

Investor Letter for the calendar year: 2022

Author: Timo Buss

Re: Uncommon Facts about Alphabet's Common Stock

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Dear fellow investors,

Thank you very much for taking the time to read my investor letter for the calendar year 2022. I have been advising the Patient Capital Fund for Hamburg-based fund boutique Covesto Asset Management since January 1st, 2020. Once a year, I would like to report to you the considerations which were important in advising the fund during the calendar year, whether new significant investments were made, how the portfolio structure and performance at year-end turned out and, at the end, devote myself to one topic in detail.

This year's topic in detail is: **Uncommon Facts about Alphabet's Common Stock.**

The investor letter begins with a table showing the portfolio structure and a performance overview.

#### Portfolio structure

NAV* as of 31.12.2022	98.73€
Weight of the largest investment	8.9%
Weight of the five largest investments	37.2%
Weight of the seventeen largest investments	83.6%
Weight of cash	1.5%

\*The NAV refers to the I tranche that was launched on 11.02.2020 at 100.00€

My investment strategy for the Patient Capital Fund focuses on low trading activity with a very high concentration in the best investment ideas. The largest positions in the fund are regularly weighted near the maximum regulatory limit of 10% of the fund volume, the top 5 positions often make up ~40% of the fund volume (2022: 37.2%) and the top 17 positions represent >80% of total assets (2022: 83.6%). **I have invested ~100% of my liquid assets in the fund and will not make any investments in the capital market other than acquiring additional shares of this fund.**

On the next page, I would like to inform you about the ten largest holdings of the fund.

## Alphabetical listing of the ten largest holdings of Covesto Patient Capital

Activision Blizzard → *NEW*

Alphabet

Constellation Software → *NEW*

Dino Polska

Fomento Económico Mexicano → *current publication* (Link): [FMX:US / FEMSA](#)

Mastercard

Microsoft

SAP

S&P Global

VISA → *current publication* (Link): [V:US / VISA](#)

The label *NEW* indicates positions among the ten largest holdings that were not part of the portfolio in the previous year (2022: 2). All other movements are due to price changes or additions/reductions of long-term holdings. In case you would like to check upon the holdings more frequently, you can access the portfolio structure which is daily updated [here](#) including a breakdown by country, sector and currency

In the past calendar year, I recommended two new companies to be included in the top 10: Activision Blizzard and Constellation Software. Eight of the fund's ten largest holdings were already part of the portfolio during the previous year and movements are primarily due to price changes.

### Performance overview net of all costs

Period	Covesto Patient Capital*	DAX**	Delta
	(1)	(2)	(1)-(2)
2020	10.2%	3.6%	+6.7%
2021	22.4%	15.8%	+6.6%
2022	(21.6%)	(12.4%)	(9.3%)
cumulative since 2020	5.7%	5.1%	+0.6%

\*The performance relates to the S tranche in 2020 only and to the I tranche from 2021 onwards (launch date: 11.02.2020)

\*\*The fund is not limited to German companies. I am therefore of the opinion that a tabular comparison with the domestic DAX index is only partially meaningful. A comparison with so-called world indices (in EUR, for which the renowned index providers regularly charge high fees, would be more substantiated in terms of informative value

The table shows the performance of the fund since I started advising it. In my [Investor Letter for the 2020 calendar year](#), I explain why such a table provides little information about the skills of a fund advisor in the short run. Only in the long run, it will become clear whether a fund advisor creates repeatable value-add for his investors with a previously defined strategy. In January 2025 (after five full calendar years of performance), I'll have a first detailed interim results discussion. My goal in advising the fund includes outperforming both the national as well as a global index in the long run and **I aim to achieve a performance of >10% p. a. on average for your, as well as my, investment in the fund.**

## Uncommon Facts about Alphabet's Common Stock

In 1997, Larry Page and Sergey Brin face a dilemma. The two computer scientists want to complete their PhDs at Stanford University. At the same time, their research project BackRub – the predecessor of today's Google search engine – is growing in popularity. BackRub's idea of indexing the entire web and making it searchable is by no means new. As early as 1994, Yahoo, Lycos and Excite offer web searches with portal solutions such as e-mail, news or horoscopes. The business model of web portals evolves towards keeping users on their own site for as long as possible. BackRub, on the other hand, wants to redirect users to relevant, external sites as quickly as possible. For an optimal ranking of its search results, BackRub relies on a phenomenon from academic citation practice, according to which relevant research papers are referenced more frequently than irrelevant ones. Applied to the Internet, Larry Page develops the PageRank algorithm, which examines the link structure of every website to determine if many and particularly influential sources refer to it. By doing this, BackRub yields significantly better results than Yahoo or Excite, which at the time count the frequency of search terms on websites for their ranking purposes (prone to manipulation via keyword stuffing).

