share units (RSUs). As of 31 December 2020, the company had 1'112'967 RSUs and 3'603'100 options outstanding (Shopify Inc., 2021).

Shopify (2021) had issued 122 080 shares for the acquisition of 6 River Systems, which are subject to vesting restrictions: shares will be transferred in 4 equal annual instalments since the closure of the acquisition on 17 October 2019. At the end of 2020, Shopify had 91'560 shares left that are subject to vesting restrictions and will be transferred over the next three years, implying the average vesting period of 2 years. The remaining 1'021'407 RSUs have mostly been granted under the Long Term Incentive Plan (LTIP) with the following vesting schedule: 1/3 on the first anniversary, 1/12 quarterly after the first year, implying the average vesting period of also two years. This illiquidity of stocks, characterised by the restriction on trading, causes the stock to be discounted by 20-30% (Damodaran, 2005). Given the high annualized volatility of Shopify's stock in 2020 of 67.19%, 30% should be a reasonable discount (Appendix 2). The close price of Shopify stock on the day of valuation (31 December 2020) was 1'131.95 USD, therefore, having all the pieces, the downward equity adjustment amount can be calculated: $30\% \times 1'131.95 \text{ USD} \times 1'112'967 \text{ RSUs} = 377.95 \text{ million USD}$.

Plan Category	Number	Weighted average exercise price in USD
Legacy Option Plan	992'376	4.45
Stock Option Plan	1'441'791	174.79
Long-Term Incentive Plan	1'113'823	-
6RS Stock Option Plan	55'110	33.81
Total	3'603'100	-

*Table 5. Stock option plans
(Shopify Inc., 2021)*

Shopify's stock options expire in 10 years and have the same vesting schedule as RSUs: can exercise 1/3 on the first anniversary and 1/12 with each quarter after the first year, implying the weighted average vesting period of 2 years (Shopify Inc., 2021). Since the Long Term Incentive Plan was introduced together with the Stock Option Plan right after Shopify's IPO in 2015, the options granted must have similar value (as the company cannot grant an option with a strike price below the market price), therefore, for calculations, the weighted average exercise price is assumed to be the same – 174.79 USD (Shopify Inc., 2015). This yields the total weighted average exercise price of 125.72 USD.

Plan Category	Number	Weighted average exercise price in USD
Legacy Option Plan	992'376	4.45
Stock Option Plan	1'441'791	174.79
Long-Term Incentive Plan	1'113'823	174.79
6RS Stock Option Plan	55'110	33.81
Total	3'603'100	125.72

*Table 6. Stock option plans with built-in assumptions
(Shopify Inc., 2021; own research)*

Shopify (2021) is using the Black-Scholes option valuation model to estimate the fair value of stock options, therefore, the same model will be applied here. As of 31 December 2020, Shopify is incorporating the assumptions shown in Table 6.

Assumption	31 Dec 2020
Expected volatility	46.4%
Risk-free interest rate	1.04%
Dividend yield	Nil
Average expected life	4.41

*Table 7. Stock option plans with built-in assumptions
(Shopify Inc., 2021)*

As the calculated average vesting period of the option is much shorter than the average expected by the Shopify life of the option, the latter estimate will be used. The dividend yield assumption is also adopted. However, expected volatility and risk-free interest rate assumptions will be changed. In 2020, the annualized volatility of Shopify's stock was 67.19% and will be taken for a more conservative estimate (Appendix 2). When it comes to the risk-free rate, according to the Bank of Canada (2021), a 10-year bond yield is 1.5%, which will be used as a risk-free rate.

Since the number of options is non-negligible, adjustments to the stock price are needed to take into account the dilution effects: $S_{0\ adj} = S_0 \times \left(\frac{n_s}{n_s + n_o}\right)$, where S_0 is the stock price, $S_{0\ adj}$ is the adjusted stock price, n_s is the number of shares, and n_o is the number of options, therefore, $S_{0\ adj} = 1\ 131.95\ USD \times \left(\frac{119\ 569\ 705}{119\ 569\ 705 + 3\ 603\ 100}\right) = 1\ 198.84\ USD$ (Shopify Inc., 2021).

The valuation of a call option with the Black-Scholes model is done by using the following formulas:

$$c = S_0 \times N(d_1) - K \times e^{-r \times T} \times N(d_2)$$

$$d_1 = \frac{\ln\left(\frac{S_0}{K}\right) + \left(r + \frac{\sigma^2}{2}\right) \times T}{\sigma \times \sqrt{T}}$$

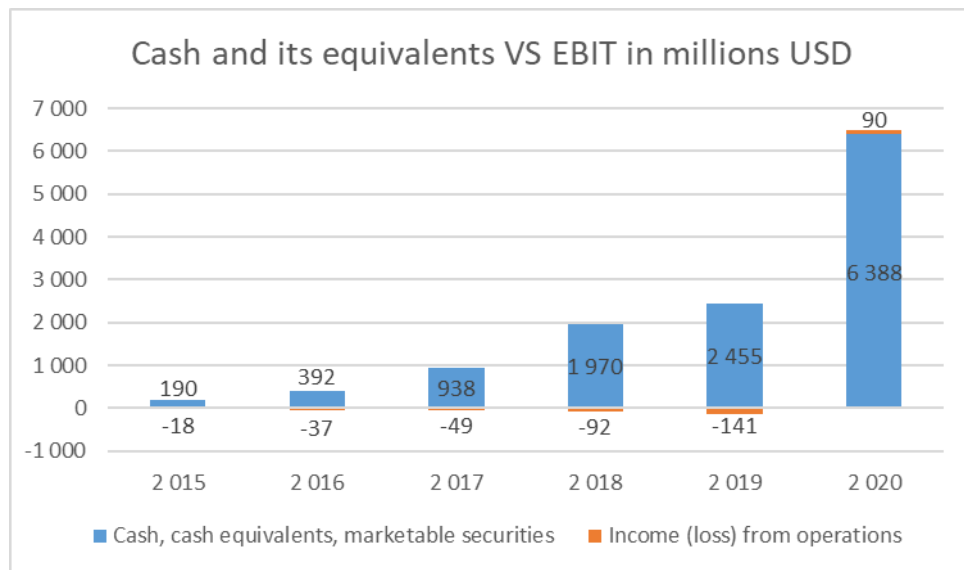
$$d_2 = d_1 - \sigma \times \sqrt{T}$$

Equation 3. Black-Scholes model

Where c is a call option price, N is a normal distribution, K is the strike price, r is the risk-free rate, T is the time to maturity, and σ is the standard deviation of the stock return. Having all the pieces, the resulting call price is 991.39 USD, which is not surprising given the rapid surge of Shopify's stock value from 407.81 USD on 2 January 2020 to 1131,95 USD on 31 December 2020. As a result, the value of all call options is 3.572 billion USD, which should be deducted from Shopify's equity (Appendix 3).

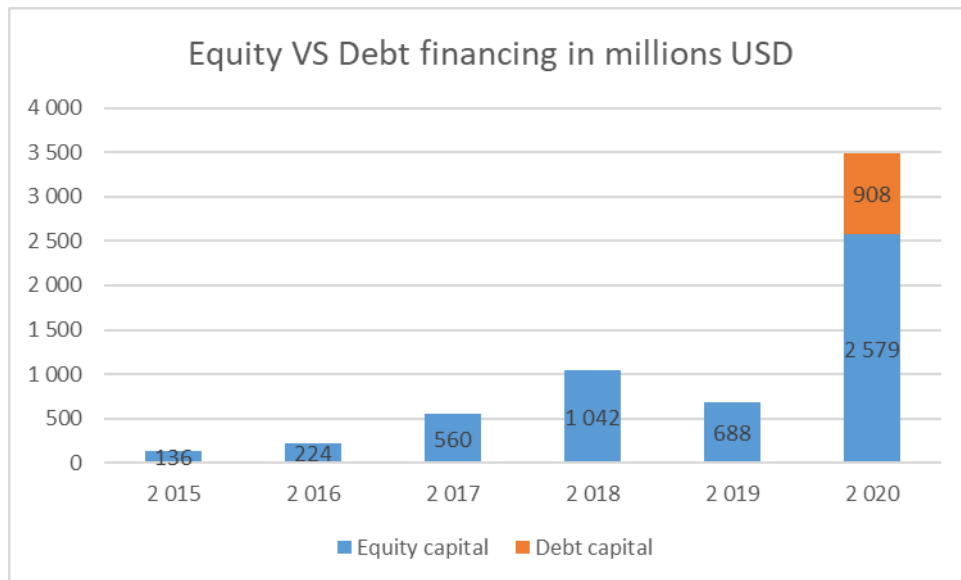
5.2. Default risk

Usually, a company files for bankruptcy when it has problems repaying the debt, however, in the case of Shopify, the company has very little debt, which is unlikely to increase dramatically for a number of reasons. Firstly, the company already has around 6 billion USD in liquid assets, such as cash, cash equivalents and marketable securities. That provides a significant buffer, given the company's EBIT.



*Figure 19. Comparison of Shopify's liquid assets and EBIT
(Shopify, 2016-2021; own data processing)*

Secondly, the company has a habit of issuing equity rather than debt, and although this might be a weak argument in general when it comes to start-ups, equity financing may be much more preferable due to the fact that it allows spending more resources on development without necessarily being worried about the necessity to leave something to pay interest.



*Figure 20. Equity and debt capital raised annually
(Shopify, 2016-2021; own data processing)*

Due to the sheet amounts of accumulated cash over the years and little debt, the liquidity and solvency ratios indicate a very strong financial standing. When it comes to liquidity or the ability to cover short-term obligations, in 2020, Shopify showed a current ratio of 15.69 and a quick ratio of 14.85, while the healthy range starts already at around 1.5 (Seth, Calculating the Current Ratio, 2021). A much stricter measure of liquidity is the cash ratio because the previous two assume that accounts receivable are fully collectable and inventories and other assets can be sold at book value, which is not always the case, especially when the company finds itself in distress. In 2020 Shopify had a cash ratio of 6.17, while the healthy range starts from 0.5-1, depending on the industry (Corporate Finance Institute, 2021).

When it comes to solvency, in 2020, the debt to assets and debt to equity ratios showed 0.10 and 0.12 values, respectively, which means that the company had very little debt and was predominantly financed through equity. When it comes to other solvency measures, a few adjustments need to be made. Due to the fact that Shopify's convertible senior bonds were issued late in the year, they did not incur interest expense from them, therefore, the reported effective interest rate of 4.01% and 920 million USD principal amount will be used to calculate interest coverage ratios (Shopify Inc., 2021). In 2020 Shopify's times interest earned ratio was 2.44, and the cash coverage ratio was 4.34, which also shows the good financial standing of the company.

However, debt is not the only possible cause of bankruptcy. Inefficient resource allocation, inability to market the product effectively to actually generate sufficient sales, accumulated deficit from continuous losses and a plethora of other factors can also lead to bankruptcy, and since Shopify is a young and fast-growing company, these factors arguably are even more relevant than

debt burden, therefore, a further investigation of the financial risk is necessary. One of the ways to evaluate a company across these risk factors is to use the Altman Z-Score model.

$$Z = 0.012 \times X_1 + 0.014 \times X_2 + 0.033 \times X_3 + 0.006 \times X_4 + 0.999 \times X_5$$

$$X_1 = \frac{\text{working capital}}{\text{total assets ratio}}$$

$$X_2 = \frac{\text{retained earnings}}{\text{total assets ratio}}$$

$$X_3 = \frac{\text{earnings before interest and taxes}}{\text{total assets}}$$

$$X_4 = \frac{\text{market value of equity}}{\text{total assets}}$$

$$X_5 = \frac{\text{sales}}{\text{total assets}}$$

Equation 4. Altman Z-Score

The Altman Z-Score model incorporates the abovementioned factors using simple ratios as constituents of a multifactor statistical model (Altman, 1968). Altman et al. (2014) identify three ranges of the Z-Score: if a company scores ≥ 2.99 , then bankruptcy is very unlikely; the score of 1.81-2.99 is an ambiguous area; and the score ≤ 1.88 means a high probability of bankruptcy. Over the last six years, Shopify has been way in the safe area, scoring between 2.89 and 6.59, with a decreasing trend in the last two years, driven mainly by the issuance of debt securities, however, the probability of bankruptcy is still very low.

	2015	2016	2017	2018	2019	2020
X1 (working capital / total assets)	0,68	0,73	0,84	0,88	0,70	0,83
X2 (retained earnings / total assets)	-0,20	-0,17	-0,11	-0,08	-0,09	0,00
X3 (EBIT / total assets)	-0,07	-0,08	-0,04	-0,04	-0,04	0,01
X4 (shareholders' equity / total liabilities)	4,78	5,85	9,58	13,51	6,87	4,49
X5 (sales / total assets)	0,84	0,79	0,60	0,48	0,45	0,38
Z	2,94	3,39	5,00	6,59	3,64	2,89

Table 8. Z-Score

(Altman, 1968; Shopify Inc., 2016-2021; own data processing)

5.3. Foreign exchange risk

Due to the fact that the vast majority of sales occur in the US, the predominant part of the exchange risk comes from CAD and USD fluctuations. Importantly, Shopify (2021) notes that a significant part of its operating expenses is incurred in CAD, therefore, an increase in the CAD value relative to the USD can adversely affect the company. Shopify (2021) reports that a 10% strengthening of CAD relative to USD would have decreased its income from operations by almost 48 million USD, which is approximately 1.6% of sales and, therefore, the exchange rate risk can be considered insignificant.

5.4. Interest rate risk

Shopify (2021) reports that it earns interest on some of its cash, cash equivalents, marketable securities and loans, and it pays a fixed interest on its senior convertible notes. Given that other assets and liabilities do not bear interest, Shopify's exposure to interest rate risk can be considered nil.

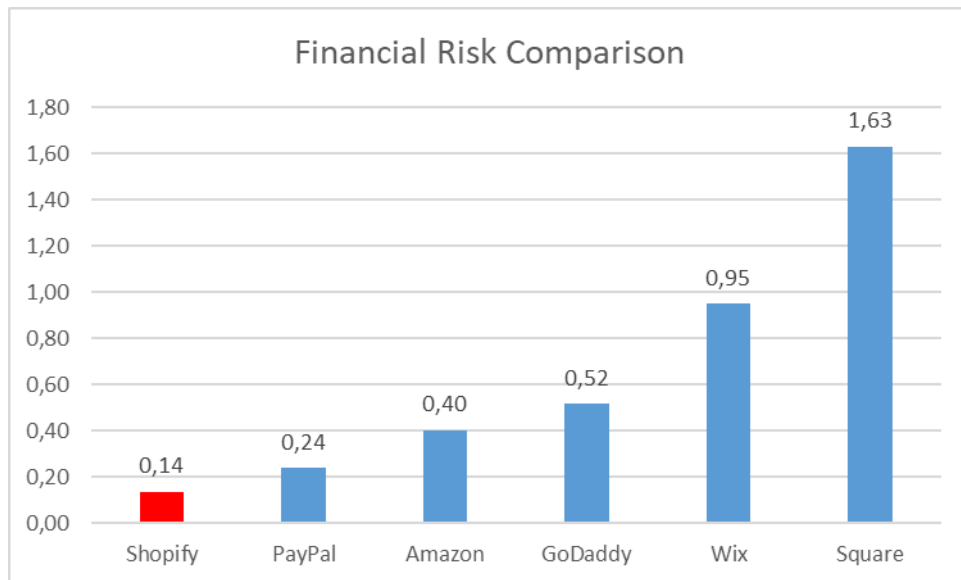
5.5. Conclusion

Overall, Shopify has a very low exposure to financial risk. This is mainly due to the low amounts of debt but also due to the strong balance sheet and huge amounts of cash and equivalents, which allows for mitigating both liquidity and solvency issues. In order to compare Shopify's financial risk to the ones of its competitors, the difference between equity beta, β_E , and asset beta, β_A , is used, which is denoted as financial beta β_F .

$$\beta_F = \beta_E - \beta_A$$

Equation 5. Financial risk

For comparability, book values of equity and debt were used for financial risk coefficient calculation for each of the competitors (Appendix 1). As can be seen in Figure 21, Shopify has an extremely low financial risk relative to its competitors.



*Figure 21. Financial risk comparison
(Yahoo Finance, 2021; own data processing)*

6. Valuation

6.1. Forecast

6.1.1. Sales

In order to forecast future revenues, the value drivers of each of the revenue streams should be identified. When it comes to the merchant solutions revenue stream, since it is predominantly comprised of transaction processing fees, the greater the number and value of transactions, the greater the revenue, therefore, Shopify (2021) identifies GMV as its key value driver of the merchant solutions revenue.

Shopify's GMV, in turn, depends on e-commerce sales in the US and worldwide. Since the majority of Shopify's merchants and their customers are based in the US, Shopify's GMV correlates more with the US e-commerce sales (99.29%) than with worldwide (96.04%). As shown in Table 9, experts predict that the e-commerce growth surge that happened in the aftermath of the pandemic in 2020 is going to slow down rapidly in the first two years and then continue to decrease more slowly, characteristic of natural market saturation.

in billions USD	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
E-commerce sales worldwide	1 548	1 845	2 382	2 982	3 351	4 213	4 921	5 545	6 169	6 773	7 385
growth rate		19,2%	29,1%	25,2%	12,4%	25,7%	16,8%	12,7%	11,3%	9,8%	9,0%
growth rate Δ			51,7%	-13,5%	-50,9%	107,9%	-34,7%	-24,5%	-11,3%	-13,0%	-7,7%
E-commerce sales in the US	342	395	454	514	602	792	933	1 089	1 262	1 449	1 648
growth rate		15,6%	14,8%	13,3%	17,2%	31,6%	17,8%	16,7%	15,9%	14,8%	13,7%
growth rate Δ			-4,7%	-10,7%	29,4%	84,1%	-43,5%	-6,3%	-5,0%	-6,7%	-7,3%

Table 9. E-commerce sales in the US and worldwide

(US Census Bureau News, 2015-2020; Davidkhanian, 2021; Lebow, 2021; own data processing)

My expectation is that Shopify's GMV will follow the same trend, but it will be more prolonged in time due to the fact that this is a young company that historically has been growing very rapidly and also, based on the analysis in the previous chapters, assuming that Shopify will preserve its strong brand and the market leader position. In 2020 Shopify's GMV grew by 95.6%, therefore, I expect the growth rate to drop to 60% in 2021 and 40% in 2022. In the years 2023-2025, I expect it to drop less significantly, by 5-10% annually, stabilizing by 2026 at around 18% and slowly declining to 13% by the year 2030.

Having forecasted the GMV, we can forecast merchant solutions revenue. In order to derive the numbers, I regress merchant solutions revenue on GMV to find the exact relationship and then plug in the previously forecasted GMV in the equation to derive the merchant solutions revenue (see Figure 22).

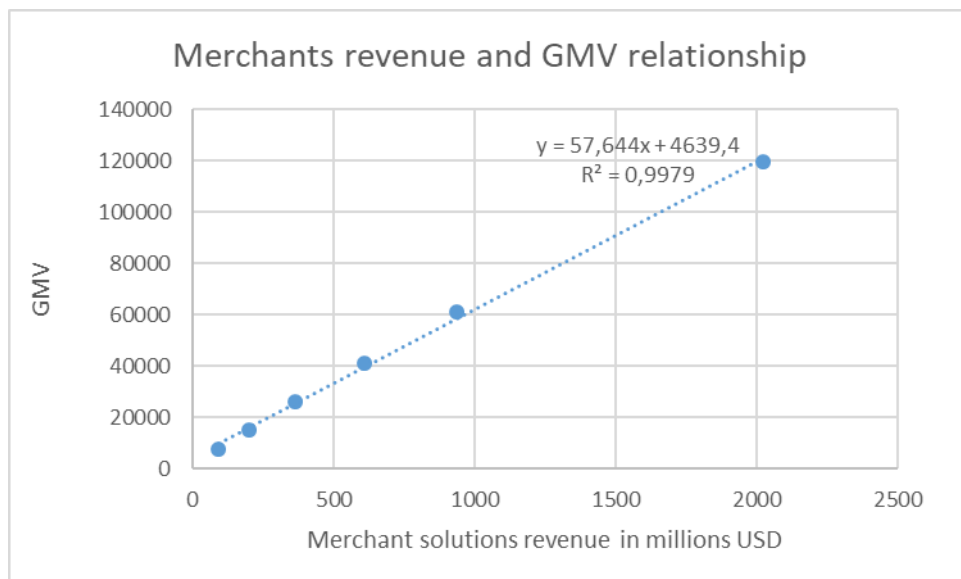


Figure 22. Merchant solutions revenue and GMV
(Shopify, 2016-2021; own data processing)

When it comes to the subscription solutions revenue stream, Shopify (2021) has constructed the Monthly Recurring Revenue indicator that measures the weighted average subscription fee to forecast this revenue stream. However, since this measure is quite intransparent and the subscriber retention rate is unknown, it is very hard to use this tool, therefore, I simply use the number of users on the platform as the key value driver of the subscriptions revenue stream, which has 98.64% correlation.

In order to forecast the number of users on the platform, the following assumptions are made:

- marketing and sales expenses are fully attributable to subscriptions solutions revenue;
- customer retention rate is 100%.

This way, the annual increase in the number of users is fully attributable to marketing and sales expenses, and the weighted average customer acquisition cost (CAC) can be derived. Although assumptions are not accurate and unrealistic, they should still provide an effective tool for forecasting because, firstly, the weights of different products in the weighted average CAC are likely to stay the same across time, secondly, the retention rate is likely to stay the same across time, and, therefore, the derived trend can be used for projections. Also, regarding the marketing and sales expenses, Shopify (2021) notes that the biggest contributor to the merchant solutions revenue – Shopify Payments – requires significantly less marketing and sales, administrative and research and development expenses, which makes our assumptions more in line with the reality than not.

	2015	2016	2017	2018	2019	2020
Users (thousands)	162	377	609	820	1 000	1 749
absolute Δ		215	232	211	180	749
Sales and marketing (thousands USD)	70 374	129 214	225 694	350 069	472 841	602 048
Customer acquisition cost (USD)		601	973	1 659	2 627	804
CAC growth rate			61,9%	70,5%	58,3%	-69,4%

*Table 10. Customer acquisition cost derivation
(Shopify, 2016-2021; own data processing)*

As can be seen in Table 10, with time, CAC is increasing, which is in line with the concepts of market saturation and diminishing returns. I assume that due to the ongoing pandemic, the CAC will increase only slightly in 2021, then more rapidly reaching 6'200 USD by 2027, and then more slowly, reaching around 7'300 USD by 2030.

Historically, marketing and sales expenses comprised 62-75% of subscriptions solutions revenue, therefore, they are forecasted with an expectation to stay within the same range, which means an annual increase of around 200'000-300'000 USD, which is in line with Shopify's (2021) projections. Marketing and sales expenses, together with CAC, give the number of new users, which, given the assumptions, can be used to derive the total number of users.

Having forecasted the number of users, we can forecast subscription solutions revenue. In order to derive the numbers, I regress subscription solutions revenue on the number of users to find the exact relationship and then plug in the previously forecasted number of users in the equation to derive the subscription solutions revenue.

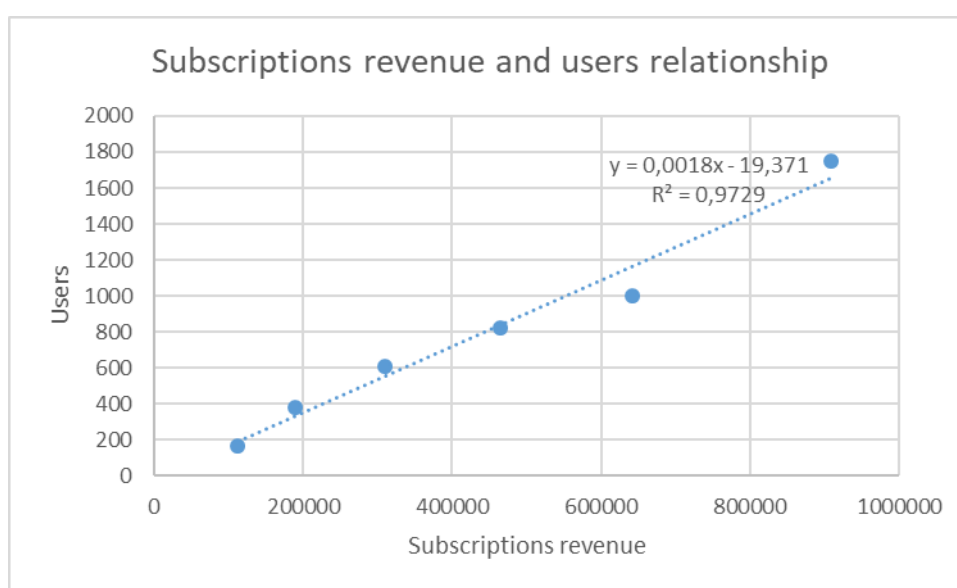


Figure 23. Subscription solutions revenue and users
(Shopify, 2016-2021; own data processing)

The results are summarized in the Table 11 below.

Revenue forecast (in thousands)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Subscriptions solutions	908 757	1 355 429	1 751 984	2 036 690	2 271 686	2 478 584	2 667 420	2 850 774	3 032 281	3 217 341	3 408 274
Users	1 749	2 522	3 272	3 810	4 255	4 646	5 003	5 350	5 693	6 043	6 404
Sales and marketing	602 048	850 000	1 200 000	1 400 000	1 600 000	1 800 000	2 000 000	2 150 000	2 300 000	2 450 000	2 600 000
CAC	804	1 100	1 600	2 600	3 600	4 600	5 600	6 200	6 700	7 000	7 200
Merchant solutions	2 020 734	3 233 335	4 558 215	5 949 340	7 456 392	8 963 444	10 591 060	12 298 249	14 154 816	16 147 532	18 256 964
Gross Merchandise Volume (GMV)	119 577 147	191 323 435	267 852 809	348 208 652	435 260 815	522 312 978	616 329 314	714 942 004	822 183 305	937 288 968	1 059 136 534
growth rate	95,6%	60,0%	40,0%	30,0%	25,0%	20,0%	18,0%	16,0%	15,0%	14,0%	13,0%
Total revenue	2 929 491	4 588 764	6 310 200	7 986 031	9 728 078	11 442 029	13 258 481	15 149 022	17 187 098	19 364 873	21 665 238

Table 11. Revenue forecast
(Shopify, 2021; own data processing and forecast)

6.1.2. Costs of sales

Over the last six years, the cost of subscription solutions revenue has stably stayed between 20-22% as a percentage of the respective revenue stream. Given the nature of this revenue stream, the direct costs should mostly be connected to the maintenance costs, which are stable and which are reasonable to expect to stay stable in the future. Over the last six years, the costs comprised, on average, 20.9% and are expected to stay the same in the future.

When it comes to the cost of merchant solutions revenue, over the last five years, it has been decreasing as a percentage of the respective revenue stream by 2.64% on average. Most of the new products belong to merchant solutions, therefore, the fact that the costs have been decreasing indicates that the necessary infrastructure is built and the products reach the necessary scale. In the long term, the costs are expected to continue to decrease, however, in the short term, Shopify (2021) plans the expansion of the Shopify Fulfilment Network, which is expected to cause a decrease in the merchant solutions and overall gross profit. To account for the changes, I expect the costs to increase by 3% in the next two years, by 1% in 2023, and then start to decrease again: by 2% in 2024-2025 and by 3% from 2026 till 2030.

COGS forecast (in thousands)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Subscriptions solutions	193 532	283 666	366 658	426 242	475 422	518 722	558 242	596 615	634 601	673 330	713 289
% of subscriptions revenue	21,3%	20,9%	20,9%	20,9%	20,9%	20,9%	20,9%	20,9%	20,9%	20,9%	20,9%
Merchant solutions	1 194 439	2 008 197	2 967 816	3 933 059	4 780 231	5 567 120	6 260 287	6 900 445	7 517 505	8 091 394	8 600 703
% of merchant revenue	59,1%	62,1%	65,1%	66,1%	64,1%	62,1%	59,1%	56,1%	53,1%	50,1%	47,1%
% Δ	-3,3%	3,00%	3,00%	1,00%	-2,00%	-2,00%	-3,00%	-3,00%	-3,00%	-3,00%	-3,00%
Cost of revenues	1 387 971	2 291 863	3 334 474	4 359 301	5 255 653	6 085 843	6 818 529	7 497 059	8 152 106	8 764 724	9 313 993

*Table 12. Costs of sales forecast
(Shopify, 2021; own data processing and forecast)*

6.1.3. Operating costs

Marketing and sales expenses already being forecasted above, there are three more statements to consider. When it comes to R&D and G&A expenses, Shopify (2021) expects both of them to increase in absolute amount, adding that G&A, in particular, are expected to decrease as a percentage of total revenue. Over the last five years, G&A expenses have been decreasing on average by 0.36% as a percentage of total revenue – I assume that it will continue to decrease at the same rate in the future. As to the R&D, over the last five years, it has stayed around 20% of the revenue, starting to decrease in 2020. I assume that R&D will continue to decrease by 0.5% as a percentage of revenue in the following years because most of the growth is associated with merchant solutions, while R&D is more associated with subscriptions solutions.

Transaction and loan losses (T&LL) expenses have a short history of 2 years, during which they have doubled. As Shopify Capital is rapidly expanding, it is expected that the related expenses are going to increase as well. I assume that it is going to increase in the absolute amount, while the growth rate will be decreasing: by 20% in 2021-2023, and then more gradual and slower, coming down to 12% by 2030.

Operating expenses forecast (in thousands)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Sales and marketing	602 048	850 000	1 200 000	1 400 000	1 600 000	1 800 000	2 000 000	2 150 000	2 300 000	2 450 000	2 600 000
absolute Δ	129 207	247 952	350 000	200 000	200 000	200 000	200 000	150 000	150 000	150 000	150 000
% of subscriptions revenue	66,2%	62,7%	68,5%	68,7%	70,4%	72,6%	75,0%	75,4%	75,9%	76,1%	76,3%
% Δ	-7,4%	-3,5%	5,8%	0,2%	1,7%	2,2%	2,4%	0,4%	0,4%	0,3%	0,1%
Research and development	552 127	841 910	1 126 194	1 385 353	1 638 909	1 870 451	2 101 098	2 324 951	2 551 803	2 778 317	3 000 029
absolute Δ	197 112	289 783	284 284	259 159	253 556	231 542	230 647	223 853	226 852	226 514	221 712
% of total revenue	18,8%	18,3%	17,8%	17,3%	16,8%	16,3%	15,8%	15,3%	14,8%	14,3%	13,8%
% Δ	-3,6%	-0,5%	-0,5%	-0,5%	-0,5%	-0,5%	-0,5%	-0,5%	-0,5%	-0,5%	-0,5%
General and administrative	245 343	367 640	482 640	581 813	673 397	750 484	821 473	883 589	940 042	988 825	1 027 603
absolute Δ	91 578	122 297	115 000	99 173	91 584	77 087	70 989	62 116	56 453	48 782	38 778
% of total revenue	8,4%	8,0%	7,6%	7,3%	6,9%	6,6%	6,2%	5,8%	5,5%	5,1%	4,7%
% Δ	-1,4%	-0,36%	-0,36%	-0,36%	-0,36%	-0,36%	-0,36%	-0,36%	-0,36%	-0,36%	-0,36%
Transaction and loan losses	51 849	93 328	149 325	209 055	271 772	339 715	407 658	481 036	558 002	636 122	712 457
absolute Δ	26 680	41 479	55 997	59 730	62 717	67 943	67 943	73 378	76 966	78 120	76 335
growth rate	106,0%	80,0%	60,0%	40,0%	30,0%	25,0%	20,0%	18,0%	16,0%	14,0%	12,0%
% Δ		-26,0%	-20,0%	-20,0%	-10,0%	-5,0%	-5,0%	-2,0%	-2,0%	-2,0%	-2,0%
Operating expenses	1 451 367	2 152 878	2 958 159	3 576 221	4 184 077	4 760 650	5 330 229	5 839 576	6 349 846	6 853 263	7 340 088

Table 13. Operating costs forecast
(Shopify, 2021; own data processing and forecast)

6.1.4. Financing and investing

Before we can move onto calculating other items of the income statement, such as interest expense, we need to consider financing first. As discussed previously, the assumed target debt-to-equity ratio is 0.35. Given that the current debt-to-equity ratio is 0.12, the proportion of issued debt to issued equity should increase over time. In 2020, the net carrying amount of debt was around 83% of the principal amount and was assumed to stay the same. I expect Shopify to continue to raise equity capital in large amounts in the next few years and then gradually decrease: 2 billion USD in 2021-22, 1.5 billion USD in 2023-24, 1 billion USD in 2025-26, 0.75 billion USD in 2027-28 and 0.50 billion USD in 2029-30. The amount of debt will be issued such that the issued debt to issued capital ratio will be 0.36, 0.40, 0.45, 0.53 and 0.60 in the respective time periods. Since the maturity for the 2020 issue of senior convertible notes is five years, it is assumed that the following issues have the same maturity (Shopify Inc., 2021).

When it comes to investing, Shopify holds equity in private companies, therefore, the value of their equity is not readily determinable. According to Shopify (2021), the fair value of their investments based on companies' revenue growth and discount rates was 173.5 million USD as of 31 December 2020. A substantial portion of it is a strategic investment in Affirm, varying the value of 158 million USD. Since there is no guide on future investments and acquisitions, I assume the investment value to stay flat, adjusted for inflation.

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Convertible senior notes BoP	0	758 008	1 351 232	1 944 455	2 438 808	2 933 161	2 383 926	2 034 691	1 644 260	1 373 828	1 021 005
Issue (principal amount)	920 000	720 000	720 000	600 000	600 000	450 000	450 000	400 000	400 000	300 000	300 000
Unamortised discounts, etc.	161 992	126 776	126 776	105 647	105 647	79 235	79 235	70 431	70 431	52 823	52 823
% of principal amount	17,61%	17,61%	17,61%	17,61%	17,61%	17,61%	17,61%	17,61%	17,61%	17,61%	17,61%
Repayment						920 000	720 000	720 000	600 000	600 000	450 000
Convertible senior notes EoP	758 008	1 351 232	1 944 455	2 438 808	2 933 161	2 383 926	2 034 691	1 644 260	1 373 828	1 021 005	818 181
Proceeds from public equity offerings	2 578 591	2 000 000	2 000 000	1 500 000	1 500 000	1 000 000	1 000 000	750 000	750 000	500 000	500 000
Issued Debt to issued equity ratio	35,68%	36,00%	36,00%	40,00%	40,00%	45,00%	45,00%	53,33%	53,33%	60,00%	60,00%
Equity and other investments	173 454	178 918	183 641	187 314	191 416	195 398	199 345	203 371	207 480	211 671	215 946

Table 14. Financing forecast
(Shopify, 2021; own data processing and forecast)

6.1.5. Other income and other comprehensive income

Other income consists of 4 elements: interest income, interest expense, unrealized gain on equity and other investments, and foreign exchange gain or loss. Foreign exchange gain or loss is assumed to be null. Interest income has varied a lot, and given that Shopify does not elaborate much on it and it is insignificant, I assume that it will stay fixed, adjusted for inflation.

Shopify (2021) notes that most of the unrealized gain comes from the strategic investment in a payment provider Affirm. Since it is a strategic investment, Shopify is not expected to cash out, therefore, the gain should remain unrealized, and since unrealized gains have no impact on the free cash flow, we can just assume it to stay fixed, adjusted for inflation.

When it comes to interest expense, the effective interest rate on senior convertible notes is 4.01% (Shopify Inc., 2021). For simplicity reasons, the effective interest rate is assumed to be the same for future debt issuances.

Concerning the other comprehensive income, given its insignificant impact and the lack of elaboration, I assume it to stay flat as an average of the last five years, adjusted for inflation.

Other income forecast (in thousands)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Interest income	23 434	24 172	24 810	25 307	25 861	26 399	26 932	27 476	28 031	28 597	29 175
Interest expense	-9 085	-65 764	-94 636	-118 696	-142 756	-160 801	-178 846	-194 886	-210 926	-222 956	-234 986
Convertible senior notes (principal amount)	920 000	1 640 000	2 360 000	2 960 000	3 560 000	4 010 000	4 460 000	4 860 000	5 260 000	5 560 000	5 860 000
Interest		4,01%	4,01%	4,01%	4,01%	4,01%	4,01%	4,01%	4,01%	4,01%	4,01%
Unrealized gain on equity and other investments	135 193	139 452	143 133	145 996	149 193	152 296	155 373	158 511	161 713	164 980	168 312
Foreign exchange gain (loss)	669	0	0	0	0	0	0	0	0	0	0
Other (expenses) income, net	150 211	97 860	73 307	52 606	32 298	17 894	3 459	-8 899	-21 182	-29 379	-37 499
Other comprehensive income	7 724	2 730	2 802	2 859	2 921	2 982	3 042	3 104	3 166	3 230	3 295

Table 15. Other income and OCI forecast
(Shopify, 2021; own data processing and forecast)

Now we have all the pieces of the puzzle for completing the income statement. The complete income statement is available in Appendix 4.

6.1.6. CAPEX, PPE, depreciation

Shopify is a software company, therefore, it does not have a lot of physical assets. In 2020 the value of its property, plant and equipment (PPE) comprised only 1.2% of the value of all assets or 6.7% of all assets excluding cash and marketable securities, therefore, we should note that it has an insignificant impact on valuation.

Shopify (2021) noted that due to the pandemic, a lot of staff is working from home, and Shopify planned to reduce the number of offices, however, most of the offices are leased, not owned, therefore, a significant reduction in PPE is not expected. The opposite is actually expected because Shopify (2021) plans to expand its fulfilment network. In the near future, I expect an annual capital expenditure (CAPEX) of 100 million USD and then a decrease to 50 million USD with a depreciation schedule of 20 years.

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
CAPEX schedule	-41 733	-100 000	-100 000	-80 000	-50 000	-50 000	-50 000	-50 000	-50 000	-50 000	-50 000
Depreciation in years	20	20	20	20	20	20	20	20	20	20	20
Depreciation schedule:											
Previous years	61 027	57 976	54 924	51 873	48 822	45 770	42 719	39 668	36 616	33 565	30 514
2021		5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000
2022			5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000	5 000
2023				4 000	4 000	4 000	4 000	4 000	4 000	4 000	4 000
2024					2 500	2 500	2 500	2 500	2 500	2 500	2 500
2025						2 500	2 500	2 500	2 500	2 500	2 500
2026							2 500	2 500	2 500	2 500	2 500
2027								2 500	2 500	2 500	2 500
2028									2 500	2 500	2 500
2029										2 500	2 500
2030											2 500
Depreciation schedule	61 027	62 976	64 924	65 873	65 322	64 770	64 219	63 668	63 116	62 565	62 014
PPE BoP	111 398	92 104	129 128	164 204	178 331	163 010	148 239	134 020	120 353	107 237	94 672
+ CAPEX	41 733	100 000	100 000	80 000	50 000	50 000	50 000	50 000	50 000	50 000	50 000
- Depreciation	-61 027	-62 976	-64 924	-65 873	-65 322	-64 770	-64 219	-63 668	-63 116	-62 565	-62 014
PPE EoP	92 104	129 128	164 204	178 331	163 010	148 239	134 020	120 353	107 237	94 672	82 658

Table 16. CAPEX, PPE, depreciation forecast
(Shopify, 2021; own data processing and forecast)

6.1.7. Goodwill, intangibles, amortization

Intangible assets are stated at the cost of acquisition and are amortized over 2-10 years. Most of the assets have a shorter useful life. Shopify (2021) provides no guidance on the value of the acquired software, technology, customer relationships in the future, and the plans on acquisition as well, however, given the plans for expansion, Shopify will need new software and technologies, therefore, I conservatively assume that intangibles will continue to grow at the rate

similar to the years 2017-2018: around 20 million USD in 2021. I also assume that it is going to increase by 5% annually, while the amortization will decrease in absolute terms (because no big acquisitions, such as 6 Rivers System in 2019, are not planned).

Goodwill is not amortized, and given no guidance on future acquisitions, assumed to stay flat.

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Goodwill	311 865	311 865	311 865	311 865	311 865	311 865	311 865	311 865	311 865	311 865	311 865
Intangible assets, net	135 676	125 676	117 676	111 726	107 879	106 189	106 714	109 516	114 658	122 207	132 234
absolute Δ	-22 573	20 000	21 000	22 050	23 153	24 310	25 526	26 802	28 142	29 549	31 027
growrh rate	-113,3%	-188,6%	5,0%	5,0%	5,0%	5,0%	5,0%	5,0%	5,0%	5,0%	5,0%
Amortization	9 033	30 000	29 000	28 000	27 000	26 000	25 000	24 000	23 000	22 000	21 000
% of intangibles	6,66%	23,87%	24,64%	25,06%	25,03%	24,48%	23,43%	21,91%	20,06%	18,00%	15,88%

*Table 17. Goodwill, intangibles, amortization forecast
(Shopify, 2021; own data processing and forecast)*

6.1.8. Working capital

Due to the nature of the business (SaaS), there is almost no inventory. Shopify does sell hardware products, such as Point-of-Sale terminals, but the value of the inventory is negligible. Shopify does have significant payables and receivables, though. In order to forecast these statements, days sales outstanding (DSO) and days payable outstanding (DPO) are used.

$$DSO = \frac{\text{Accounts receivable}}{\text{Revenues}} \times 365$$

$$DPO = \frac{\text{Accounts payable}}{\text{Cost of revenues}} \times 365$$

Equation 6. Working capital

Overall, Shopify has quite a low DSO and quite a high DPO, which hold stability across time. For forecasting, I use the average DSO and DPO in the last four years and assume it to stay the same in the future: 15 and 81 days, respectively.

Working capital	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
DIO	-	-	-	-	-	-	-	-	-	-	-
DSO	15	15	15	15	15	15	15	15	15	15	15
accounts receivable	120 752	194 670	267 698	338 792	412 695	485 407	562 466	642 669	729 130	821 518	919 107
DPO	79	81	81	81	81	81	81	81	81	81	81
accounts payable	300 795	508 692	740 105	967 571	1 166 521	1 350 786	1 513 410	1 664 013	1 809 405	1 945 378	2 067 292

Table 18. Working capital forecast
(Shopify, 2021; own data processing and forecast)

6.1.9. Other significant balance sheet items

By far, the most significant balance sheet item is marketable securities, comprising half of the assets. In order to forecast marketable securities statements on the balance sheet, we need to forecast their purchase and maturity first (which is part of the cash flow statement). For purchase, I assume an annual increment of the average of the last three years, which is around 1.5 billion USD. For maturity, the first step is to derive the trend. Given that these are short-term instruments that mature in 1 year with 100% certainty, I find that the matured securities comprise 100% of the last period's securities plus around 1/3 of the newly purchased securities. I also assume 0.5% returns over inflation.