Page and Brin realize the potential of their invention, but want to focus on their academic careers. They put BackRub up for sale for \$1.6m. When the exclusive negotiating partner Excite offers only half the price, the deal falls through. Page and Brin subsequently abandon their priorities, found Google Inc. in 1998 (alluding to the number Googol =  $1.0 \times 10^{100}$ ) and want to lead their startup to glory themselves. One of their first large angel investors is Amazon founder Jeff Bezos, who overlooks the fact that neither Page nor Brin have a concrete plan to monetize their invention at the time. Google needs a business model, but the most obvious one, display advertising, is initially considered mundane and undesirable by both founders. In their 1998 academic paper on the launch of Google, they state in this regard:

*“We expect that advertising funded search engines will be inherently biased towards the advertisers and away from the needs of the consumers. [...] In general, it could be argued from the consumer point of view that the better the search engine is, the fewer advertisements will be needed for the consumer to find what they want.”*

Let's jump to today: Google's parent company Alphabet is the world's largest advertising company, with revenues of \$257.6 bn in 2021 and an operating margin of 31% (\$78.7 bn EBIT). Looking back on this success story, it's often misremembered how Google initially struggles to find a real business model due to the advertising aversion of its founders. **But everything changes when search engine Overture (GoTo.com), financed by serial founder Bill Gross, introduces text-based advertising in the then novel cost-per-click model and revolutionizes the digital advertising market forever.** Unlike reach-based payment (CPM), the CPC model allows precise measurement of the value received in relation to the advertising budget spent. Google copies the unpatented model and introduces AdWords Select in 2002. From that point on, Google is profitable. In 2004, the company goes public at a \$27 bn valuation. Subsequently, the company achieves an impeccable track record in expanding its core business and increases its advertising revenues by over >20% p. a. for two decades or, stated differently, by a factor of more than 2x every 5 years (2006: \$10.5 bn, 2011: \$36.5 bn, 2016: \$79.4 bn, 2021: \$209.5 bn).

*Search: Alphabet's most important alpha bet*

Alphabet's future stands or falls on the fate of its central cash cow: Google Search. Search is the most visited website in the world with >80% search engine market share on desktop PCs and >90% on mobile devices. For ranking purposes, the company has stopped relying solely on backlinks and today takes over 200 different ranking factors into account. Building on its almost 4 billion users, Search generates the largest data set on global search and click behavior, which serves to continuously fine-tune the quality of its service. **This feedback loop is an important economic moat, as competitors may copy Google's ranking methods but hardly the aggregated usage data.** The more people choose Google over, say, Bing, due to higher relevancy, the more attractive the search engine becomes to advertisers in the next step. In my opinion, Search's long-term revenue potential can be derived from the following four factors:

1) *number of queries* × 2) *ad load* × 3) *click through rate (CTR)* × 4) *cost per click (CPC)*

The 1) number of all search queries and 2) how often Search attaches ads to those queries are the two most promising value drivers in my opinion. The total number of search queries depends on how many and how frequently people use Google. After the failed sale to Excite, Google processed 10,000 queries per day. In 1999, it was 3 million and 60 million the following year. **At the time of the IPO, the number of search queries reached 200 million per day and in 2009, the 1 billion mark was exceeded for the first time. In 2012, the company reported 3 billion searches per day and 6 billion in 2016.** I estimate Search today handles >10 billion searches per day (3-5 searches per day with nearly 4 billion users). There are 5 billion internet users worldwide (equates to 60% penetration worldwide compared to 90% in developed markets). Over the next two decades, I expect this number to increase to 8 billion. In this case, Search could gain almost 3 billion new users (+70%).