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Marketable securities											
Purchase of marketable securities	5 600 207	7 090 522	8 580 836	10 071 151	11 561 466	13 051 780	14 542 095	16 032 410	17 522 724	19 013 039	20 503 354
Absolute increment	2 881 603	1 490 315	1 490 315	1 490 315	1 490 315	1 490 315	1 490 315	1 490 315	1 490 315	1 490 315	1 490 315
Maturity of marketable securities	-3 721 405	-6 268 625	-7 597 855	-9 067 456	-10 625 093	-12 083 831	-13 578 395	-15 075 670	-16 565 810	-18 056 129	-19 546 443
Marketable securities	3 684 370	4 506 267	5 489 248	6 492 943	7 429 316	8 397 265	9 360 965	10 317 705	11 274 619	12 231 529	13 188 440

Table 19. Marketable securities forecast
(Shopify, 2021; own data processing and forecast)

Merchant cash advances (MCA), loans and related receivables are related to Shopify Capital, where Shopify provides businesses with capital by acquiring future receivables or giving a loan. Over the last five years, MCA and loans have experienced a substantial but declining growth from 296% to 63%, however, MCA and loans were quite stably growing as a percentage of total revenue: from 7.0% in 2017 to 9.5% in 2019, then declining to 8.4% in 2020. The reason for the decline is driven by the impact of the pandemic, namely, other Shopify products, such as transaction processing, have started to generate significantly more revenue due to the fact that a lot of purchased started to happen online. I expect this effect to persist in 2021 and expect MCA and loans to decrease by 0.5% as a percentage of revenue. In the years 2023-2025, I expect it to

grow as a percentage of revenue at 0.5% and then start to decline due to the market saturation effects, reaching negative 0.25% growth as a percentage of revenue by 2030.

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
MCA, loans and related receivables, net	244 723	360 391	495 589	667 135	861 302	1 070 261	1 273 314	1 454 878	1 650 610	1 811 346	1 972 354
Relative change	63,0%	47,3%	37,5%	34,6%	29,1%	24,3%	19,0%	14,3%	13,5%	9,7%	8,9%
% of total revenue	8,4%	7,9%	7,9%	8,4%	8,9%	9,4%	9,6%	9,6%	9,6%	9,4%	9,1%
% Δ	-1,2%	-0,50%	0,00%	0,50%	0,50%	0,50%	0,25%	0,00%	0,00%	-0,25%	-0,25%

*Table 20. MCA, loans and related receivables forecast
(Shopify, 2021; own data processing and forecast)*

As alluded to before, Shopify leases most of its assets. Shopify (2021) provides a schedule for lease maturities until 2025. The overall trend is around 50 million USD, which I assume is for unscheduled years after 2025. Shopify is continually renewing the leases, therefore, to account for that, I find how much the current portion of leases is comprising of total leases. I find that it is 8.1% on average. Finally, I find the proportion of the right-of-use assets relative to the current leases – on average 13.37%, which I assume to hold in the future.

Leases and right-of-use assets	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Maturities of lease liabilities: Thereafter: 368 014	23 446	43 257	43 183	53 957	53 535						
Maturities of lease liabilities: Thereafter: 118 014							50 000	50 000	50 000	50 000	50 000
Current	10 051	23 446	43 257	43 183	53 957	53 535	50 000	50 000	50 000	50 000	50 000
% of total	6,5%	8,1%	8,1%	8,1%	8,1%	8,1%	8,1%	8,1%	8,1%	8,1%	8,1%
Long-term	144 836	267 123	492 833	491 990	614 739	609 931	569 657	569 657	569 657	569 657	569 657
% of total	93,5%	91,9%	91,9%	91,9%	91,9%	91,9%	91,9%	91,9%	91,9%	91,9%	91,9%
Total lease liabilities	154 887	290 569	536 090	535 173	668 696	663 466	619 657	619 657	619 657	619 657	619 657
Right-of-use assets, net	119 373	313 504	578 402	577 413	721 475	715 833	668 565	668 565	668 565	668 565	668 565
% of current leases	1188%	1337%	1337%	1337%	1337%	1337%	1337%	1337%	1337%	1337%	1337%

*Table 21. Leases and right-of-use assets forecast
(Shopify, 2021; own data processing and forecast)*

The last significant item is deferred revenue. Deferred revenue has several components: newly deferred revenue, deferred revenue from acquisitions and recognised deferred revenue. As there is no guidance on acquisitions, deferred revenue from acquisitions is assumed to be null. When it comes to the other two components, on average, 3.7% of the total revenue is deferred, and 2.3% is recognised every year – I assume the proportions to stay the same in the future. The majority of the deferred revenue is recognised within one year, however, the proportion of the current portion has been decreasing historically by 4% on average, therefore, I assume this trend to persist in the future.

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Deferred revenue BoP	62 660	128 815	192 262	279 510	389 930	524 435	682 639	865 959	1 075 418	1 313 056	1 580 806
Dererral of revenue	119 324	170 128	233 951	296 082	360 669	424 213	491 558	561 650	637 212	717 953	803 239
% of revenue	4,1%	3,7%	3,7%	3,7%	3,7%	3,7%	3,7%	3,7%	3,7%	3,7%	3,7%
Deferred revenue from acquisitions	-	-	-	-	-	-	-	-	-	-	-
Recognition of dereferred revenue	-53 169	-106 682	-146 702	-185 663	-226 163	-266 009	-308 239	-352 191	-399 573	-450 203	-503 683
% of revenue	-1,8%	-2,3%	-2,3%	-2,3%	-2,3%	-2,3%	-2,3%	-2,3%	-2,3%	-2,3%	-2,3%
Deferred revenue EoP	128 815	192 262	279 510	389 930	524 435	682 639	865 959	1 075 418	1 313 056	1 580 806	1 880 362
Current portion	107 809	153 165	211 411	279 220	354 411	433 825	515 443	596 797	675 779	749 898	816 253
% of EoP	83,7%	79,7%	75,6%	71,6%	67,6%	63,6%	59,5%	55,5%	51,5%	47,4%	43,4%
% change	-6,8%	-4,0%	-4,0%	-4,0%	-4,0%	-4,0%	-4,0%	-4,0%	-4,0%	-4,0%	-4,0%
Long-term portion	21 006	39 099	68 105	110 722	170 046	248 850	350 570	478 699	637 387	831 055	1 064 304
% of EoP	16,3%	20,3%	24,4%	28,4%	32,4%	36,5%	40,5%	44,5%	48,5%	52,6%	56,6%
% change	6,8%	4,0%	4,0%	4,0%	4,0%	4,0%	4,0%	4,0%	4,0%	4,0%	4,0%

*Table 22. Deferred revenue forecast
(Shopify, 2021; own data processing and forecast)*

6.1.10. Other insignificant balance sheet items

A number of items that have been recorded are affected by one-off events by nature. Such items are income taxes receivables, deferred tax assets and deferred tax liabilities. Shopify (2021) notes that the income tax receivable increase in 2020 is a result of a one-off event, likely due to the structural changes in response to the pandemic, therefore, I assume it to stay null. Deferred tax assets mostly consist of loss carry-forwards and are assumed to stay flat since the date of exercise is not predetermined. Deferred tax liabilities mostly occur as a result of acquisitions of intangibles and represent a temporary taxable difference on the acquisitions. Since there is no guidance on future acquisitions, I assume it to stay null.

Other current assets have covaried a lot with the total revenue and stayed between 2.3% and 2.9% as a percentage of revenue. For the future, I assume it to stay on the 5-year average level of 2.56% as a percentage of revenue.

Income taxes payable have a short history, high variance and lack elaboration by Shopify, which makes it difficult to make a forecast, however, since it is an in-excludable part of the balance sheet, I assume it to stay flat on the same level as in 2020 – the amount is still insignificant and has virtually no impact on the analysis.

Finally, there is no guidance on additional paid-in capital. Combined with the low impact of this statement on the final analysis, I assume it to stay null.

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Income taxes receivable	56067	-	-	-	-	-	-	-	-	-	-
Other current assets	68 247	117 262	161 251	204 076	248 592	292 391	338 808	387 119	439 200	494 852	553 635
% of total revenue	2,33%	2,56%	2,56%	2,56%	2,56%	2,56%	2,56%	2,56%	2,56%	2,56%	2,56%
Deferred tax assets	52 677	52 677	52 677	52 677	52 677	52 677	52 677	52 677	52 677	52 677	52 677
Income taxes payable	19 677	19 677	19 677	19 677	19 677	19 677	19 677	19 677	19 677	19 677	19 677
Deferred tax liabilities	-	-	-	-	-	-	-	-	-	-	-
Additional paid-in capital	261 436	-	-	-	-	-	-	-	-	-	-
Accumulated comprehensive income	8 770	11 500	14 303	17 161	20 082	23 064	26 106	29 210	32 376	35 606	38 902
Retained earnings (accumulated deficit)	15 285	193 068	259 860	335 650	571 324	1 022 195	1 840 383	3 165 947	5 123 961	7 856 328	11 511 967

*Table 23. Insignificant balance sheet items forecast
(Shopify, 2021; own data processing and forecast)*

6.1.11. Cash and equity

In order to finally derive cash and equity, we need to forecast several cash flow items first. When it comes to stock-based compensation is almost completely recognised in different operating expense statements. I find that in the last three years' stock-based compensation comprised a fairly stable percentage of the respective operating expense, therefore, I assume it to stay the same in the future.

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Stock-based compensation	246 940	339 972	457 433	555 523	650 844	737 931	823 733	902 869	981 812	1 059 344	1 133 901
Sales and marketing	602 048	850 000	1 200 000	1 400 000	1 600 000	1 800 000	2 000 000	2 150 000	2 300 000	2 450 000	2 600 000
Related stock-based compensation	40 680	57 216	80 775	94 238	107 701	121 163	134 626	144 723	154 820	164 917	175 014
	6,8%	6,7%	6,7%	6,7%	6,7%	6,7%	6,7%	6,7%	6,7%	6,7%	6,7%
Research and development	552 127	841 910	1 126 194	1 385 353	1 638 909	1 870 451	2 101 098	2 324 951	2 551 803	2 778 317	3 000 029
Related stock-based compensation	154 119	219 398	293 481	361 017	427 092	487 431	547 537	605 872	664 988	724 017	781 794
	27,9%	26,1%	26,1%	26,1%	26,1%	26,1%	26,1%	26,1%	26,1%	26,1%	26,1%
General and administrative	245 343	367 640	482 640	581 813	673 397	750 484	821 473	883 589	940 042	988 825	1 027 603
Related stock-based compensation	45 658	63 358	83 177	100 268	116 051	129 336	141 570	152 275	162 004	170 411	177 094
	18,6%	17,2%	17,2%	17,2%	17,2%	17,2%	17,2%	17,2%	17,2%	17,2%	17,2%

*Table 24. Stock-based compensation forecast
(Shopify, 2021; own data processing and forecast)*

When it comes to provisions for transactions and loan losses are related to the transaction and loan losses expense that had been differentiated starting in 2019. I assume that Shopify will continue to make provisions in relatively the same proportions to the expense as it had historically, therefore, I use the average proportion for the forecast. Lastly, the proceeds from the exercise of stock options are forecasted based on the average proportion to the total revenue in the last four years.

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Transaction and loan losses	51 849	93 328	149 325	209 055	271 772	339 715	407 658	481 036	558 002	636 122	712 457
Provision for transaction and loan losses	27 282	57 826	92 522	129 531	168 390	210 487	252 585	298 050	345 738	394 142	441 439
% of total transaction and loan losses	52,6%	62,0%	62,0%	62,0%	62,0%	62,0%	62,0%	62,0%	62,0%	62,0%	62,0%
Proceeds from the exercise of stock options	70 809	120 633	165 888	209 944	255 740	300 798	348 550	398 250	451 829	509 080	569 554
% of total revenue	2,4%	2,6%	2,6%	2,6%	2,6%	2,6%	2,6%	2,6%	2,6%	2,6%	2,6%

*Table 25. Provision for T&LL and proceeds from options exercise forecast
(Shopify, 2021; own data processing and forecast)*

Together with the fact that Shopify (2021) does not plan to pay dividends, cash and cash equivalents statement can be derived. The stock (part of equity statements) is then the difference between total assets and all liabilities and equity statements (apart from the statement stock that we are deriving). The complete forecasted balance sheet and cash flow statements can be found in Appendix 4.

6.2. WACC

DCF valuation model requires the cash flows to be discounted with a certain discount rate – this rate is called the weighted average cost of capital (WACC) or just the cost of capital, and it represents the minimum rate of return that investors are willing to see from a company. The WACC is found with the formula below, where r_E is the required return on equity, r_D is the required return on debt, E is the equity value, D is the debt value, and t_C is the corporate tax.

$$WACC = r_E \times \frac{E}{D + E} + r_D \times \frac{D}{D + E} \times (1 - t_C)$$

Equation 7. WACC

In order to find r_E , the capital asset pricing model (CAPM) is used, where r_f is the base interest rate, β is the observed beta (derived previously), and r_M is the equity risk premium.

$$r_E = r_f + \beta \times r_M$$

Equation 8. Required return on equity

Since Shopify is a Canadian company, the base rate and equity premium are taken for Canada as well. According to the Bank of Canada (2021), the 10-year note yield is 1.5%. A 10-year yield is used to incorporate a long-term investor sentiment about the economy, however, a

30-year bond is not used for these purposes because it may incorporate a higher risk premium for longer maturity, which will distort our analysis.

According to Statista Research Department (2021), the average equity risk premium in Canada in 2021 was 5.7%. Combined with the fact that Shopify's unlevered or asset beta is 1.17, we can derive the unlevered cost of equity for Shopify: 8.13%.

However, in order to incorporate the risks of the planned capital structure, the beta should be re-levered according to the target debt-to-equity ratio, which, as we determined in the previous chapters, is 0.35. The re-levered beta is then 1.57, and the re-levered cost of equity is 10.44%.

The next step is to find the cost of debt, which I did use the formula below, where r_{CS} is the credit spread.

$$r_D = (r_f + r_{CS}) \times (1 - t_C)$$

Equation 9. Required return on debt

In order to determine the appropriate credit spread for Shopify, I use the times interest earned (TIE) ratio, which for Shopify was 2.44 in 2020, using the effective interest rate of 4.01%. According to Damodaran (2020), based on a TIE of 2.44, the spread is 2%. Given the Canadian tax rate of 26.5%, the cost of debt can be derived: 2.57% (KPMG, 2020). The weighted average cost of capital is then 8.4%.

Base rate	1,50%	Base rate	1,50%	Target D/E ratio	35,00%
Equity risk premium	5,70%	Times interest earned (TIE)	2,44	Debt ratio	25,93%
Beta factor (observed)	1,30	Credit spread (based on TIE)	2,00%	Cost of debt (after-tax)	2,57%
Beta factor (unlevered)	1,16	Cost of debt (pre-tax)	3,50%	Equity ratio	74,07%
Beta factor (re-levered)	1,57	Tax rate	26,50%	Cost of equity	10,44%
Cost of equity (unlevered)	8,13%	Cost of debt (after-tax)	2,57%	WACC	8,40%
Cost of equity (levered)	10,44%				

*Table 26. WACC
(own research)*

Importance of WACC. WACC plays an important role in the evaluation of a company such as Shopify Inc. The WAAC has the ability to provide analysts with the cost of doing business, which is calculated using debt and equity. It also provides the required or acceptable return on investment that can serve as a benchmark when assessing a potential venture into a specific market. It captures the average cost of doing business by determining all the different sources of income,

including bonds, common stocks, preferred stocks, as well as any other long-term debt and liability for the company.

In the same regard, it is very important to understand that a company such as Shopify needs to have a clear path in regard to making a decision before committing to investing in a certain company. The analysts may have to consider the rate of return and the barriers to a new market entry. Therefore, it is important for Shopify to venture into a new market that has a high rate of return than the calculated WACC of any given country (Berry et al., 2014). However, by using the WACC formula, the analysts should assume that certain variables, such as the capital structure of the company, will remain constant over the duration of conducting business. They will also have to assume that the risk of doing business will not change during the duration and after completing the business.

Advantages of WACC. Most companies use WACC frequently to ensure that they are able to derive the best outcome from different markets in the long run. Therefore, there are huge advantages to employing the WACC in the evaluation, especially when assessing various investment opportunities.

The fact that Shopify can easily calculate the WACC to determine the risk of venturing into a new territory is one of the major advantages. Through calculations, the company can have the information readily available and accessible on the company's financial statements (Berry et al., 2014).

Through the use of WACC calculations, analysts are able to compare and contrast the rate of return in different markets. The greatest advantage is that the same formula can apply to different countries, and hence it can be a single tool used to give an accurate comparison across the domain markets; thus, this can be a go-to tool for the researchers of the company (Berry et al., 2014).

Limitation of WACC. Despite the fact that Shopify researchers can use the WACC to determine the company's value, there is also a need to be aware of its limitations.

Shopify owners may not be willing to avail the information regarding the company's debt, equity as well as rate of debt to the other stakeholders. This may be due to the company's rules and regulations regarding privacy policy. Because of the ambiguous nature and the lack of information, the responsible stakeholder may fail to calculate the WACC. Thus, it is imperative to make sure that the figures used for deriving the company's cost of capital are reliable and better verifiable. This way, the analysts would be able to draw an accurate scenario for the WACC of the company (Berry et al., 2014).

Changes in the capital structure may occur in the middle of a financial year. To work accurately, WACC assumes that the capital structure of the company will remain static over a given period. However, this is not the reality on the ground because the capital structure of a company does change due to different issues (Berry et al., 2014). For example, Shopify as a company may have debts that may mature, and there would be a need to start paying the debt. Additionally, the owner could decide to add equity to the company, and this may change the firm's dynamics. Thus, it would be imperative for Shopify analysts to account for the fact that capital structure cannot remain static and will likely fluctuate over time. This can affect the result of the forecast, so it would be advisable to factor in such risks when planning (Berry et al., 2014).

Another limitation may include alteration of the WACC whereby the owners may decide to do so because it depends on the debt and equity ratio of the company. Thus, it is quite clear that WACC is a highly useful tool that Shopify equity researchers can use in their evaluation. Despite the limitations, the advantages may outweigh all the shortcomings if comprehensive checks are made, and appropriate amendments are introduced (Berry et al., 2014).

6.3. DCF

Serious investors and companies usually utilize a valuation metric to completely assess the health of a company and its performance and weigh its future prospects. The entire stakeholders in a company are majorly interested in these numbers. So one may ask why there is a need for a total valuation of the company. The response is that valuing a company and its stock may assist investors and creditors in identifying whether the company is overvalued or undervalued in the market. One of the methods that one can use to value a company and its asset is known as Discounted Cash Flow (DCF). In this section, I will attempt to understand the DCF concept, use it to value Shopify and learn to identify some of its strengths and flaws (Panigrahi, Vachhani, & Sisodia, 2021).

Scholars describe DCF analysis as a valuation method that companies use to find out the value of the company and its asset. This valuation is based on the number of cash flows that the company can generate at a later date. After investing in a company, the assumption is that the business is going to generate cash flows in a given period. This means that the value of money invested today will be worth more in future. To determine the value of the future money, you must discount it meaning that the methods assume that the investors cannot reinvest the same money in other businesses.

There are certain important points to note regarding DCF analysis. While computing the DCF, a person should assume that the company's investment would generate more cash or profit

in the future. Secondly, one should assume that the value of the investment will have doubled or tripled or so. Thus, the term discounted in this metric means the adjustment of the diminishing value of the investment. Likewise, cash flow refers to the money that the investment is going to generate (Panigrahi, Vachhani, & Sisodia, 2021).

To calculate DCF for Shopify, we need to use the formula:

$$DCF = CF1/(1 + dr)^1 + CF2/(1 + dr)^2 + \dots + n/(1 + dr)^n$$

Equation 10. DCF

Where *DCF* is the sum of all discounted cash flows expected to be generated in the future; *CF* is the total cash flow for a particular business year (*CF1* is year 1, and so forth); *dr* this is the discounted rate targeted as a return on investment, and it is also WACC.

Using DCF at Shopify. When the company decides to invest in another market, it would be prudent to discount and project the cash expected from the investment. In a case where the amount is valued below the sum of discounted cash flows, it would mean that the stock market has undervalued the investment and could potentially be benefiting the investors. On the other hand, if the price is valued high than the sum of discounted cash flows, the investment is most likely overvalued (Panigrahi, Vachhani, & Sisodia, 2021). The DCF computation is good for Shopify since we can determine the company's current value and project its future profits as well as the cash flow. Thus, this means that we must assume and estimate the prospective growth and profitability of the business in future, among other things. In hindsight, this method of evaluating the company is the best because though a relatively new company, it has kept growing stable by the day. The method may not work for companies that are experiencing instability or just small start-up companies. For an e-commerce business, this DCF method of valuation is perfect because the company's growth, income and expenditure are relatively stable (Panigrahi, Vachhani, & Sisodia, 2021).

One of the best things regarding the use of the DCF method or model is that the metric uses a lot of company details to estimate the value of the company. It is also very easy to use and detailed such that it takes into account significant assumptions in regard to the business. Using the model, it is also easier to calculate the intrinsic value of the business and its asset. The administration does not also need any assets or companies to compare with to calculate the value. When there is a need for mergers and acquisitions, this method comes in handy, whereby it can

calculate the internal rate of return IRR of investment for making critical decisions. We can also consider different scenarios for sensitive analysis (Panigrahi, Vachhani, & Sisodia, 2021).

Anything good has its drawbacks, and DCF is not an exception because for the method to work, it requires a lot of time to project the variables that should be used. Additionally, aspects such as capital expenditure, source of funds and other investments are not easy to estimate despite other parameters such as revenue and cost being easily available. The method can also be used to project for the long term, although the long-term predictions may not always give accurate results due to the possibility of unseen issues available in any business (Panigrahi, Vachhani, & Sisodia, 2021). While the method may not be perfect and may be prone to errors due to its complex nature, it is advisable to use it to measure the intrinsic value of a company and its investments. It would also help in making informed decisions by determining the true value of a company.

In view of the above, once the business plan and WACC are ready, the free cash flow to the firm (FCFF) can be derived. When it comes to the terminal value (TV), a set of assumptions needs to be made.

Firstly, what is the appropriate perpetual growth rate? In general, if the perpetual growth rate exceeds the growth rate of the economy, then the company is assumed to grow faster than the economy forever until it becomes the whole economy. This is not consistent with the common company life cycle that we can observe in practice – companies tend to mature and then slowly become outdated. The perpetual growth rate that is lower than that of the economy is, therefore, appropriate for a firm that is already mature. Given that Shopify is a very young firm that has had extraordinarily high growth, it is reasonable to assume its perpetual growth at the upper end of the historical economic growth of its core market (the US): 3.00%.

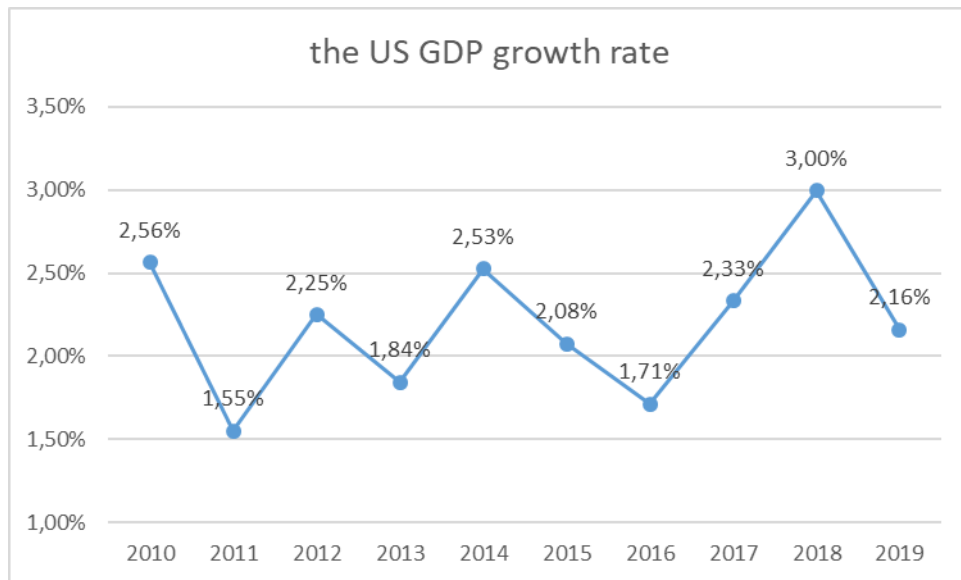


Figure 24. The US GDP growth rate
(The World Bank, 2021)

Another key determinant of the final value of the company is its profitability. According to our business plan, in 2030, Shopify's EBITDA will reach 23.1% (Appendix 4). For the terminal value, a slightly lower EBITDA margin of 20.0% is considered in order to incorporate some of the effects of maturity. The firm value is then 118 billion USD, 89.9% of which accounts for the present value of terminal value, which is significant and means that the valuation result is highly sensitive to the terminal value assumptions, however, this is not unusual for a young and rapidly scaling firm.

Factoring in the downward options and RSU adjustment, the implied share price is 950.61 USD, which is 16.02% lower than the actual share price of 1131.95 USD as of 31 December 2020. Taking into account the high sensitivity to the TV assumptions, a sensitivity analysis is necessary.

		Perpetual growth							Perpetual EBITDA				
		2,00%	2,50%	3,00%	3,50%	4,00%			16,00%	18,00%	20,00%	22,00%	24,00%
WACC	7,50%	924,49	1019,56	1135,82	1281,19	1468,16	WACC	7,50%	919,67	1027,74	1135,82	1243,89	1351,97
	8,00%	849,37	929,31	1025,27	1142,62	1289,35		8,00%	830,74	928,01	1025,27	1122,54	1219,81
	8,40%	797,43	867,78	951,20	1051,70	1175,08		8,40%	771,08	861,14	951,20	1041,27	1131,33
	9,00%	730,22	789,22	858,09	939,52	1037,29		9,00%	695,98	777,03	858,09	939,15	1020,20
	9,50%	682,09	733,66	793,21	862,72	944,91		9,50%	643,57	718,39	793,21	868,03	942,85

Table 27. Sensitivity analysis
(own research)

One of the weak points in our assumptions is the credit spread based on TIE, because the TIE is based on the first year when Shopify had just turned profitable. If we consider the fact that

Shopify has enough cash to cover all of its liabilities multiple times, it will make the financial debt virtually non-existent, lowering the WACC to around 8.00%. All other things equal, an 8.00% discount factor would yield a 1025.27 USD share price, which is still 9.4% lower than the actual price.

Another weak point is the EBITDA assumption. It is possible that the profitability will continue to increase with the scale, and assuming that would mean a 24% EBITDA for the terminal value, the share price would be 1131.33 USD, which is only 0.62 USD lower than the actual price.

Finally, when it comes to the perpetual growth rate, if Shopify gains a significant market share in the developing countries which adopt e-commerce at a high rate, then the weighted average economic growth of its core markets will increase, increasing the possible perpetual growth. If it increases to 4%, the share price would be 1175.08 USD, which is 3.8% higher than the actual price. If, on the other hand, Shopify's core market stays the same and the US does not experience good economic growth, and the appropriate perpetual growth rate is 2%, then the share price would be 797.43 USD, which is 29.55% lower than the actual price.

Overall, the positive scenarios are less likely and do not show a great upside potential. The more likely negative scenarios together with the base scenario, suggest that Shopify's shares are overpriced.

6.4. Multiples

Valuation and Comparison for Multiples. The internet-based or e-commerce industries are businesses that engage in selling goods or retailing using the internet. In the United States alone, over 200 thousand businesses use the internet to sell their merchandise and services. The annual revenue for the companies, according to experts, is over \$500 billion. Over the last five years, these industries have been growing at a rate of over 13 %, and they continue to grow (Plenborg & Pimentel, 2016).

Thus, it is in the best interest of the company to use valuation multiples when performing the business valuation to find out where Shopify stands in the market. Experts recommend the use of multiple valuations in different scenarios. When offloading an e-commerce business whereby obtaining a valuation may help the owners to give the exact value, and this may help in negotiations with potential buyers. Another scenario is whereby a firm may consider buying another e-commerce business whereby acquiring a business valuation may assist in feeling confident about the purchase price (Plenborg & Pimentel, 2016). Lastly, the valuation may help an e-commerce firm when trying to venture into different markets and determine the value of set markets.

One way that experts recommend for evaluating an e-commerce company is through valuation multiples. A valuation multiple is equated to a ratio which can compare two things with each other. For example, one of the most recommended components for valuation is a multiple known as an SDE multiple. The SDE multiple, when computed, compares a company's value based on the earnings of the company (Plenborg & Pimentel, 2016). Using other similar e-commerce businesses, we can compute other firms' multiples and compare them with Shopify.

Earnings multiples. One of the most common multiples used in the e-commerce business is the SDE and E/P multiples (Plenborg & Pimentel, 2016). SDE and E/P multiples are based on the firm's net profit. The downside of these measures is that they take into account the capital structure of the firms that may rapidly change, and also, earnings multiples are ineffective when trying to compare young and temporarily unprofitable companies.

EBITDA, EBIT multiples. Another popular multiple measures is the EBITDA and EBIT multiples (Plenborg & Pimentel, 2016). Unlike the SDE multiple, the EBITDA and EBIT multiples are based on operational profit, not net profit. This allows for the elimination of the firm's idiosyncratic variables from the comparison and focuses on commonalities between businesses in the same industry. Thus, these multiples are much better to use in the e-commerce company because they adapt to a company's capital structure, assets and taxation (Schueler, 2020).

Sales multiple. One of the less used but still important measures is the Sales multiple. Unlike the previously described multiples, it only takes into account the turnover of the company and allows it to extrapolate the value even of the firms that are not yet profitable or experience some degree of economic turbulence.

For multiples analysis of Shopify, companies from the same industry have been selected as peers: e-commerce, e-commerce platforms, and e-commerce services.

Company	Market cap	Description
Shopify	\$119.5 bn	A Canadian multinational e-commerce platform for online stores and retail point-of-sale systems. Offers website builder tools, payment system, marketing, shipping services.
Hubspot	\$18.7	An American developer and marketer of software products for inbound marketing, sales, and customer service.
Zendesk	\$17.3	An American SaaS company providing products related to customer support, sales, and other customer communications.
Wix	\$14.2	An Israeli software company, providing cloud-based web development services. Offers website building tools, plug-ins for e-commerce and online marketing.
GoDaddy	\$13.8	An American publicly traded Internet domain registrar and web hosting company. Offers website building tools, in particular, e-commerce stores.
Square	\$100.4	An American financial services and digital payments company.
Amazon	\$1628.5	E-commerce.

*Table 28. Peers for regular multiples
(own research)*

Due to the fact that the e-commerce industry is new and booming, there are a lot of young companies that have not yet achieved the necessary profitability scale, which includes the majority of Shopify's peers. This means that multiples based on profitability, such as EV/EBITDA, EV/EBIT, and E/P cannot be used. Shopify itself experiences only the first year of being profitable, which also does not make a good basis for the relative analysis based on profitability, therefore, the sales-based method is used: EV/Sales.

in bn USD	Market cap	Price	Cash	Debt	EV	Sales	EV/Sales
Shopify	119,5	1 131,95	2,70	0,76	117,55	2,929	40,13
Hubspot	18,7	396,44	0,378	0,471	18,793	0,883	21,28
Zendesk	17,3	143,12	0,405	0,936	17,831	1,029	17,33
Wix	14,2	249,96	0,169	0,359	14,39	0,989	14,55
Godady	13,8	82,95	0,765	3,09	16,125	3,316	4,86
Square	100,4	217,64	3,158	2,586	99,826	9,498	10,51
Amazon	1628,5	3 256,93	42,122	31,816	1618,159	386,064	4,19
					mean	12,12	
Implied share price	323,26				median	12,53	
Actual share price	1131,95				high	21,28	
potential	-71,44%				low	4,19	

Table 29. EV/Sales derivation

(2020 annual report of each company, 2021; own data processing)

As it can be seen in the table above, the median EV/Sales multiple is 12.53, which implies that Shopify's shares are worth only 323.26 USD. This is significantly less than the actual price, therefore adjustments are made. It can even be implied from the table above that companies with higher growth potential trade at higher multiples. In order to adjust for the growth potential, the sales forecast is taken from Finbox (2021) for each of the companies, and then the regression of EV/Sales multiples on the 3-year compound annual growth rate (CAGR) is made.

in bn USD	Market cap	Price	Cash	Debt	EV	2020 Sales	2021E Sales	2022E Sales	2020 EV/Sales	CAGR Growth
Shopify	119,5	1 131,95	2,70	0,76	117,55	2,929	4,589	6,310	40,13	46,77%
Hubspot	18,7	396,44	0,378	0,471	18,793	0,883	1,289	1,665	21,28	37,32%
Zendesk	17,3	143,12	0,405	0,936	17,831	1,029	1,333	1,690	17,33	28,16%
Wix	14,2	249,96	0,169	0,359	14,39	0,989	1,271	1,531	14,55	24,42%
Godady	13,8	82,95	0,765	3,09	16,125	3,316	3,767	4,162	4,86	12,03%
Square	100,4	217,64	3,158	2,586	99,826	9,498	17,581	18,743	10,51	40,48%
Amazon	1628,5	3 256,93	42,122	31,816	1618,159	386,064	470,652	555,964	4,19	20,00%
Implied share price							slope		41,60	
Actual share price							intercept		0,86	
potential							adjusted		20,31	

Table 30. Adjusted EV/Sales derivation

(2020 annual report of each company, 2021; Finbox, 2021; own data processing)

Indeed, companies with higher growth potential are, in general, trading at higher multiples. However, even though the adjusted multiple is almost two times higher, the resulting implied share price is still around two times lower than the actual price: 513.99 USD.

In conclusion, relative valuation suggests a high degree of overvaluation.

6.5. Transaction multiples

A transactional multiple is another model that we can use to value Shopify. The model is mostly applicable in the context of merger and acquisition but also in the comparative analysis of a company valuation. This model of valuation is noticeably different from DCF or discounted cash flow because it provides data based on the current trends in the market and not based on the intrinsic value of a company (Schueler, 2020). Some of the most common multiple in transaction multiple is Enterprise Value to Sales (EV/S) and Price to Earnings (P/E). Since the capital structure of a company does not affect the enterprise value, we can use it in transaction multiples to improve the comparability between a number of companies using different variables.

We utilize transaction multiple to compare two variables in a company which are value and the driver of value. It is imperative to select the correct value driver for the value that you intend to use in the multiple to arrive at any meaningful conclusion. This is the reason why most experts use enterprise value (EV) to calculate a transitional multiple (Schueler, 2020). The reason for this is that EV considers the whole value of the company, which may include the company equity, debt and other variables such as stocks. Thus, one of the advantages of using EV over other values, such as equity, is that the capital structure of the company does not affect its outcome.

While selecting the variables to use for value and value drivers for calculating multiples, it is important to ensure the following.

The similarity between value and value driver. It is imperative to ensure that the value and value driver you intend to use or the calculation of multiples are consistent and related. For example, it would not make sense to use EBIT as a value driver for equity because it has returns that have factored in debt and equity. That is why it would be important to ensure that the two selected metrics used have some kind of relation to arrive at a better conclusion (Schueler, 2020).

Use current information. Another thing to note while looking for figures to calculate the multiples is to ensure that the figures you use are current and available. This may help to eliminate the after-effects of any announced change that can occur after picking the variables. For example, while calculating the EV/EBITDA multiple of a transaction that was earlier announced, it would be necessary to use all the data from the same time to avoid a mix-up of the outcome (Schueler, 2020).

EV/Sales is the best value to use for Shopify because it has a negative EBITDA, and it is a start-up company currently generating revenue but not enough profit. Scholars' advice is companies should use the same formula for an older company that may be incurring losses and may lead to unreliable results (Schueler, 2020). This may be due to the failure to consider the debt

and liability that the company may have. This multiple is just perfect for Shopify because it is a start-up and has yet to turn in a considerable amount of profit compared to a much older company.

There is a close relation between EBITDA and EBIT because they both display the income for the stakeholders accruing from debt and equity. Thus, EBITDA and EBIT are the preferable multiples to use for comparing and valuation in general. EBITDA balances EBIT in regard to the company expenses and the rate of depreciation, and the source of capital, and it overlooks their effects (Schueler, 2020). Hence, it is the perfect multiple for comparing a number of companies at various stages of growth and fixed capital. In hindsight, this means that (EBTIDA) has a tendency to overlook the company's rate of depreciation, which normally changes depending on the amount of fixed capital. These multiple cannot apply to Shopify because the business is not cyclical, and it is earnings in the form of profit is not yet stable in its financial year's duration. In short, the company is not mature enough, although scholars use the multiple industries that deal with retailing, utility and consumer products (Schueler, 2020).

P/E is another multiple applicable to value companies with identical capital structures. The reason for this is that companies can easily manipulate the ratio using the capital structure in decision-making, which has no use for the company. Additionally, in the e-commerce industry, whereby different companies of different sizes the differing capital structure, the result of the multiples may not be standard to provide any useful value for the company (Schueler, 2020).

For transaction multiples, another set of peers is needed. The selected targets are all in relatively the same industry – providing e-commerce solutions – and are predominantly based in the US. Even though most of the targets were private pre-acquisition, all of the acquirers were public firms that disclosed the details of the transactions in their annual reports.

Company	Transaction	Description
Neolane	\$617 m	A French software company specializing in cross-channel campaign management technology.
Demandware	\$2930 m	An American software company offering an e-commerce platform.
TubeMogul	\$549 m	An American software company specializing in brand advertising.
Magento	\$1645 m	An American software company offering an e-commerce platform.
Marketo	\$4736 m	An American software company offering marketing services.
6 River Systems	\$380 m	An American company specializing in fulfilment solutions.
Vend	\$350 m	A New Zealand software company offering a cloud-based point-of-sale and retail management software.

*Table 31. Peers for transaction multiples
(own research)*

For the same reasons as previously, the transaction multiple that we are going to derive is EV/Sales. Also, due to the fact that most companies were private pre-acquisition, information on the profitability of the targets is much more scarce.

Date	Acquirer	Target	Pre-acquisition Status	Number of Shares	Transaction Payment	Net debt	Sales LTM	EV	EV/Sales
22 Jul 2013	Adobe (US)	Neolane (FR)	private	all	616,60		80,00	616,60	7,71
11 Jul 2016	Salesforce (US)	Demandware (US)	NYSE-listed	all	2 929,68	-117,841	254,08	2 811,84	11,07
02 Dec 2016	Adobe (US)	TubeMogul (US)	NASDAQ-listed	all	549,00	-79,00	212,10	470,00	2,22
18 Jun 2018	Adobe (US)	Magento (US)	private	all	1 644,60		150,00	1 644,60	10,96
31 Oct 2018	Adobe (US)	Marketo (US)	private	all	4 736,26		308,78	4 736,26	15,34
17 Oct 2019	Shopify (CA)	6 River Systems (US)	private	all	379,70	-8,00	25,00	371,70	14,87
12 Mar 2021	Lightspeed (CA)	Vend (NZ)	private	all	350,00		34,00	271,00	7,97
								mean	10,02
Implied share price								median	10,96
Actual share price								high	15,34
potential								low	2,22

*Table 32. Transaction EV/Sales multiple
(Annual report of each company, [respective year]; own data processing)*

As can be seen in the table above, the median EV/Sales transaction multiple is 10.96, which implies that Shopify's shares are worth only 284.89 USD. Even with the highest multiple from

this peer group Shopify's implied share price would be 392.07 USD, which is still significantly lower than the actual price.

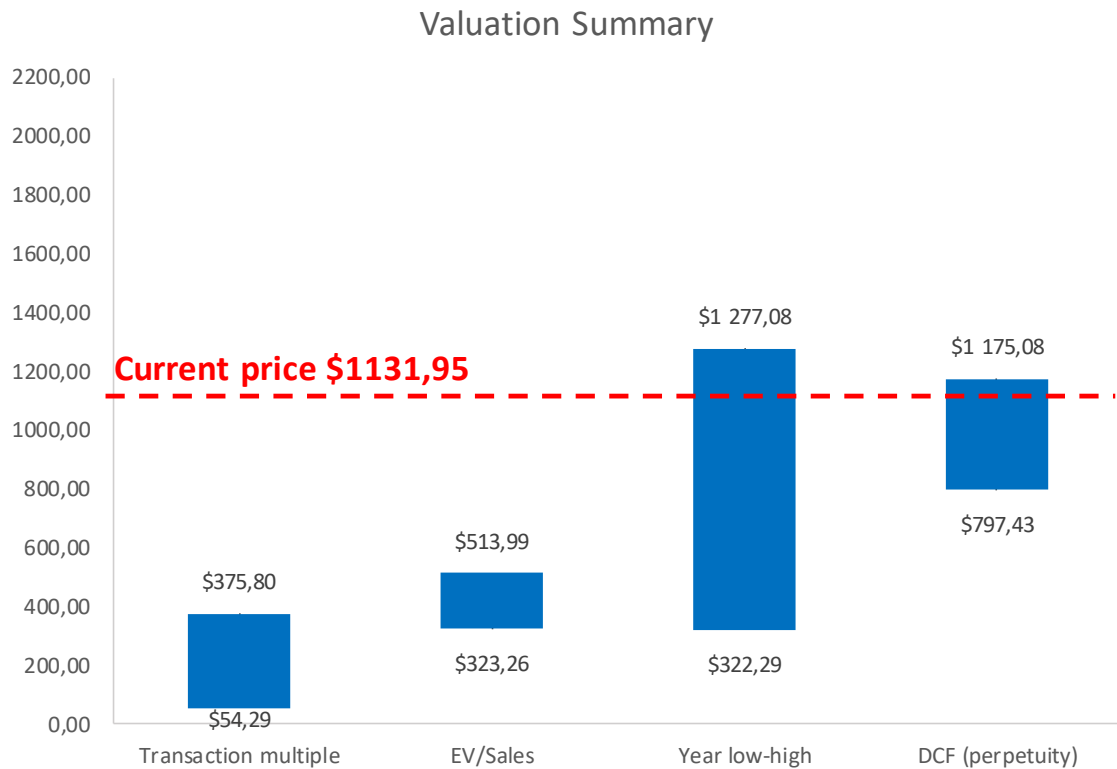
Overall, transaction multiples suggest that Shopify is significantly overpriced.