In addition to 1) the number of all search queries, 2) the percentage of searches served with at least one ad is decisive. A maximum of four text-based ads can appear above organic results. **According to Google, 80% of all searches are ad-free, while 20% trigger the display of at least one sponsored link.** 15% of search queries have never been googled before. Four text-based ads appear in less than 5% of all searches. The latter category often includes commercial searches such as "insurance", "divorce attorney", "hotels", or "running shoes". Here, the user is shown four sponsored links or vertical, partially sponsored search boxes like "Google Hotels" or "Google Shopping". Potential lies in monetizing the ad-free long tail (80% of searches), where a 10 pp higher penetration could mean up to 50% more paid clicks. Short term, I expect a rising ad load especially in local searches. In the long run, query volume could benefit from usage scenarios such as voice or internet usage during autonomous driving. In terms of the remaining two revenue factors for Search, 3) the ad click through rate (CTR) is notoriously difficult to improve. Here, I believe Google has already exhausted most efficiency potentials through countless A/B tests of color and layout options and significantly expanded the advertising space on mobile devices. Ultimately, I don't regard 4) the level of the auction-based CPC as a growth guarantor either. Going forward, CPCs should at most be able to rise with the level of inflation.

## *Alphabet's billion user club and Android's platform control*

In addition to Search, Alphabet has built eight other software products with >1 billion users each:

- 1) Google Photos: >1.0 bn users
- 2) Google Maps – partially acquired in 2004: >1.0 bn users (MAUs)
- 3) Gmail: >1.8 bn users (DAUs)
- 4) YouTube – acquired in 2006: >2.0 bn users (MAUs)
- 5) Google Play Store: >2.5 bn users (MAUs)
- 6) Android – acquired in 2005: >2.8 bn users (MAUs)
- 7) Google Workspace: >3.0 bn users
- 8) Chrome Browser: >3.3 bn users

Several of Alphabet's most successful apps come from acquisitions. To date, >250 acquisitions have been carried out for a total consideration of \$30 bn (most recently, cybersecurity firm Mandiant for \$5.4 bn). Android was acquired in 2005 for a financially insignificant amount of \$50m, but it's one of the smartest M&A deals of all time. In conjunction with Chrome, Android enables direct influence on important access points to the Internet and cements Search's market position on mobile.

Mobile operating systems can be described as a duopoly. Android reaches 72% market share, Apple iOS 27%. In emerging markets – where Android devices are available starting at \$50 versus ~\$400 for the cheapest iPhone – the situation is even clearer. Unlike the closed iOS, Android is an open-source project, whose source code can be downloaded, modified and used commercially for free. **Alphabet aims to have the largest possible Android user base and later monetizes the OS indirectly through more searches and paid clicks.** Theoretically, OEMs are allowed to sell mobile devices without Search or any other Google service. Amazon did this in 2014 with the Fire Phone based on Fire OS, a forked version of Android without Google apps. In practice, however, Alphabet tries to ensure the distribution of Search on almost all Android devices through contracts like the AFA, MADA or RSA.<sup>1</sup> MADA requires device makers to pre-install *all* of the following Google apps if *only one* of them is supposed to come pre-installed on the device: 1) Search, 2) Chrome Browser, 3) YouTube, 4) Gmail, 5) Google Maps and 6) Google Play Store. The crux of the matter? Android users are able to install all of these apps themselves with just one click – except for the Play Store!

The Play Store is the exclusive access point to download software on Android devices. If it is not pre-installed upon delivery, it is practically impossible to download elsewhere. As a result, the device loses its appeal. In addition, software developers usually only develop apps for those app stores that have the most users (Apple and Play). Alternatives like MiMarket or Amazon's Appstore with <1% market share don't justify any extra effort. One reason for the flop of the Fire Phone was its app store, which wasn't competitive offering 200,000 apps at launch time compared to >1 million in Google's Play Store. Because of this, all major manufacturers opt to sign the MADA, which qualifies them for an RSA in the

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<sup>1</sup> Anti-Fragmentation Agreement, Mobile Application Distribution Agreement, Revenue Sharing Agreement

next step.<sup>2</sup> **If they ship Google as the pre-installed default search engine, they receive a percentage of all advertising revenue generated through their devices in return.** In 2021, I believe Alphabet paid \$24 bn to its search distribution partners (of which ~\$15 bn to Apple), or 16% of all Google Search & other ad revenues. From the OEM's point of view, the RSA transforms a mobile operating system from a horrendous cost center if developed in-house to a direct profit center (for Apple, the ~\$15 bn is virtually all profit). Android thus offers OEMs a convincing value proposition and is rolling out its software offering to future search platforms such as connected TVs<sup>3</sup>, wearables or cars.