7. Conclusion

This thesis has focused on the valuation of Shopify and tried to answer the central research question, which is: What is the intrinsic value of Shopify's share of stock as of 31st December 2020?

Since Shopify is a relatively new-born-global business in a very competitive tech industry, the company's prospects are surrounded by a lot of uncertainty and making the equity research extremely complicated. The company's remuneration and acquisition practices put a substantial weight into equity options and RSUs that required comprehensive analysis and derivation. And high competition and low barriers to entry create uncertainty around the ability of the company to not only meet the required rate of return in the industry but also to grow.

Various models were pre-selected in order to analyse the data and overcome the limitations posed by picking a single model. However, many models could not be applied to our case, such as those based on profits or dividends. The fundamental analysis proved to be imperfect because it puts a lot of weight into perpetual growth, which in the case of rapidly growing start-ups, means that the implied share value is extremely sensitive even to the slightest changes in the growth assumptions. The relative analysis proved to be imperfect due to the lack of well-established competitors, whose core business also synergistically combines transaction processing and SaaS subscriptions. Due to such limitations, the estimations done by using these models did not converge on a narrow range of possible values.



*Figure 25. Valuation summary
(own data processing)*

Nonetheless, one thing that all ranges of values do have in common is that they are mostly below the current price of 1'131.95 USD. DCF analysis indicates that Shopify share price should be 16.02% lower, adjusted EV/Sales analysis indicates that it should be 54.59% lower, and transaction multiples analysis indicates that it should be 74.83% lower. Such convergence clearly indicates that Shopify share price is significantly overpriced.

8. Literature

- [1] Altman, E. I. (1968). Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. *The Journal of Finance*, XXIII, 594.
- [2] Altman, E. I., Iwanicz-Drozdzowska, M., & Laitinen, E. K. (2014). Distressed Firm and Bankruptcy prediction in an international context: A review and empirical analysis of Altman's Z-Score Model.
- [3] Arcieri, K. (2020, February 25). Shopify's \$1 billion fulfillment network could pose competition for Amazon. Retrieved December 11, 2021, from <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/shopify-s-1-billion-fulfillment-network-could-pose-competition-for-amazon-57098608>
- [4] Armental, M. (2015, April 14). Canadian Software Company Shopify Files for U.S.-Canada IPO. Retrieved November 30, 2021, from [wsj.com/articles/canadian-software-company-shopify-files-for-u-s-canada-ipo-1429044275](https://www.wsj.com/articles/canadian-software-company-shopify-files-for-u-s-canada-ipo-1429044275)
- [5] Ashok Panigrahi, K. V. (2021). Application of discounted cash flow model valuation: The case of Exide industries. *Journal of Management Research and Analysis*, 170-179.
- [6] Bank of Canada. (2021). Selected Bond Yields. Retrieved December 21, 2021, from <https://www.bankofcanada.ca/rates/interest-rates/canadian-bonds/>
- [7] Bank of Canada. (2021). Selected Bond Yields. Retrieved January 2, 2022, from <https://www.bankofcanada.ca/rates/interest-rates/canadian-bonds/>
- [8] Barraclough, D. (2021, May 28). Magento vs Shopify – Which Is the Right Platform for You? Retrieved December 10, 2021, from <https://www.websitebuilderexpert.com/ecommerce-website-builders/comparisons/magento-vs-shopify/>
- [9] Barraclough, D. (2021, December 9). Shopify vs Squarespace. Retrieved December 10, 2021, from <https://www.websitebuilderexpert.com/ecommerce-website-builders/comparisons/shopify-vs-squarespace/>
- [10] Berkow, J. (2012, February 1). Shopify buys Select Start Studios. *Financial Post*. Retrieved December 1, 2021, from <https://financialpost.com/entrepreneur/ottawa-tech-merger-shopify-buys-select-start-studios?r>
- [11] BrainStation. (2010, December 13). Ottawa's Shopify raises \$7 Million Series A Funding from Bessemer, FirstMark, and Felicis. *BrainStation*. Retrieved November 30, 2021, from

- <https://brainstation.io/magazine/ottawas-shopify-raises-7-million-series-a-funding-from-bessemer-firstmark-and-felicis>
- [12] Brandl, R. (2018, October 23). Website Builder and Ecommerce Support – Which Platforms Offer The Best Help? Retrieved December 10, 2021, from <https://www.tooltester.com/en/blog/website-builder-support/>
- [13] Canada Business Directory. (2021). Shopify Payments (Canada) Inc. Retrieved December 4, 2021, from Canada Business Directory: <https://www.can1business.com/company/Active/Shopify-Payments-Canada-Inc>
- [14] Carmichael, C. (2021, October 1). WooCommerce vs Shopify: Who Comes Out On Top? Retrieved December 10, 2021, from <https://www.websitebuilderexpert.com/ecommerce-website-builders/comparisons/woocommerce-vs-shopify/>
- [15] Carney, L. (2021, December 9). Wix vs Shopify: Which Should You Choose to Sell Online? Retrieved December 11, 2021, from <https://www.websitebuilderexpert.com/ecommerce-website-builders/comparisons/wix-vs-shopify/>
- [16] Chevalier, S. (2021, July 7). *Retail e-commerce sales worldwide from 2014 to 2024*. Retrieved November 30, 2021, from Statista: <https://www.statista.com/statistics/379046/worldwide-retail-e-commerce-sales/>
- [17] Clark, P. A. (2021, November 15). The Metaverse Has Already Arrived. Here’s What That Actually Means. *Time*. Retrieved December 15, 2021, from <https://time.com/6116826/what-is-the-metaverse/>
- [18] Cole, T. (2014, November 27). *Our Canadian CEO of the year you’ve probably never heard of*. Retrieved January 30, 2022, from The Globe and Mail: <https://www.theglobeandmail.com/report-on-business/rob-magazine/meet-our-ceo-of-the-year/article21734931/>
- [19] Cole, T. (2014, November 27). Our Canadian CEO of the year you’ve probably never heard of. *The Globe and Mail*. Retrieved November 30, 2021, from <https://www.theglobeandmail.com/report-on-business/rob-magazine/meet-our-ceo-of-the-year/article21734931/>
- [20] Community Moderator at Shopify. (2019, July 29). Stripe is not available as a payment gateway. Retrieved December 10, 2021
- [21] Corporate Finance Institute. (2021). Cash Ratio. Retrieved December 22, 2021, from <https://corporatefinanceinstitute.com/resources/knowledge/finance/cash-ratio-formula/>

- [22] Damodaran, A. (2005, September). Employee Stock Options (ESOPs) and Restricted Stock:. *Stern School of Business*, 49. Retrieved December 21, 2021, from <https://people.stern.nyu.edu/adamodar/pdfiles/papers/esops.pdf>
- [23] Damodaran, A. (2017, July 9). Country Risk: Determinants, Measures and Implications – The 2017 Edition. *Stern School of Business*, 5-12, 61, 79. Retrieved December 17, 2021, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3000499
- [24] Damodaran, A. (2020, January). Ratings, Interest Coverage Ratios and Default Spread. Retrieved December 28, 2020, from http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ratings.htm
- [25] Damodaran, A. (2021, January 8). Country Default Spreads and Risk Premiums. Retrieved December 17, 2021, from http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html
- [26] Davidkhanian, S. (2021, July 8). US Ecommerce Forecast 2021. *eMarketer*. Retrieved December 25, 2021, from <https://www.emarketer.com/content/us-ecommerce-forecast-2021>
- [27] Dean, B. (2021, October 21). Shopify Revenue and Merchant Statistics in 2021. Retrieved December 6, 2021, from <https://backlinko.com/shopify-stores>
- [28] Dun & Bradstreet. (2021). Shopify Payments (USA) Inc. Retrieved December 4, 2021, from [dnb.com/business-directory/company-profiles.shopify_payments_\(usa\)_inc.5c231cf6a5222b29bd0bb5fca11834dd.html](https://dnb.com/business-directory/company-profiles.shopify_payments_(usa)_inc.5c231cf6a5222b29bd0bb5fca11834dd.html)
- [29] Empson, R. (2013, April 12). After 7 Years & 50K Storefronts Created, Shopify Launches Major Redesign To Simplify Online Store-Building. *TechCrunch*. Retrieved December 15, 2021, from <https://techcrunch.com/2013/04/11/after-7-years-50k-storefronts-launched-shopify-launches-major-redesign-to-simplify-online-store-building/>
- [30] Finbox. (2021). Float Shares / Outstanding for Shopify Inc. Retrieved December 6, 2021, from https://finbox.com/NYSE:SHOP/explorer/shares_float_pct
- [31] Gagliardi, N. (2021, May 27). Google Cloud expands partnership with Shopify, forms merchant integration with Square. Retrieved December 8, 2021, from <https://www.zdnet.com/article/google-cloud-expands-partnership-with-shopify-forms-merchant-integration-with-square/>
- [32] Galov, N. (2020, November 24). Shopify Statistics – Data about the Most Popular Ecommerce Platform. *Hosting Tribunal*. Retrieved December 17, 2020, from <https://hostingtribunal.com/blog/shopify-statistics/#gref>

- [33] Global Deloitte Digital Study. (2021). 2021 AR Consumers based on people who use AR weekly of daily. Retrieved December 15, 2021, from <https://www.shopify.com/enterprise/augmented-reality-ecommerce-shopping#2>
- [34] Google Finance. (2021, November 30). *Google Finance*. Retrieved November 30, 2021, from <https://www.google.com/finance/quote/SHOP:NYSE>
- [35] Google Finance. (2021). S&P 500. Retrieved December 16, 2021, from https://www.google.com/finance/quote/.INX:INDEXSP?sa=X&ved=2ahUKEwjU_MnJhen0AhWdRvEDHU1iDI8Q3ecFegQIDRAc&window=MAX
- [36] Google Trends. (2021). Global search volume for Shopify, Wix, WooCommerce, SquareSpace, Magento between 2004 and 2021. Retrieved December 10, 2021, from https://trends.google.com/trends/explore?date=all&q=%2Fm%2F02ntbw8,%2Fm%2F05f77_x,%2Fm%2F0xpptgc,%2Fm%2F075ff_x,%2Fm%2F04065k0
- [37] Google Trends. (2021, December 10). USA search volume for PayPal, Stripe, Square, Affirm between 2004 and 2021. Retrieved December 10, 2021, from <https://trends.google.com/trends/explore?date=all&geo=US&q=paypal,stripe,%2Fm%2F0by16yq,%2Fg%2F11fkl4bl9w>
- [38] Invest Excel. (2015). How does Yahoo Finance Calculate Beta? Retrieved December 16, 2021, from <https://investexcel.net/how-does-yahoo-finance-calculate-beta/>
- [39] Ip, G. (2021, September 15). How the U.S. Nailed the Economic Response to Covid-19. *The Wall Street Journal*. Retrieved December 16, 2021, from <https://www.wsj.com/articles/how-the-u-s-nailed-the-economic-response-to-covid-19-11631714400>
- [40] Ireland Business Directory. (2021). Shopify International Limited. Retrieved December 4, 2021, from <https://ie.globaldatabase.com/company/shopify-international-limited>
- [41] KPMG. (2020). Corporate tax rates table. Retrieved December 28, 2021, from <https://home.kpmg/it/it/home/services/tax/tax-tools-and-resources/tax-rates-online/corporate-tax-rates-table.html>
- [42] Kshetri, N. (2007). Barriers to e-commerce and competitive business models in developing countries: a case study. *Electronic Commerce Research and Applications*, 6(4), pp. 443-452.
- [43] Lebow, S. (2021, August 19). Worldwide ecommerce continues double-digit growth following pandemic push to online. *eMarketer*. Retrieved December 15, 2021, from <https://www.emarketer.com/content/worldwide-ecommerce-continues-double-digit-growth-following-pandemic-push-online>

- [44] Lee, D. (2020, August 25). Shopify: How does it make money? *5. Inside*. Retrieved December 10, 2021
- [45] Lee, J. (2020, November 29). Can Shopify Compete With Amazon Without Becoming Amazon? *The New York Times Magazine*. Retrieved December 11, 2021, from <https://www.nytimes.com/2020/11/24/magazine/shopify.html>
- [46] Li, Y. (2021, July 19). Bill Ackman still sees a massive economic boom despite the delta variant, says rates to rebound. *CNBC*. Retrieved December 16, 2021, from <https://www.cnbc.com/2021/07/19/bill-ackman-still-sees-a-massive-economic-boom-despite-the-delta-variant-says-rates-to-rebound.html>
- [47] Lindzon, J. (2013, August 1). SHOPIFY ACQUIRES DESIGN AGENCY JET COOPER. *Betakit*. Retrieved December 1, 2021, from <https://betakit.com/shopify-acquires-design-agency-jet-cooper/>
- [48] Lockhart, J. W. (2021, September 29). Augmented Reality in Ecommerce: How AR, VR and 3D Are Changing Online Shopping. Retrieved December 15, 2021, from <https://www.shopify.com/enterprise/augmented-reality-ecommerce-shopping#2>
- [49] Lutke, T. (2011, October 17). Shopify Raises \$15 Million in Series B Funding. *Shopify Blog*. Retrieved November 30, 2021, from <https://www.shopify.com/blog/4344032-shopify-raises-15-million-in-series-b-funding>
- [50] Mohamed, T. (2021, September 27). 'The Big Short' investor Michael Burry warns the stock-market boom reminds him of the dot-com bubble - and rings the alarm on options mania. *Market Insider*. Retrieved December 16, 2021, from <https://markets.businessinsider.com/news/stocks/big-short-michael-burry-warns-stocks-options-dotcom-bubble-crash-2021-9>
- [51] Monaghan, M. (2021, November 5). Squarespace Ecommerce Review 2021 | Is It Any Good? Retrieved December 10, 2021, from <https://www.websitebuilderexpert.com/ecommerce-website-builders/squarespace-ecommerce-business-review/>
- [52] Nasdaq. (2021, May 6). What Type Of Shareholders Own The Most Number of Shopify Inc. (NYSE:SHOP) Shares? Retrieved December 6, 2021, from <https://www.nasdaq.com/articles/what-type-of-shareholders-own-the-most-number-of-shopify-inc.-nyse%3Ashop-shares-2021-05-06>
- [53] Neufeld, D. (2018, March 26). Shopify's Infrastructure Collaboration with Google. Retrieved December 8, 2021, from <https://shopify.engineering/shopify-infrastructure-collaboration-with-google>

- [54] Novicio, T. (2021, April 8). 15 Biggest Companies That Use Shopify. Retrieved December 1, 2021, from <https://finance.yahoo.com/news/15-biggest-companies-shopify-170757960.html>
- [55] O'Neill, A. (2021, October 13). *Australia: Real gross domestic product (GDP) growth rate from 2016 to 2026**. Retrieved December 16, 2021, from Statista: <https://www.statista.com/statistics/263602/gross-domestic-product-gdp-growth-rate-in-australia/>
- [56] O'Neill, A. (2021, October 20). *Canada: Real gross domestic product (GDP) growth rate from 2016 to 2026*. Retrieved December 16, 2021, from Statista: <https://www.statista.com/statistics/263603/gross-domestic-product-gdp-growth-rate-in-canada/>
- [57] O'Neill, A. (2021, August 31). *Growth of the global gross domestic product (GDP) from 2016 to 2026*. Retrieved December 16, 2021, from Statista: <https://www.statista.com/statistics/273951/growth-of-the-global-gross-domestic-product-gdp/>
- [58] O'Neill, A. (2021, November 23). *Real gross domestic product (GDP) growth rate in the United States from 2016 to 2026*. Retrieved December 16, 2021, from Statista: <https://www.statista.com/statistics/263614/gross-domestic-product-gdp-growth-rate-in-the-united-states/>
- [59] O'Neill, A. (2021, November 23). *United Kingdom: Real gross domestic product (GDP) growth rate from 2016 to 2026*. Retrieved December 16, 2021, from Statista: <https://www.statista.com/statistics/263613/gross-domestic-product-gdp-growth-rate-in-the-united-kingdom/>
- [60] Prakash, P. (2021, March 5). Shopify Capital Lending Review. Retrieved December 11, 2021, from <https://www.fundera.com/business-loans/lender-reviews/shopify-capital>
- [61] Sam Berry, C. B. (2014). Understanding weighted average cost of capital : a pedagogical application. *Journal of financial education*, 40, pp. 115-136.
- [62] Schueler, A. (2020, February). Valuation with Multiples: A Conceptual Analysis. *Journal of Business Valuation and Economic Loss Analysis* 15(1).
- [63] Schueler, A. (2020, February). Valuation with Multiples: A Conceptual Analysis. *Journal of Business Valuation and Economic Loss Analysis*, 15, 1-13.
- [64] Seth, S. (2021, March 31). Calculating the Current Ratio. *Investopedia*. Retrieved December 22, 2021, from <https://www.investopedia.com/ask/answers/070114/what-formula-calculating-current-ratio.asp>

- [65] Seth, S. (2021, October 20). Quick Ratio. *Investopedia*. Retrieved December 22, 2021, from <https://www.investopedia.com/terms/q/quickratio.asp>
- [66] Sheikh, R. (2021, December 13). Buy now pay later: How does it work? *BBC Panorama*. Retrieved December 15, 2021, from <https://www.bbc.com/news/explainers-59582188>
- [67] Shopify Inc. (2013, December 13). Shopify Announces \$100 Million Funding. Retrieved November 30, 2021, from <https://news.shopify.com/shopify-announces-100-million-funding>
- [68] Shopify Inc. (2014, February 4). Announces New Enterprise Customers: Google, DODOcase, Los Angeles Lakers. Retrieved December 1, 2021, from <https://news.shopify.com/shopify-launches-shopify-plus>
- [69] Shopify Inc. (2015). *Form F-1*. Retrieved December 21, 2021, from United States Securities and Exchange Commission: <https://www.sec.gov/Archives/edgar/data/1594805/000119312515129273/d863202df1.htm#toc>
- [70] Shopify Inc. (2016, February 17). *Form 20-F*. Retrieved November 30, 2021, from <https://d1lge852tjjqow.cloudfront.net/CIK-0001594805/830c0f57-15ad-4629-8f45-09dbb5532de2.pdf>
- [71] Shopify Inc. (2017, February 15). *Form 40-F*. Retrieved November 30, 2021, from <https://d18rn0p25nwr6d.cloudfront.net/CIK-0001594805/c6f2bbf3-8d32-46dc-a60e-cd8ef1146e5d.pdf>
- [72] Shopify Inc. (2018, February 15). *Form 40-F*. Retrieved December 4, 2021, from <https://d18rn0p25nwr6d.cloudfront.net/CIK-0001594805/b1945370-6a3b-4c34-a50d-8fb81098c0e9.pdf>
- [73] Shopify Inc. (2019, June 19). Introducing Shopify Fulfillment Network. Retrieved December 12, 2021, from <https://news.shopify.com/introducing-shopify-fulfillment-network>
- [74] Shopify Inc. (2019, September 9). Shopify to Acquire 6 River Systems. Retrieved November 30, 2021, from <https://news.shopify.com/shopify-to-acquire-6-river-systems>
- [75] Shopify Inc. (2021). Billing FAQ. Retrieved December 15, 2021, from <https://help.shopify.com/en/manual/your-account/manage-billing/your-invoice/faq>
- [76] Shopify Inc. (2021, February 17). *Form 40-F*. Retrieved November 30, 2021, from <https://d18rn0p25nwr6d.cloudfront.net/CIK-0001594805/c3898d01-52b6-4d9b-87dc-21744e8ba90d.pdf>
- [77] Shopify Inc. (2021, April 23). *Form 6-K*. Retrieved December 6, 2021, from <https://d18rn0p25nwr6d.cloudfront.net/CIK-0001594805/68de1e69-c2f8-4587-b071-7f9a73ebe7c8.pdf>

- [78] Shopify Inc. (2021, April 23). *Form 6-K*. Retrieved DEcember 21, 2021, from <https://d18rn0p25nwr6d.cloudfront.net/CIK-0001594805/68de1e69-c2f8-4587-b071-7f9a73ebe7c8.pdf>
- [79] Shopify Inc. (2021). Pricing. Retrieved December 6, 2021, from <https://www.shopify.com/pricing>
- [80] Shopify Inc. (2021). Shopify Capital. Retrieved December 6, 2021, from <https://www.shopify.com/capital>
- [81] Shopify Inc. (2021). Shopify Capital loan. Retrieved December 6, 2021, from <https://help.shopify.com/en/manual/your-account/shopify-capital/united-states/loan#faq>
- [82] Shopify Inc. (2021). Shopify Capital merchant cash advance. Retrieved December 6, 2021, from <https://help.shopify.com/en/manual/your-account/shopify-capital/united-states/merchant-cash-advance>
- [83] Shopify Inc. (2021). Shopify Contracting Party. Retrieved December 4, 2021, from <https://www.shopify.com/legal/country-list>
- [84] Singapore Business Directory. (2021). Shopify Commerce Singapore Pte. Ltd. Retrieved December 4, 2021, from <https://www.sgpbusiness.com/company/Shopify-Commerce-Singapore-Pte-Ltd>
- [85] Statista Research Department. (2021, July 8). Average market risk premium in Canada from 2011 to 2021. Retrieved December 28, 2021, from <https://www.statista.com/statistics/664845/average-market-risk-premium-canada/>
- [86] The World Bank. (2021). GDP (current US\$) - United States, China. Retrieved December 15, 2021, from <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?end=2020&locations=US-CN&start=1960>
- [87] The World Bank. (2021). GDP growth (annual %) - United States. Retrieved December 28, 2021, from <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?end=2019&locations=US&start=2010>
- [88] Thomas Plenborg, R. C. (2016, May). Best Practices in Applying Multiples for Valuation Purposes. *The Journal of Private Equity*, 55-64.
- [89] U.S. Census Bureau News. (2016, February 17). Quarterly Retail E-commerce Sales 4th Quarter 2015. *QUARTERLY RETAIL E-COMMERCE SALES 4th QUARTER 2015*. Retrieved December 25, 2021, from <https://www2.census.gov/retail/releases/historical/ecommm/15q4.pdf>