### *The rise of YouTube and the upcoming CTV era*

Another successful acquisition – and unlike Android, a direct revenue contributor – is YouTube. Founded in 2005 by three former PayPal employees, YouTube has become the world's largest video platform and now accounts for 20% of global mobile traffic. Before strong network effects between viewers, creators and advertisers came to fruition, the founders had to overcome the so-called "cold start problem". [To do so, they uploaded videos to the platform themselves](#) and asked friends and family to join in. **Nevertheless, the video library did not show any growth for the first three months and by mid-2005, only 50 videos were available on YouTube.** However, after a software update and simplified embedding of videos on Myspace, both the upload and download behavior picked up steam. By the end of 2005, thousands of videos had been uploaded and by mid-2006, over 100 million. One big problem at the time? Uploaded videos often contained copyrighted material, and the founders didn't have a sophisticated plan for dealing with a looming wave of lawsuits. Entrepreneur and investor Mark Cuban therefore painted a bleak picture for YouTube's future at the end of September 2006:

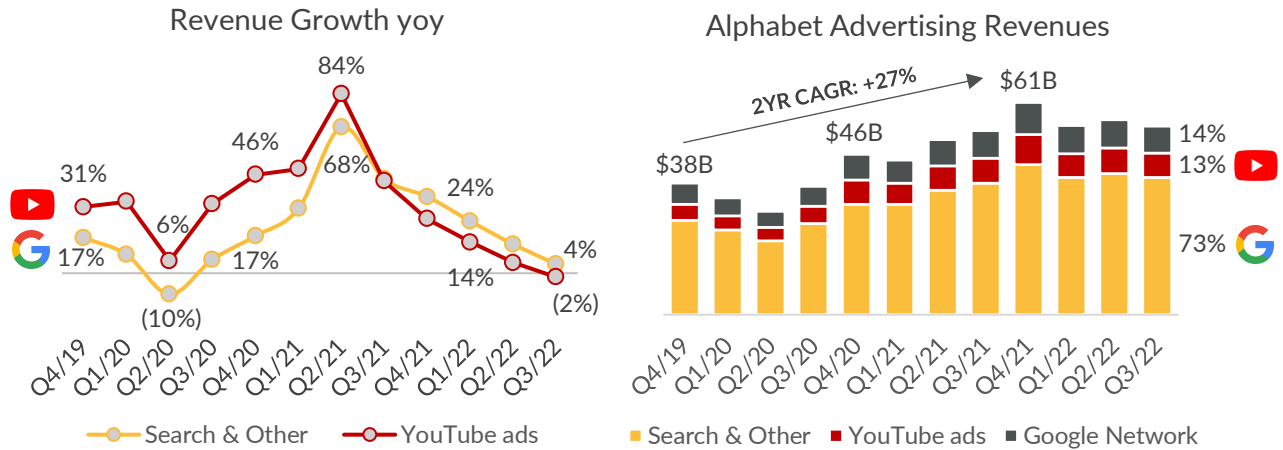
*„They are just breaking the law. **There is a reason they haven't yet gone public, they haven't sold. It's because they are going to be toasted. Anyone who buys YouTube is a moron.** [...] User-generated content is not going away. But do you want your advertising dollars spent on a video of Aunt Jenny watching her niece tap dance?“*

Exactly one week later, "moron" Google entered the stage and bought YouTube for \$1.7 bn. The wave of lawsuits indeed came crashing down on the company, but in the most important case – *Viacom International Inc. v. YouTube, Inc.* – the parties settled out of court years later. In general, rightsholders were promised a revenue share and YouTube introduced video ads in connection with its YouTube-Partner-Program (YPP) in 2007. Large TV networks as well as smaller creators with more than 1,000 subscribers can participate in the YPP. **YPP creators receive 55% of the advertising revenue generated in connection with their videos and YouTube gets the remaining 45%.** The rest is history. By fiscal 2021, YouTube grew its advertising business to \$28.8 bn and in terms of revenue is now recouping its heavily criticized \$1.7 bn price tag every 3 weeks. For a long time, YouTube's monetization was not pushed aggressively, but at the latest since the pandemic, the time of restraint is over (see graphs on the following page).