- [90] U.S. Census Bureau News. (2017, February 17). Quarterly Retail E-commerce Sales 4th Quarter 2016. Retrieved December 25, 2021, from <https://www2.census.gov/retail/releases/historical/ecommerce/16q4.pdf>
- [91] U.S. Census Bureau News. (2018, February 16). Quarterly Retail E-commerce Sales 4th Quarter 2017. Retrieved December 25, 2021, from <https://www2.census.gov/retail/releases/historical/ecommerce/17q4.pdf>
- [92] U.S. Census Bureau News. (2019, March 13). Quarterly Retail E-commerce Sales 4th Quarter 2018. Retrieved December 13, 2021, from <https://www2.census.gov/retail/releases/historical/ecommerce/18q4.pdf>
- [93] U.S. Census Bureau News. (2020, February 19). Quarterly Retail E-commerce Sales 4th Quarter 2019. Retrieved December 25, 2021, from <https://www2.census.gov/retail/releases/historical/ecommerce/19q4.pdf>
- [94] U.S. Census Bureau News. (2021, February 19). Quarterly Retail E-commerce Sales 4th Quarter 2020. Retrieved December 19, 2021, from <https://www2.census.gov/retail/releases/historical/ecommerce/20q4.pdf>
- [95] UNCTAD. (2021, March 15). How COVID-19 triggered the digital and e-commerce turning point. Retrieved December 15, 2021, from <https://unctad.org/news/how-covid-19-triggered-digital-and-e-commerce-turning-point>
- [96] Vynck, G. D. (2015, June 10). Shopify Merchants to Sell Through Facebook With 'Buy' Button. *Bloomberg*. Retrieved December 15, 2021, from <https://www.bloomberg.com/news/articles/2015-06-10/shopify-merchants-to-sell-directly-on-facebook-with-buy-button>
- [97] Warburton, M. (2021, July 28). Shopify files for mixed shelf offering of up to \$10 bln with SEC. *Reuters*. Retrieved December 21, 2021, from <https://www.reuters.com/article/shopify-equity-idUSL1N2P32TG>
- [98] Yahoo Finance. (2021). Amazon.com, Inc. (AMZN) Historical Data. Retrieved December 17, 2021, from <https://finance.yahoo.com/quote/AMZN/history?period1=1433116800&period2=1609372800&interval=1mo&filter=history&frequency=1mo&includeAdjustedClose=true>
- [99] Yahoo Finance. (2021). Block, Inc. (SQ) Historical Data. Retrieved December 17, 2021, from <https://finance.yahoo.com/quote/SQ/history?period1=1448928000&period2=1577750400&interval=1mo&filter=history&frequency=1mo&includeAdjustedClose=true>

- [100] Yahoo Finance. (2021). GoDaddy Inc. (GDDY) Historical Data. Retrieved December 17, 2021, from <https://finance.yahoo.com/quote/GDDY/history?period1=1433116800&period2=1577750400&interval=1mo&filter=history&frequency=1mo&includeAdjustedClose=true>
- [101] Yahoo Finance. (2021). PayPal Holdings, Inc. (PYPL) Historical Data. Retrieved December 17, 2021, from <https://finance.yahoo.com/quote/PYPL/history?period1=1438387200&period2=1577750400&interval=1mo&filter=history&frequency=1mo&includeAdjustedClose=true>
- [102] Yahoo Finance. (2021). S&P 500 (^GSPC) Historical Data. Retrieved December 17, 2021, from <https://finance.yahoo.com/quote/%5EGSPC/history?period1=-1325635200&period2=1577750400&interval=1mo&filter=history&frequency=1mo&includeAdjustedClose=true>
- [103] Yahoo Finance. (2021). Shopify Inc. (SHOP) Historical Data. Retrieved December 17, 2021, from <https://finance.yahoo.com/quote/SHOP/history?period1=1432080000&period2=1577750400&interval=1mo&filter=history&frequency=1mo&includeAdjustedClose=true>
- [104] Yahoo Finance. (2021, September 29). Shopify Inc. (SHOP) Holders. Retrieved December 6, 2021, from <https://finance.yahoo.com/quote/SHOP/holders?p=SHOP>
- [105] Yahoo Finance. (2021). Shopify Inc. (SHOP) Summary. Retrieved December 16, 2021, from <https://finance.yahoo.com/quote/SHOP/>
- [106] Yahoo Finance. (2021). Volution Group plc (FAN.L) Historical Data. Retrieved December 17, 2021, from <https://finance.yahoo.com/quote/FAN.L/history?period1=1433116800&period2=1577750400&interval=1mo&filter=history&frequency=1mo&includeAdjustedClose=true>
- [107] Yahoo Finance. (2021). Wix.com Ltd. (WIX) Historical Data. Retrieved December 17, 2021, from <https://finance.yahoo.com/quote/WIX/history?period1=1433116800&period2=1577750400&interval=1mo&filter=history&frequency=1mo&includeAdjustedClose=true>

9. Appendix

Appendix 1

	S&P 500	Shopify	GoDaddy	Wix	Amazon	PayPal	Square
		E beta: 1,30 A beta: 1,17 D beta: 0,00 F beta: 0,14	E beta: 0,69 A beta: 0,17 D beta: 0,00 F beta: 0,52	E beta: 1,50 A beta: 0,55 D beta: 0,00 F beta: 0,95	E beta: 1,63 A beta: 1,23 D beta: 0,16 F beta: 0,40	E beta: 0,88 A beta: 0,64 D beta: 0,11 F beta: 0,24	E beta: 3,35 A beta: 1,72 D beta: 0,03 F beta: 1,63
		Debt: 758 008 Equity: 6 400 723	Debt*: 2 376 800 Equity*: 772 000	Debt: 358 715 Equity: 207 749	Debt: 23 414 000 Equity: 62 060 000	Debt: 8 939 000 Equity: 20 063 000	Debt: 2 586 924 Equity: 2 681 569
av. last 3 years		Tax: 0,00%	Tax: 0,00%	Tax: 0,00%	Tax: 13,15%	Tax: 16,84%	Tax: 2,00%

*for year 2019

Source: Yahoo Finance, Shopify, Godady, Wix, Amazon, PayPal, Square

Date	Close	returns	Close	returns	Close	returns	Close	returns	Close	returns	Close	returns	Close	returns
Dec 01 2019	3230,78	3%	397,58	18%	67,92	2%	122,38	1%	1847,84	3%	108,17	0%	62,56	-9%
Oct 31 2019	3140,98	3%	336,75	7%	66,38	2%	120,89	-1%	1800,80	1%	108,01	4%	69,12	13%
Sep 30 2019	3037,56	2%	313,57	1%	65,03	-1%	122,07	5%	1776,66	2%	104,10	0%	61,43	-1%
Aug 31 2019	2976,74	2%	311,66	-19%	65,98	4%	116,74	-17%	1735,91	-2%	103,59	-5%	61,95	0%
Jul 31 2019	2926,46	-2%	385,39	21%	63,34	-14%	140,25	-6%	1776,29	-5%	109,05	-1%	61,84	-23%
Jun 30 2019	2980,38	1%	317,88	6%	73,38	5%	148,52	5%	1866,78	-1%	110,40	-4%	80,41	11%
May 31 2019	2941,76	7%	300,15	9%	70,15	-6%	142,10	3%	1893,63	7%	114,46	4%	72,53	17%
Apr 30 2019	2752,06	-7%	274,90	13%	74,40	-9%	137,34	2%	1775,07	-8%	109,75	-3%	61,95	-15%
Mar 31 2019	2945,83	4%	243,53	18%	81,50	8%	134,16	11%	1926,52	8%	112,77	9%	72,82	-3%
Mar 01 2019	2834,40	2%	206,62	9%	75,19	1%	120,83	11%	1780,75	9%	103,84	6%	74,92	-8%
Feb 01 2019	2784,49	3%	189,15	12%	74,65	9%	109,25	0%	1639,83	-5%	98,07	10%	81,24	14%
Jan 01 2019	2704,10	8%	168,47	22%	68,63	5%	109,35	21%	1718,73	14%	88,76	6%	71,35	27%
Dec 01 2018	2506,85	-9%	138,45	-9%	65,62	1%	90,34	-4%	1501,97	-11%	84,09	-2%	56,09	-20%
Oct 31 2018	2760,17	2%	152,66	11%	65,26	-11%	94,18	-3%	1690,17	6%	85,81	2%	69,84	-5%
Sep 30 2018	2711,74	-7%	138,15	-16%	73,17	-12%	97,35	-19%	1598,01	-20%	84,19	-4%	73,45	-26%
Aug 31 2018	2913,98	0%	164,46	13%	83,39	2%	119,70	8%	2003,00	0%	87,84	-5%	99,01	12%
Jul 31 2018	2901,52	3%	145,67	5%	81,46	11%	111,10	17%	2012,71	13%	92,33	12%	88,64	37%
Jun 30 2018	2816,29	4%	138,21	-5%	73,62	4%	95,00	-5%	1777,44	5%	82,14	-1%	64,65	5%
May 31 2018	2718,37	0%	145,89	-1%	70,60	-1%	100,30	15%	1699,80	4%	83,27	1%	61,64	6%
Apr 30 2018	2705,27	2%	148,09	11%	71,59	11%	86,95	6%	1629,62	4%	82,07	10%	58,25	23%
Mar 31 2018	2648,05	0%	133,63	7%	64,56	5%	82,25	3%	1566,13	8%	74,61	-2%	47,34	-4%
Mar 01 2018	2640,87	-3%	124,59	-10%	61,42	3%	79,55	6%	1447,34	-4%	75,87	-4%	49,20	7%
Feb 01 2018	2713,83	-4%	138,21	8%	59,81	8%	75,05	23%	1512,45	4%	79,41	-7%	46,05	-2%
Jan 01 2018	2823,81	6%	127,92	27%	55,23	10%	61,05	6%	1450,89	24%	85,32	16%	46,91	35%
Dec 01 2017	2673,61	1%	101,00	-3%	50,28	3%	57,55	5%	1169,47	-1%	73,62	-3%	34,67	-12%
Oct 31 2017	2647,58	3%	103,82	4%	48,65	4%	54,90	-21%	1176,75	6%	75,73	4%	39,22	5%
Sep 30 2017	2575,26	2%	99,49	-15%	46,70	7%	69,80	-3%	1105,28	15%	72,56	13%	37,19	29%
Aug 31 2017	2519,36	2%	116,49	5%	43,51	-3%	71,85	10%	961,35	-2%	64,03	4%	28,81	10%
Jul 31 2017	2471,65	0%	110,92	20%	44,82	4%	65,10	6%	980,60	-1%	61,68	5%	26,11	-1%
Jun 30 2017	2470,30	2%	92,37	6%	42,98	1%	61,70	-11%	987,78	2%	58,55	9%	26,35	12%
May 31 2017	2423,41	0%	86,90	-5%	42,42	3%	69,60	-6%	968,00	-3%	53,67	3%	23,46	2%
Apr 30 2017	2411,80	1%	91,86	21%	41,14	6%	73,70	-11%	994,62	8%	52,21	9%	22,99	26%
Mar 31 2017	2384,20	1%	75,95	12%	38,92	3%	82,45	21%	924,99	4%	47,72	11%	18,24	6%
Mar 01 2017	2362,72	0%	68,09	15%	37,90	3%	67,90	9%	886,54	5%	43,02	2%	17,28	0%
Feb 01 2017	2363,64	4%	59,21	17%	36,85	3%	62,30	19%	845,04	3%	42,00	6%	17,32	18%
Jan 01 2017	2278,87	2%	50,82	19%	35,73	2%	52,55	18%	823,48	10%	39,78	1%	14,62	7%
Dec 01 2016	2238,83	2%	42,87	3%	34,95	-1%	44,55	-10%	749,87	0%	39,47	0%	13,63	5%
Oct 31 2016	2198,81	3%	41,67	1%	35,34	-1%	49,50	24%	750,57	-5%	39,28	-6%	12,94	16%
Sep 30 2016	2126,15	-2%	41,45	-3%	35,79	4%	40,00	-8%	789,82	-6%	41,66	2%	11,20	-4%
Aug 31 2016	2168,27	0%	42,92	4%	34,53	7%	43,43	4%	837,31	9%	40,97	10%	11,66	-4%
Jul 31 2016	2170,95	0%	41,36	21%	32,38	8%	41,82	17%	769,16	1%	37,15	0%	12,19	21%
Jun 30 2016	2173,60	4%	34,27	11%	29,92	-4%	35,60	17%	758,81	6%	37,24	2%	10,07	11%
May 31 2016	2098,86	0%	30,76	5%	31,19	-4%	30,35	10%	715,62	-1%	36,51	-3%	9,05	-5%
Apr 30 2016	2096,95	2%	29,29	-8%	32,53	7%	27,66	12%	722,79	10%	37,79	-4%	9,53	-36%
Mar 31 2016	2065,30	0%	31,85	13%	30,37	-6%	24,72	22%	659,59	11%	39,18	2%	14,89	-3%
Mar 01 2016	2059,74	7%	28,21	26%	32,33	3%	20,27	5%	593,64	7%	38,60	1%	15,28	46%
Feb 01 2016	1932,23	0%	22,38	-4%	31,35	3%	19,23	-6%	552,52	-6%	38,14	6%	10,44	19%
Jan 01 2016	1940,24	-5%	23,22	-10%	30,49	-5%	20,42	-10%	587,00	-13%	36,14	0%	8,77	-33%
Dec 01 2015	2043,94	-2%	25,80	-2%	32,06	3%	22,75	-8%	675,89	2%	36,20	3%	13,09	
Oct 31 2015	2080,41	0%	26,34	-18%	31,07	13%	24,85	12%	664,80	6%	35,26	-2%		
Sep 30 2015	2079,36	8%	32,22	-8%	27,48	9%	22,12	27%	625,90	22%	36,01	16%		
Aug 31 2015	1920,03	-3%	35,20	28%	25,21	1%	17,42	-12%	511,89	0%	31,04	-11%		
Jul 31 2015	1972,18	-6%	27,54	-26%	25,08	-12%	19,75	-29%	512,89	-4%	35,00			
Jun 30 2015	2103,84	2%	37,39	10%	28,44	1%	28,00	19%	536,15	24%				
May 31 2015	2063,11		33,95		28,19		23,62		434,09					

Appendix 2

Shopify 2019	
mean:	0,46%
var:	0,07%
daily std:	2,74%
annualized std:	43,25%

Shopify 2020	
mean:	0,51%
var:	0,18%
daily std:	4,24%
annualized std:	67,19%

Date	Close	Returns	$(X_t - \bar{X})^2$
Dec 30 2019	396,36	-2,85%	0,11%
Dec 27 2019	408,00	-0,18%	0,00%
Dec 26 2019	408,75	2,34%	0,04%
Dec 24 2019	399,39	2,64%	0,05%
Dec 23 2019	389,13	-0,24%	0,00%
Dec 20 2019	390,07	-0,76%	0,01%
Dec 19 2019	393,06	-0,98%	0,02%
Dec 18 2019	396,94	2,32%	0,03%
Dec 17 2019	387,95	-1,44%	0,04%
Dec 16 2019	393,63	2,09%	0,03%
Dec 13 2019	385,57	3,63%	0,10%
Dec 12 2019	372,05	-0,28%	0,01%
Dec 11 2019	373,08	1,38%	0,01%
Dec 10 2019	368,00	-0,48%	0,01%
Dec 09 2019	369,79	1,42%	0,01%
Dec 06 2019	364,60	0,28%	0,00%
Dec 05 2019	363,59	-2,26%	0,07%
Dec 04 2019	372,00	6,09%	0,32%
Dec 03 2019	350,66	5,99%	0,31%
Dec 02 2019	330,84	-1,76%	0,05%
Nov 29 2019	336,75	-1,25%	0,03%
Nov 27 2019	341,00	1,43%	0,01%
Nov 26 2019	336,19	6,03%	0,31%
Nov 25 2019	317,07	0,81%	0,00%
Nov 22 2019	314,52	-0,49%	0,01%
Nov 21 2019	316,07	-0,31%	0,01%
Nov 20 2019	317,05	0,24%	0,00%
Nov 19 2019	316,28	-2,07%	0,06%
Nov 18 2019	322,98	3,39%	0,09%
Nov 15 2019	312,38	-0,02%	0,00%
Nov 14 2019	312,45	-0,59%	0,01%
Nov 13 2019	314,31	2,86%	0,06%
Nov 12 2019	305,56	0,74%	0,00%
Nov 11 2019	303,32	1,91%	0,02%
Nov 08 2019	297,64	4,16%	0,14%
Nov 07 2019	285,75	-3,14%	0,13%
Nov 06 2019	295,02	-0,16%	0,00%
Nov 05 2019	295,50	-4,03%	0,20%
Nov 04 2019	307,91	-2,79%	0,11%

Date	Close	Returns	$(X_t - \bar{X})^2$
Dec 30 2020	1163,00	-0,73%	0,02%
Dec 29 2020	1171,61	2,14%	0,03%
Dec 28 2020	1147,06	-6,40%	0,48%
Dec 24 2020	1225,52	2,30%	0,03%
Dec 23 2020	1197,96	-6,20%	0,45%
Dec 22 2020	1277,08	6,67%	0,38%
Dec 21 2020	1197,26	2,25%	0,03%
Dec 18 2020	1170,96	-0,77%	0,02%
Dec 17 2020	1180,00	1,96%	0,02%
Dec 16 2020	1157,31	7,75%	0,52%
Dec 15 2020	1074,10	1,41%	0,01%
Dec 14 2020	1059,17	0,12%	0,00%
Dec 11 2020	1057,87	-0,89%	0,02%
Dec 10 2020	1067,37	2,81%	0,05%
Dec 09 2020	1038,19	-5,80%	0,40%
Dec 08 2020	1102,09	1,63%	0,01%
Dec 07 2020	1084,40	2,89%	0,06%
Dec 04 2020	1053,89	-0,83%	0,02%
Dec 03 2020	1062,68	-1,55%	0,04%
Dec 02 2020	1079,44	0,97%	0,00%
Dec 01 2020	1069,06	-1,96%	0,06%
Nov 30 2020	1090,38	5,41%	0,24%
Nov 27 2020	1034,39	1,46%	0,01%
Nov 25 2020	1019,52	4,97%	0,20%
Nov 24 2020	971,24	-0,89%	0,02%
Nov 23 2020	980,01	-0,86%	0,02%
Nov 20 2020	988,51	2,25%	0,03%
Nov 19 2020	966,77	3,79%	0,11%
Nov 18 2020	931,43	1,90%	0,02%
Nov 17 2020	914,02	-0,57%	0,01%
Nov 16 2020	919,22	0,10%	0,00%
Nov 13 2020	918,30	-0,81%	0,02%
Nov 12 2020	925,80	-2,26%	0,08%
Nov 11 2020	947,18	6,93%	0,41%
Nov 10 2020	885,76	-1,87%	0,06%
Nov 09 2020	902,60	-13,63%	2,00%
Nov 06 2020	1045,00	0,82%	0,00%
Nov 05 2020	1036,50	4,07%	0,13%
Nov 04 2020	996,00	5,76%	0,28%

Nov 01 2019	316,76	1,02%	0,00%
Oct 31 2019	313,57	-1,74%	0,05%
Oct 30 2019	319,12	2,11%	0,03%
Oct 29 2019	312,52	-3,82%	0,18%
Oct 28 2019	324,93	2,36%	0,04%
Oct 25 2019	317,45	-1,82%	0,05%
Oct 24 2019	323,34	8,82%	0,70%
Oct 23 2019	297,14	-0,85%	0,02%
Oct 22 2019	299,69	-6,27%	0,45%
Oct 21 2019	319,73	1,71%	0,02%
Oct 18 2019	314,34	-5,13%	0,31%
Oct 17 2019	331,34	2,38%	0,04%
Oct 16 2019	323,64	-6,48%	0,48%
Oct 15 2019	346,08	0,52%	0,00%
Oct 14 2019	344,30	4,57%	0,17%
Oct 11 2019	329,26	1,48%	0,01%
Oct 10 2019	324,47	3,38%	0,09%
Oct 09 2019	313,85	0,90%	0,00%
Oct 08 2019	311,05	-4,68%	0,26%
Oct 07 2019	326,32	-0,27%	0,01%
Oct 04 2019	327,20	0,50%	0,00%
Oct 03 2019	325,57	4,90%	0,20%
Oct 02 2019	310,36	-0,91%	0,02%
Oct 01 2019	313,22	0,50%	0,00%
Sep 30 2019	311,66	1,95%	0,02%
Sep 27 2019	305,69	-2,38%	0,08%
Sep 26 2019	313,14	-0,46%	0,01%
Sep 25 2019	314,60	6,47%	0,36%
Sep 24 2019	295,47	-5,68%	0,38%
Sep 23 2019	313,26	-1,74%	0,05%
Sep 20 2019	318,82	-1,90%	0,06%
Sep 19 2019	325,00	-0,26%	0,01%
Sep 18 2019	325,85	-0,90%	0,02%
Sep 17 2019	328,82	-2,70%	0,10%
Sep 16 2019	337,93	-0,11%	0,00%
Sep 13 2019	338,31	-5,14%	0,31%
Sep 12 2019	356,63	2,62%	0,05%
Sep 11 2019	347,51	3,05%	0,07%
Sep 10 2019	337,24	-5,97%	0,41%
Sep 09 2019	358,67	-5,72%	0,38%
Sep 06 2019	380,42	-3,13%	0,13%
Sep 05 2019	392,72	1,61%	0,01%
Sep 04 2019	386,49	0,67%	0,00%
Sep 03 2019	383,91	-0,38%	0,01%
Aug 30 2019	385,39	-1,61%	0,04%
Aug 29 2019	391,71	-0,78%	0,02%
Aug 28 2019	394,80	-3,00%	0,12%
Aug 27 2019	406,99	2,79%	0,05%
Aug 26 2019	395,96	3,45%	0,09%

Nov 03 2020	941,72	2,92%	0,06%
Nov 02 2020	914,99	-1,13%	0,03%
Oct 30 2020	925,43	-5,28%	0,33%
Oct 29 2020	977,00	-4,84%	0,29%
Oct 28 2020	1026,71	-5,19%	0,32%
Oct 27 2020	1082,89	4,32%	0,15%
Oct 26 2020	1038,05	1,15%	0,00%
Oct 23 2020	1026,22	1,90%	0,02%
Oct 22 2020	1007,07	-1,46%	0,04%
Oct 21 2020	1022,01	-3,26%	0,14%
Oct 20 2020	1056,49	-1,17%	0,03%
Oct 19 2020	1069,00	0,17%	0,00%
Oct 16 2020	1067,21	-1,03%	0,02%
Oct 15 2020	1078,30	-0,35%	0,01%
Oct 14 2020	1082,12	-2,21%	0,07%
Oct 13 2020	1106,59	1,52%	0,01%
Oct 12 2020	1090,00	-0,55%	0,01%
Oct 09 2020	1096,00	2,51%	0,04%
Oct 08 2020	1069,21	-0,39%	0,01%
Oct 07 2020	1073,43	3,09%	0,07%
Oct 06 2020	1041,25	-2,28%	0,08%
Oct 05 2020	1065,53	3,55%	0,09%
Oct 02 2020	1028,99	-2,41%	0,09%
Oct 01 2020	1054,43	3,08%	0,07%
Sep 30 2020	1022,97	-0,27%	0,01%
Sep 29 2020	1025,70	6,13%	0,32%
Sep 28 2020	966,50	0,58%	0,00%
Sep 25 2020	960,92	5,76%	0,28%
Sep 24 2020	908,61	-1,11%	0,03%
Sep 23 2020	918,81	-3,71%	0,18%
Sep 22 2020	954,25	2,84%	0,05%
Sep 21 2020	927,89	2,95%	0,06%
Sep 18 2020	901,34	3,51%	0,09%
Sep 17 2020	870,76	-1,63%	0,05%
Sep 16 2020	885,18	-4,76%	0,28%
Sep 15 2020	929,39	-0,26%	0,01%
Sep 14 2020	931,83	1,90%	0,02%
Sep 11 2020	914,50	-2,11%	0,07%
Sep 10 2020	934,17	-1,59%	0,04%
Sep 09 2020	949,31	3,48%	0,09%
Sep 08 2020	917,40	-5,72%	0,39%
Sep 04 2020	973,02	-4,20%	0,22%
Sep 03 2020	1015,70	-5,48%	0,36%
Sep 02 2020	1074,59	-5,27%	0,33%
Sep 01 2020	1134,32	6,37%	0,34%
Aug 31 2020	1066,42	2,34%	0,03%
Aug 28 2020	1042,06	-1,09%	0,03%
Aug 27 2020	1053,50	-3,29%	0,14%
Aug 26 2020	1089,33	5,03%	0,20%

Aug 23 2019	382,75	-1,49%	0,04%
Aug 22 2019	388,54	-0,33%	0,01%
Aug 21 2019	389,83	3,96%	0,12%
Aug 20 2019	374,97	3,63%	0,10%
Aug 19 2019	361,83	0,86%	0,00%
Aug 16 2019	358,74	2,18%	0,03%
Aug 15 2019	351,07	-0,49%	0,01%
Aug 14 2019	352,80	-4,45%	0,24%
Aug 13 2019	369,23	0,68%	0,00%
Aug 12 2019	366,73	-0,87%	0,02%
Aug 09 2019	369,95	3,39%	0,09%
Aug 08 2019	357,81	4,83%	0,19%
Aug 07 2019	341,31	2,60%	0,05%
Aug 06 2019	332,67	3,51%	0,09%
Aug 05 2019	321,39	-3,25%	0,14%
Aug 02 2019	332,19	-2,69%	0,10%
Aug 01 2019	341,39	7,40%	0,48%
Jul 31 2019	317,88	1,14%	0,00%
Jul 30 2019	314,30	-1,69%	0,05%
Jul 29 2019	319,71	-5,00%	0,30%
Jul 26 2019	336,54	0,96%	0,00%
Jul 25 2019	333,34	1,14%	0,00%
Jul 24 2019	329,57	-0,20%	0,00%
Jul 23 2019	330,22	-1,50%	0,04%
Jul 22 2019	335,24	1,59%	0,01%
Jul 19 2019	330,00	-0,35%	0,01%
Jul 18 2019	331,15	1,79%	0,02%
Jul 17 2019	325,32	2,50%	0,04%
Jul 16 2019	317,39	-2,05%	0,06%
Jul 15 2019	324,02	4,52%	0,16%
Jul 12 2019	310,02	-1,58%	0,04%
Jul 11 2019	315,00	-1,26%	0,03%
Jul 10 2019	319,01	-0,92%	0,02%
Jul 09 2019	321,98	0,31%	0,00%
Jul 08 2019	321,00	2,32%	0,03%
Jul 05 2019	313,72	0,12%	0,00%
Jul 03 2019	313,33	0,44%	0,00%
Jul 02 2019	311,96	2,39%	0,04%
Jul 01 2019	304,68	1,51%	0,01%
Jun 28 2019	300,15	-0,27%	0,01%
Jun 27 2019	300,96	4,13%	0,13%
Jun 26 2019	289,03	1,76%	0,02%
Jun 25 2019	284,04	-8,91%	0,88%
Jun 24 2019	311,83	-4,60%	0,26%
Jun 21 2019	326,85	-0,35%	0,01%
Jun 20 2019	328,01	0,30%	0,00%
Jun 19 2019	327,02	7,50%	0,50%
Jun 18 2019	304,21	-0,54%	0,01%
Jun 17 2019	305,85	0,24%	0,00%

Aug 25 2020	1037,19	3,79%	0,11%
Aug 24 2020	999,32	-2,13%	0,07%
Aug 21 2020	1021,12	-1,78%	0,05%
Aug 20 2020	1039,62	3,02%	0,06%
Aug 19 2020	1009,11	-1,52%	0,04%
Aug 18 2020	1024,71	1,16%	0,00%
Aug 17 2020	1012,96	2,54%	0,04%
Aug 14 2020	987,90	-1,20%	0,03%
Aug 13 2020	999,90	0,90%	0,00%
Aug 12 2020	991,00	1,96%	0,02%
Aug 11 2020	971,99	-3,34%	0,15%
Aug 10 2020	1005,56	-4,52%	0,25%
Aug 07 2020	1053,12	-3,22%	0,14%
Aug 06 2020	1088,13	-0,60%	0,01%
Aug 05 2020	1094,65	1,36%	0,01%
Aug 04 2020	1080,00	-0,28%	0,01%
Aug 03 2020	1083,05	5,77%	0,28%
Jul 31 2020	1024,00	-2,37%	0,08%
Jul 30 2020	1048,84	-0,45%	0,01%
Jul 29 2020	1053,59	6,96%	0,42%
Jul 28 2020	985,00	0,88%	0,00%
Jul 27 2020	976,39	5,01%	0,20%
Jul 24 2020	929,81	0,15%	0,00%
Jul 23 2020	928,41	-3,02%	0,12%
Jul 22 2020	957,33	0,47%	0,00%
Jul 21 2020	952,83	-5,60%	0,37%
Jul 20 2020	1009,39	8,76%	0,68%
Jul 17 2020	928,13	0,29%	0,00%
Jul 16 2020	925,49	-3,54%	0,16%
Jul 15 2020	959,45	-1,54%	0,04%
Jul 14 2020	974,41	0,58%	0,00%
Jul 13 2020	968,75	-6,12%	0,44%
Jul 10 2020	1031,86	-0,78%	0,02%
Jul 09 2020	1040,02	2,23%	0,03%
Jul 08 2020	1017,30	0,33%	0,00%
Jul 07 2020	1013,99	2,76%	0,05%
Jul 06 2020	986,77	-4,19%	0,22%
Jul 02 2020	1029,97	1,31%	0,01%
Jul 01 2020	1016,64	7,10%	0,44%
Jun 30 2020	949,20	2,90%	0,06%
Jun 29 2020	922,42	1,36%	0,01%
Jun 26 2020	910,00	-0,69%	0,01%
Jun 25 2020	916,32	2,15%	0,03%
Jun 24 2020	897,00	-1,57%	0,04%
Jun 23 2020	911,34	0,72%	0,00%
Jun 22 2020	904,81	2,70%	0,05%
Jun 19 2020	881,00	2,02%	0,02%
Jun 18 2020	863,56	5,65%	0,26%
Jun 17 2020	817,36	1,44%	0,01%

Jun 14 2019	305,11	-0,61%	0,01%
Jun 13 2019	306,99	-1,02%	0,02%
Jun 12 2019	310,14	1,12%	0,00%
Jun 11 2019	306,71	-0,01%	0,00%
Jun 10 2019	306,73	0,55%	0,00%
Jun 07 2019	305,05	2,69%	0,05%
Jun 06 2019	297,06	1,55%	0,01%
Jun 05 2019	292,52	6,76%	0,40%
Jun 04 2019	274,00	3,40%	0,09%
Jun 03 2019	265,00	-3,60%	0,17%
May 31 2019	274,90	-0,78%	0,02%
May 30 2019	277,05	1,60%	0,01%
May 29 2019	272,68	-3,45%	0,15%
May 28 2019	282,43	2,39%	0,04%
May 24 2019	275,85	1,56%	0,01%
May 23 2019	271,62	-2,65%	0,10%
May 22 2019	279,00	2,27%	0,03%
May 21 2019	272,81	2,10%	0,03%
May 20 2019	267,19	-2,31%	0,08%
May 17 2019	273,50	-1,62%	0,04%
May 16 2019	278,01	5,24%	0,23%
May 15 2019	264,16	4,35%	0,15%
May 14 2019	253,15	0,94%	0,00%
May 13 2019	250,79	-3,11%	0,13%
May 10 2019	258,83	-0,69%	0,01%
May 09 2019	260,62	-0,34%	0,01%
May 08 2019	261,51	1,09%	0,00%
May 07 2019	258,69	-2,57%	0,09%
May 06 2019	265,52	0,56%	0,00%
May 03 2019	264,03	3,32%	0,08%
May 02 2019	255,54	4,23%	0,14%
May 01 2019	245,16	0,67%	0,00%
Apr 30 2019	243,53	7,86%	0,55%
Apr 29 2019	225,79	1,58%	0,01%
Apr 26 2019	222,28	1,51%	0,01%
Apr 25 2019	218,97	-0,38%	0,01%
Apr 24 2019	219,81	-1,62%	0,04%
Apr 23 2019	223,44	-0,38%	0,01%
Apr 22 2019	224,29	1,62%	0,01%
Apr 18 2019	220,72	1,69%	0,02%
Apr 17 2019	217,05	0,77%	0,00%
Apr 16 2019	215,40	-1,21%	0,03%
Apr 15 2019	218,03	1,49%	0,01%
Apr 12 2019	214,83	1,82%	0,02%
Apr 11 2019	210,99	2,17%	0,03%
Apr 10 2019	206,50	1,25%	0,01%
Apr 09 2019	203,96	1,86%	0,02%
Apr 08 2019	200,24	1,83%	0,02%
Apr 05 2019	196,65	0,98%	0,00%

Jun 16 2020	805,76	0,04%	0,00%
Jun 15 2020	805,47	8,47%	0,63%
Jun 12 2020	742,58	2,41%	0,04%
Jun 11 2020	725,12	-2,49%	0,09%
Jun 10 2020	743,64	0,26%	0,00%
Jun 09 2020	741,70	1,51%	0,01%
Jun 08 2020	730,67	0,40%	0,00%
Jun 05 2020	727,77	-1,01%	0,02%
Jun 04 2020	735,19	-3,52%	0,16%
Jun 03 2020	762,02	-2,24%	0,08%
Jun 02 2020	779,50	2,84%	0,05%
Jun 01 2020	758,00	0,03%	0,00%
May 29 2020	757,80	1,80%	0,02%
May 28 2020	744,43	-0,74%	0,02%
May 27 2020	750,00	-2,33%	0,08%
May 26 2020	767,89	-6,94%	0,56%
May 22 2020	825,17	2,84%	0,05%
May 21 2020	802,35	3,13%	0,07%
May 20 2020	778,00	3,32%	0,08%
May 19 2020	753,01	2,03%	0,02%
May 18 2020	738,02	-3,78%	0,18%
May 15 2020	767,00	1,69%	0,01%
May 14 2020	754,29	-0,01%	0,00%
May 13 2020	754,38	1,63%	0,01%
May 12 2020	742,28	-1,07%	0,03%
May 11 2020	750,34	5,84%	0,28%
May 08 2020	708,97	-1,91%	0,06%
May 07 2020	722,76	-1,47%	0,04%
May 06 2020	733,53	6,91%	0,41%
May 05 2020	686,11	4,13%	0,13%
May 04 2020	658,89	7,37%	0,47%
May 01 2020	613,64	-2,95%	0,12%
Apr 30 2020	632,29	-1,20%	0,03%
Apr 29 2020	639,99	1,00%	0,00%
Apr 28 2020	633,65	0,81%	0,00%
Apr 27 2020	628,58	-2,27%	0,08%
Apr 24 2020	643,19	3,66%	0,10%
Apr 23 2020	620,49	-0,97%	0,02%
Apr 22 2020	626,56	7,10%	0,44%
Apr 21 2020	585,00	-7,13%	0,58%
Apr 20 2020	629,90	6,69%	0,38%
Apr 17 2020	590,39	12,15%	1,36%
Apr 16 2020	526,43	5,89%	0,29%
Apr 15 2020	497,17	0,22%	0,00%
Apr 14 2020	496,06	10,86%	1,07%
Apr 13 2020	447,45	7,11%	0,44%
Apr 09 2020	417,74	0,78%	0,00%
Apr 08 2020	414,51	9,50%	0,81%
Apr 07 2020	378,54	-3,59%	0,17%

Apr 04 2019	194,75	-5,06%	0,30%
Apr 03 2019	205,12	1,82%	0,02%
Apr 02 2019	201,46	-2,22%	0,07%
Apr 01 2019	206,04	-0,28%	0,01%
Mar 29 2019	206,62	1,56%	0,01%
Mar 28 2019	203,45	1,68%	0,01%
Mar 27 2019	200,08	-2,10%	0,07%
Mar 26 2019	204,37	1,45%	0,01%
Mar 25 2019	201,45	1,36%	0,01%
Mar 22 2019	198,75	-3,05%	0,12%
Mar 21 2019	205,00	1,82%	0,02%
Mar 20 2019	201,34	-0,37%	0,01%
Mar 19 2019	202,09	-1,79%	0,05%
Mar 18 2019	205,77	-0,10%	0,00%
Mar 15 2019	205,98	-1,08%	0,02%
Mar 14 2019	208,23	1,32%	0,01%
Mar 13 2019	205,51	1,50%	0,01%
Mar 12 2019	202,47	1,04%	0,00%
Mar 11 2019	200,39	5,60%	0,26%
Mar 08 2019	189,76	1,51%	0,01%
Mar 07 2019	186,94	-0,23%	0,00%
Mar 06 2019	187,37	-0,07%	0,00%
Mar 05 2019	187,50	0,55%	0,00%
Mar 04 2019	186,47	-2,64%	0,10%
Mar 01 2019	191,52	1,25%	0,01%
Feb 28 2019	189,15	-0,03%	0,00%
Feb 27 2019	189,20	2,25%	0,03%
Feb 26 2019	185,03	-1,32%	0,03%
Feb 25 2019	187,50	2,11%	0,03%
Feb 22 2019	183,63	2,89%	0,06%
Feb 21 2019	178,47	-0,41%	0,01%
Feb 20 2019	179,21	-1,15%	0,03%
Feb 19 2019	181,30	1,75%	0,02%
Feb 15 2019	178,19	0,95%	0,00%
Feb 14 2019	176,52	2,62%	0,05%
Feb 13 2019	172,02	-2,01%	0,06%
Feb 12 2019	175,55	1,37%	0,01%
Feb 11 2019	173,17	-1,58%	0,04%
Feb 08 2019	175,95	2,42%	0,04%
Feb 07 2019	171,80	-1,04%	0,02%
Feb 06 2019	173,60	0,02%	0,00%
Feb 05 2019	173,57	0,01%	0,00%
Feb 04 2019	173,55	1,74%	0,02%
Feb 01 2019	170,59	1,26%	0,01%
Jan 31 2019	168,47	3,72%	0,11%
Jan 30 2019	162,43	3,39%	0,09%
Jan 29 2019	157,11	-1,46%	0,04%
Jan 28 2019	159,44	-2,08%	0,06%
Jan 25 2019	162,82	2,78%	0,05%

Apr 06 2020	392,65	9,79%	0,86%
Apr 03 2020	357,65	3,28%	0,08%
Apr 02 2020	346,30	-9,97%	1,10%
Apr 01 2020	384,67	-7,74%	0,68%
Mar 31 2020	416,93	-3,13%	0,13%
Mar 30 2020	430,38	2,08%	0,02%
Mar 27 2020	421,62	-5,76%	0,39%
Mar 26 2020	447,41	0,18%	0,00%
Mar 25 2020	446,60	3,86%	0,11%
Mar 24 2020	430,00	14,55%	1,97%
Mar 23 2020	375,39	8,48%	0,63%
Mar 20 2020	346,06	4,08%	0,13%
Mar 19 2020	332,50	-1,29%	0,03%
Mar 18 2020	336,83	-5,14%	0,32%
Mar 17 2020	355,09	10,18%	0,93%
Mar 16 2020	322,29	-17,55%	3,26%
Mar 13 2020	390,90	3,47%	0,09%
Mar 12 2020	377,78	-10,54%	1,22%
Mar 11 2020	422,31	-6,22%	0,45%
Mar 10 2020	450,34	7,65%	0,51%
Mar 09 2020	418,32	-11,39%	1,41%
Mar 06 2020	472,07	-5,25%	0,33%
Mar 05 2020	498,22	-2,74%	0,11%
Mar 04 2020	512,23	7,40%	0,47%
Mar 03 2020	476,94	-2,35%	0,08%
Mar 02 2020	488,40	5,42%	0,24%
Feb 28 2020	463,31	5,69%	0,27%
Feb 27 2020	438,37	-6,96%	0,56%
Feb 26 2020	471,18	1,01%	0,00%
Feb 25 2020	466,46	-4,99%	0,30%
Feb 24 2020	490,96	-5,70%	0,39%
Feb 21 2020	520,66	-2,79%	0,11%
Feb 20 2020	535,58	-1,40%	0,04%
Feb 19 2020	543,21	1,27%	0,01%
Feb 18 2020	536,41	0,98%	0,00%
Feb 14 2020	531,22	-0,33%	0,01%
Feb 13 2020	532,97	0,32%	0,00%
Feb 12 2020	531,25	7,81%	0,53%
Feb 11 2020	492,75	0,22%	0,00%
Feb 10 2020	491,69	2,72%	0,05%
Feb 07 2020	478,69	1,21%	0,00%
Feb 06 2020	472,98	-0,54%	0,01%
Feb 05 2020	475,56	-2,04%	0,06%
Feb 04 2020	485,46	3,42%	0,08%
Feb 03 2020	469,39	0,80%	0,00%
Jan 31 2020	465,66	-2,35%	0,08%
Jan 30 2020	476,88	1,10%	0,00%
Jan 29 2020	471,67	0,86%	0,00%
Jan 28 2020	467,66	3,67%	0,10%

Jan 24 2019	158,41	1,16%	0,00%
Jan 23 2019	156,60	0,20%	0,00%
Jan 22 2019	156,28	-1,36%	0,03%
Jan 18 2019	158,43	0,47%	0,00%
Jan 17 2019	157,69	-0,35%	0,01%
Jan 16 2019	158,25	2,56%	0,04%
Jan 15 2019	154,30	3,49%	0,09%
Jan 14 2019	149,10	-0,22%	0,00%
Jan 11 2019	149,43	0,78%	0,00%
Jan 10 2019	148,27	-0,24%	0,00%
Jan 09 2019	148,62	2,19%	0,03%
Jan 08 2019	145,44	0,73%	0,00%
Jan 07 2019	144,39	4,58%	0,17%
Jan 04 2019	138,06	6,37%	0,35%
Jan 03 2019	129,79	-5,68%	0,38%
Jan 02 2019	137,60		

Jan 27 2020	451,11	-3,09%	0,13%
Jan 24 2020	465,48	-0,80%	0,02%
Jan 23 2020	469,25	0,97%	0,00%
Jan 22 2020	464,76	-0,15%	0,00%
Jan 21 2020	465,44	2,32%	0,03%
Jan 17 2020	454,88	0,79%	0,00%
Jan 16 2020	451,30	0,62%	0,00%
Jan 15 2020	448,51	1,65%	0,01%
Jan 14 2020	441,22	0,22%	0,00%
Jan 13 2020	440,25	2,58%	0,04%
Jan 10 2020	429,17	-0,24%	0,01%
Jan 09 2020	430,20	2,89%	0,06%
Jan 08 2020	418,10	0,87%	0,00%
Jan 07 2020	414,50	0,28%	0,00%
Jan 06 2020	413,33	2,24%	0,03%
Jan 03 2020	404,29	-0,86%	0,02%
Jan 02 2020	407,81		

Appendix 3

Stock option valuation with Black-Scholes model

Stock price	S_0	1 131,95
Adjusted stock price	$S_{0\ adj}$	1 098,84
Strike price	K	125,72
Time to maturity	T	4,41
Stock volatility	σ	67,19%
Variance	σ^2	45,14%
Risk-free rate	r	1,50%
Number of shares	n_s	119 569 705
Number of options	n_o	3 603 100

$$\frac{d_1}{N(d_1)} \quad 2,29 \quad 0,99$$

$$\frac{d_2}{N(d_2)} \quad 0,88 \quad 0,81$$

$$c = 991,39$$

value of all vesting options: 3 572 071 547,55

Appendix 4

Income Statement																
	ACT								PLAN							
in US \$000's	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Revenues																
Subscriptions solutions	111 979	188 606	310 031	464 996	642 241	908 757	1 355 429	1 751 984	2 036 690	2 271 686	2 478 584	2 667 420	2 850 774	3 032 281	3 217 341	3 408 274
Merchant solutions	93 254	200 724	363 273	608 233	935 932	2 020 734	3 233 335	4 558 215	5 949 340	7 456 392	8 963 444	10 591 060	12 298 249	14 154 816	16 147 532	18 256 964
	205 233	389 330	673 304	1 073 229	1 578 173	2 929 491	4 588 764	6 310 200	7 986 031	9 728 078	11 442 029	13 258 481	15 149 022	17 187 098	19 364 873	21 665 238
Cost of revenues																
Subscriptions solutions	24 531	39 478	61 267	100 990	128 155	193 532	283 666	366 658	426 242	475 422	518 722	558 242	596 615	634 601	673 330	713 289
Merchant solutions	67 447	140 357	231 784	375 972	584 375	1 194 439	2 008 197	2 967 816	3 933 059	4 780 231	5 567 120	6 260 287	6 900 445	7 517 505	8 091 394	8 600 703
	91 978	179 835	293 051	476 962	712 530	1 387 971	2 291 863	3 334 474	4 359 301	5 255 653	6 085 843	6 818 529	7 497 059	8 152 106	8 764 724	9 313 993
Gross profit	113 255	209 495	380 253	596 267	865 643	1 541 520	2 296 900	2 975 725	3 626 730	4 472 425	5 356 186	6 439 951	7 651 963	9 034 992	10 600 149	12 351 246
GP margin	55,18%	53,81%	56,48%	55,56%	54,85%	52,62%	50,05%	47,16%	45,41%	45,97%	46,81%	48,57%	50,51%	52,57%	54,74%	57,01%
Operating expenses																
Sales and marketing	70 374	129 214	225 694	350 069	472 841	602 048	850 000	1 200 000	1 400 000	1 600 000	1 800 000	2 000 000	2 150 000	2 300 000	2 450 000	2 600 000
Research and development	39 722	74 336	135 997	230 674	355 015	552 127	841 910	1 126 194	1 385 353	1 638 909	1 870 451	2 101 098	2 324 951	2 551 803	2 778 317	3 000 029
General and administrative	20 915	43 110	67 719	107 444	153 765	245 343	367 640	482 640	581 813	673 397	750 484	821 473	883 589	940 042	988 825	1 027 603
Transaction and loan losses	-	-	-	-	25 169	51 849	93 328	149 325	209 055	271 772	339 715	407 658	481 036	558 002	636 122	712 457
	131 011	246 660	429 410	688 187	1 006 790	1 451 367	2 152 878	2 958 159	3 576 221	4 184 077	4 760 650	5 330 229	5 839 576	6 349 846	6 853 263	7 340 088
Income (loss) from operations	-17 756	-37 165	-49 157	-91 920	-141 147	90 153	144 022	17 567	50 509	288 348	595 536	1 109 723	1 812 387	2 685 146	3 746 885	5 011 158
EBIT margin	-8,65%	-9,55%	-7,30%	-8,56%	-8,94%	3,08%	3,14%	0,28%	0,63%	2,96%	5,20%	8,37%	11,96%	15,62%	19,35%	23,13%
Other (expenses) income, net																
Interest income	200	1 536	7 850	29 436	48 182	23 434	24 172	24 810	25 307	25 861	26 399	26 932	27 476	28 031	28 597	29 175
Interest expense	-	-	-	-	-	-9 085	-65 764	-94 636	-118 696	-142 756	-160 801	-178 846	-194 886	-210 926	-222 956	-234 986
Unrealized gain on equity and other investments	-	-	-	-	-	135 193	139 452	143 133	145 996	149 193	152 296	155 373	158 511	161 713	164 980	168 312
Foreign exchange gain (loss)	-1 234	274	1 312	-2 069	-2 850	669	0	0	0	0	0	0	0	0	0	0
	-1 034	1 810	9 162	27 367	45 332	150 211	97 860	73 307	52 606	32 298	17 894	3 459	-8 899	-21 182	-29 379	-37 499
Income (loss) before income taxes	-18 790	-35 355	-39 995	-64 553	-95 815	240 364	241 882	90 874	103 115	320 646	613 430	1 113 181	1 803 489	2 663 964	3 717 506	4 973 659
EBT margin	-9,16%	-9,08%	-5,94%	-6,01%	-6,07%	8,20%	5,27%	1,44%	1,29%	3,30%	5,36%	8,40%	11,90%	15,50%	19,20%	22,96%
Recovery of (provision for) income taxes	-	-	-	-	-29 027	79 145	-64 099	-24 082	-27 325	-84 971	-162 559	-294 993	-477 924	-705 950	-985 139	-1 318 020
Net income (loss)	-18 790	-35 355	-39 995	-64 553	-124 842	319 509	177 783	66 792	75 790	235 675	450 871	818 188	1 325 564	1 958 013	2 732 367	3 655 639
NI margin	-9,16%	-9,08%	-5,94%	-6,01%	-7,91%	10,91%	3,87%	1,06%	0,95%	2,42%	3,94%	6,17%	8,75%	11,39%	14,11%	16,87%
Other comprehensive income	-	-1 818	5 253	-15 651	13 262	7 724	2 730	2 802	2 859	2 921	2 982	3 042	3 104	3 166	3 230	3 295
Comprehensive income (loss)	-18 790	-37 173	-34 742	-80 204	-111 580	327 233	180 513	69 595	78 648	238 596	453 853	821 230	1 328 668	1 961 180	2 735 597	3 658 935
OCI margin	-9,16%	-9,55%	-5,16%	-7,47%	-7,07%	11,17%	3,93%	1,10%	0,98%	2,45%	3,97%	6,19%	8,77%	11,41%	14,13%	16,89%

Balance Sheet

	ACT										PLAN					
in US \$000's	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Assets																
Current assets																
Cash and cash equivalents	110 070	84 013	141 677	410 683	649 916	2 703 597	5 151 805	7 523 984	9 449 430	11 748 346	12 817 454	14 616 311	16 805 725	19 901 143	23 626 296	28 594 949
Marketable securities	80 103	308 401	796 362	1 558 987	1 805 278	3 684 370	4 506 267	5 489 248	6 492 943	7 429 316	8 397 265	9 360 965	10 317 705	11 274 619	12 231 529	13 188 440
Trade and other receivables, net	6 089	9 599	21 939	41 347	90 529	120 752	194 670	267 698	338 792	412 695	485 407	562 466	642 669	729 130	821 518	919 107
Merchant cash advances, loans and related receivables, net	-	11 896	47 101	91 873	150 172	244 723	360 391	495 589	667 135	861 302	1 070 261	1 273 314	1 454 878	1 650 610	1 811 346	1 972 354
Income taxes receivable	-	-	-	-	-	56 067	-	-	-	-	-	-	-	-	-	-
Other current assets	6 203	8 989	18 598	26 192	46 333	68 247	117 262	161 251	204 076	248 592	292 391	338 808	387 119	439 200	494 852	553 635
	202 465	422 898	1 025 677	2 129 082	2 742 228	6 877 756	10 330 394	13 937 770	17 152 376	20 700 251	23 062 778	26 151 865	29 608 096	33 994 703	38 985 541	45 228 485
Long-term assets																
Property and equipment, net	33 048	45 719	50 360	61 612	111 398	92 104	129 128	164 204	178 331	163 010	148 239	134 020	120 353	107 237	94 672	82 658
Intangible assets, net	5 826	6 437	17 210	26 072	167 282	135 676	125 676	117 676	111 726	107 879	106 189	106 714	109 516	114 658	122 207	132 234
Right-of-use assets, net	-	-	-	-	134 774	119 373	313 504	578 402	577 413	721 475	715 833	668 565	668 565	668 565	668 565	668 565
Deferred tax assets	-	-	-	-	19 432	52 677	52 677	52 677	52 677	52 677	52 677	52 677	52 677	52 677	52 677	52 677
Equity and other investments	-	-	-	-	2 500	173 454	178 918	183 641	187 314	191 416	195 398	199 345	203 371	207 480	211 671	215 946
Goodwill	2 373	15 504	20 317	38 019	311 865	311 865	311 865	311 865	311 865	311 865	311 865	311 865	311 865	311 865	311 865	311 865
	41 247	67 660	87 887	125 703	747 251	885 149	1 111 768	1 408 466	1 419 326	1 548 321	1 530 200	1 473 186	1 466 347	1 462 481	1 461 657	1 463 946
Total assets	243 712	490 558	1 113 564	2 254 785	3 489 479	7 762 905	11 442 162	15 346 236	18 571 702	22 248 572	24 592 978	27 625 051	31 074 443	35 457 184	40 447 198	46 692 431
Liabilities																
Current liabilities																
Accounts payable and accrued liabilities	23 689	45 057	62 576	96 956	181 193	300 795	508 692	740 105	967 571	1 166 521	1 350 786	1 513 410	1 664 013	1 809 405	1 945 378	2 067 292
Income taxes payable	-	-	-	-	69 432	19 677	19 677	19 677	19 677	19 677	19 677	19 677	19 677	19 677	19 677	19 677
Deferred revenue	12 726	20 164	30 694	39 180	56 691	107 809	153 165	211 411	279 220	354 411	433 825	515 443	596 797	675 779	749 898	816 253
Lease liabilities	822	1 311	1 484	2 552	9 066	10 051	23 446	43 257	43 183	53 957	53 535	50 000	50 000	50 000	50 000	50 000
	37 237	66 532	94 754	138 688	316 382	438 332	704 979	1 014 450	1 309 651	1 594 566	1 857 823	2 098 530	2 330 487	2 554 860	2 764 954	2 953 222
Long-term liabilities																
Deferred revenue	661	922	1 352	1 881	5 969	21 006	39 099	68 105	110 722	170 046	248 850	350 570	478 699	637 387	831 055	1 064 304
Lease liabilities	10 497	12 628	14 970	22 316	142 641	144 836	267 123	492 833	491 990	614 739	609 931	569 657	569 657	569 657	569 657	569 657
Convertible senior notes	-	-	-	-	-	758 008	1 351 232	1 944 455	2 438 808	2 933 161	2 383 926	2 034 691	1 644 260	1 373 828	1 021 005	818 181
Deferred tax liabilities	-	-	1 388	1 132	8 753	-	-	-	-	-	-	-	-	-	-	-
	11 158	13 550	17 710	25 329	157 363	923 850	1 657 454	2 505 393	3 041 520	3 717 947	3 242 707	2 954 918	2 692 615	2 580 872	2 421 717	2 452 142
Total liabilities	48 395	80 082	112 464	164 017	473 745	1 362 182	2 362 434	3 519 843	4 351 171	5 312 513	5 100 531	5 053 447	5 023 103	5 135 732	5 186 671	5 405 364
Equity																
Stock*	231 452	468 494	1 077 477	2 215 936	3 256 284	6 115 232	8 875 160	11 552 230	13 867 720	16 344 652	18 447 188	20 705 114	22 856 183	25 165 115	27 368 592	29 736 198
Additional paid-in capital	11 719	27 009	43 392	74 805	62 628	261 436	-	-	-	-	-	-	-	-	-	-
Accumulated other comprehensive income	-	-1 818	3 435	-12 216	1 046	8 770	11 500	14 303	17 161	20 082	23 064	26 106	29 210	32 376	35 606	38 902
Retained earnings (accumulated deficit)	-47 854	-83 209	-123 204	-187 757	-304 224	15 285	193 068	259 860	335 650	571 324	1 022 195	1 840 383	3 165 947	5 123 961	7 856 328	11 511 967
Total equity	195 317	410 476	1 001 100	2 090 768	3 015 734	6 400 723	9 079 728	11 826 393	14 220 531	16 936 059	19 492 447	22 571 604	26 051 340	30 321 452	35 260 527	41 287 067
Total liabilities and equity	243 712	490 558	1 113 564	2 254 785	3 489 479	7 762 905	11 442 162	15 346 236	18 571 702	22 248 572	24 592 978	27 625 051	31 074 443	35 457 184	40 447 198	46 692 431

Cash Flow

	ACT										PLAN					
in US \$000's	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Cash flows from operating activities																
Net income (loss) for the year	-18 790	-35 355	-39 995	-64 553	-124 842	319 509	177 783	66 792	75 790	235 675	450 871	818 188	1 325 564	1 958 013	2 732 367	3 655 639
Adjustments to reconcile net income (loss) to net cash provided by operating activities:																
Amortization and depreciation	7 236	13 967	23 382	27 052	35 651	70 060	92 976	93 924	93 873	92 322	90 770	89 219	87 668	86 116	84 565	83 014
Stock-based compensation	7 805	22 896	49 163	95 720	158 456	246 940	339 972	457 433	555 523	650 844	737 931	823 733	902 869	981 812	1 059 344	1 133 901
Amortization of debt discount and offering costs	-	-	-	-	-	8 756	-	-	-	-	-	-	-	-	-	-
Vesting of restricted shares	353	202	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Impairment of right-of-use assets and leasehold improvements	-	-	-	-	-	31 623	-	-	-	-	-	-	-	-	-	-
Provision for transaction and loan losses	-	-	2 606	5 922	17 946	27 282	47 829	68 185	89 558	112 713	135 869	160 876	187 106	215 631	246 248	278 658
Deferred income taxes	-	-	-	-	-37 918	-41 998	-	-	-	-	-	-	-	-	-	-
Unrealized gain on equity and other investments	-	-	-	-	-	-135 193	-139 452	-143 133	-145 996	-149 193	-152 296	-155 373	-158 511	-161 713	-164 980	-168 312
Unrealized foreign exchange (gain) loss	1 828	-969	-1 604	1 272	3 181	-1 689	-	-	-	-	-	-	-	-	-	-
Changes in operating assets and liabilities:																
Trade and other receivables	1 176	-2 356	-13 037	-32 649	-56 181	-29 146	-73 918	-73 029	-71 094	-73 903	-72 711	-77 060	-80 203	-86 462	-92 388	-97 589
Merchant cash advances, loans and related receivables	-	-11 896	-37 811	-50 694	-74 211	-112 721	-115 668	-135 198	-171 546	-194 167	-208 959	-203 053	-181 563	-195 732	-160 736	-161 008
Other current assets	-4 708	-2 604	-3 706	-10 816	-12 401	-11 404	-49 015	-43 990	-42 824	-44 516	-43 798	-46 418	-48 311	-52 081	-55 651	-58 784
Non-cash consideration received in exchange for services	-	-	-	-	-	-24 710	-	-	-	-	-	-	-	-	-	-
Accounts payable and accrued liabilities	11 097	19 813	15 428	20 641	82 529	118 588	207 897	231 413	227 466	198 950	184 265	162 624	150 603	145 391	135 974	121 913
Income tax assets and liabilities	-	-	-	-	64 648	-105 890	56 067	0	0	0	0	0	0	0	0	0
Deferred revenue	6 218	7 699	10 960	9 015	12 305	66 155	63 449	87 252	110 426	134 516	158 218	183 338	209 483	237 669	267 788	299 603
Lease assets and liabilities	3 541	2 620	2 515	8 414	1 452	-1 204	-58 448	-19 378	72	-10 539	413	3 458	0	0	0	0
Net cash provided by operating activities	15 756	14 017	7 901	9 324	70 615	424 958	549 471	590 272	721 247	952 701	1 280 570	1 759 532	2 394 705	3 128 645	4 052 532	5 087 036
Cash flows from investing activities																
Purchase of marketable securities	-111 154	-369 208	-1 129 263	-2 447 955	-2 718 604	-5 600 207	-7 090 522	-8 580 836	-10 071 151	-11 561 466	-13 051 780	-14 542 095	-16 032 410	-17 522 724	-19 013 039	-20 503 354
Maturity of marketable securities	48 350	139 872	642 073	1 698 264	2 477 038	3 721 405	6 268 625	7 597 855	9 067 456	10 625 093	12 083 831	13 578 395	15 075 670	16 565 810	18 056 129	19 546 443
Purchase of equity and other investments	-	-	-	-	-	-11 051	-	-	-	-	-	-	-	-	-	-
Acquisitions of property and equipment	-16 525	-23 773	-20 043	-27 950	-56 759	-41 733	-100 000	-100 000	-80 000	-50 000	-50 000	-50 000	-50 000	-50 000	-50 000	-50 000
Acquisitions of intangible assets	-4 511	-2 463	-4 219	-13 595	-5 638	-262	-20 000	-21 000	-22 050	-23 153	-24 310	-25 526	-26 802	-28 142	-29 549	-31 027
Acquisition of businesses, net of cash acquired	-	-14 114	-15 718	-19 397	-265 512	-	-	-	-	-	-	-	-	-	-	-
Net cash used in investing activities	-83 840	-269 686	-527 170	-810 633	-569 475	-1 931 848	-941 897	-1 103 981	-1 105 745	-1 009 525	-1 042 260	-1 039 226	-1 033 541	-1 035 057	-1 036 459	-1 037 937
Cash flows from financing activities																
Proceeds from public equity offerings, net of issuance costs	136 251	-	560 057	1 041 688	688 014	2 578 591	2 000 000	2 000 000	1 500 000	1 500 000	1 000 000	1 000 000	750 000	750 000	500 000	500 000
Proceeds from follow-on public offering, net of issuance costs	-	224 423	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Proceeds from convertible senior notes, net of underwriting fees	-	-	-	-	-	907 950	720 000	720 000	600 000	600 000	450 000	450 000	400 000	400 000	300 000	300 000
Repayment of debt	-	-	-	-	-	-	0	0	0	0	-920 000	-720 000	-720 000	-600 000	-600 000	-450 000
Proceeds from the exercise of stock options	1 604	4 162	14 774	30 494	48 337	70 809	120 633	165 888	209 944	255 740	300 798	348 550	398 250	451 829	509 080	569 554
Net cash provided by financing activities	137 855	228 585	574 831	1 072 182	736 351	3 557 350	2 840 633	2 885 888	2 309 944	2 355 740	830 798	1 078 550	828 250	1 001 829	709 080	919 554
Effect of foreign exchange on cash and cash equivalents	-1 654	1 027	2 102	-1 867	1 742	3 221	0	0	0	0	0	0	0	0	0	0
Net increase in cash and cash equivalents	68 117	-26 057	57 664	269 006	239 233	2 053 681	2 448 208	2 372 179	1 925 446	2 298 916	1 069 109	1 798 857	2 189 415	3 095 418	3 725 153	4 968 654
Cash and cash equivalents – Beginning of Year	41 953	110 070	84 013	141 677	410 683	649 916	2 703 597	5 151 805	7 523 984	9 449 430	11 748 346	12 817 454	14 616 311	16 805 725	19 901 143	23 626 296
Cash and cash equivalents – End of Year	110 070	84 013	141 677	410 683	649 916	2 703 597	5 151 805	7 523 984	9 449 430	11 748 346	12 817 454	14 616 311	16 805 725	19 901 143	23 626 296	28 594 949