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<sup>2</sup> MADA is illegal in the EU. Android therefore now charges a fee per device if OEMs want to preinstall Play without Search

<sup>3</sup> Connected TVs (CTVs) describe internet-enabled TV devices which allow people to watch linear TV but also streaming



YouTube has to be considered a COVID winner. More video consumption at home combined with an aggressively increased ad load enabled the platform to grow faster than Search until the end of 2021. YouTube stands for brand marketing, Search for performance marketing. During recessions, brand marketing is scaled back earlier and more significantly than performance marketing. That's why we're currently witnessing the trend reversal shown above with Search continuing a moderate growth trajectory while YouTube's ad revenue is shrinking for the first time in history. Over the long run though, I believe the video platform still has good opportunities to increase its advertising revenues thanks to three drivers:

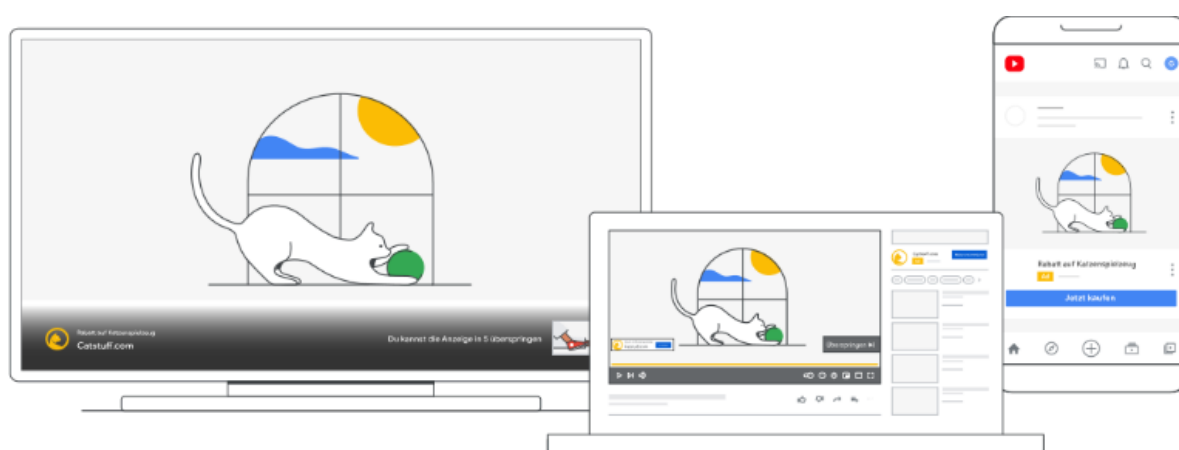
- 1) shift from linear TV budgets to CTV budgets
- 2) more performance and shopping-oriented ad formats such as video action campaigns and
- 3) the start of YouTube Shorts monetization since September 2022

More than 2 billion people use YouTube every month and spend an average of 1 hour a day browsing the YouTube app on mobile devices. [In 2017, YouTube disclosed that the total duration of content watched daily on its platform surpassed 1 billion hours](#) and crossing this milestone received wide media coverage. **What garners less attention though, is the fact that daily YouTube watch time on CTVs increased more than tenfold from 60 million hours in 2016 to more than 700 million hours in 2022.** Nielsen estimates that, in the U.S., 135 million people use YouTube on CTVs and the platform accounts for 50%(!) of all ad-supported streaming (AVOD). During primetime, YouTube reaches more viewers on CTVs than any linear U.S. television network. This competitive position could pay off handsomely in the future if 1) linear TV budgets increasingly shift to CTV budgets.

As you will see on the following page, Linear TV advertising (\$175 bn) is the largest advertising market in the world after Search. **In the U.S., streaming represents 38% of all TV usage but only 8% of the corresponding advertising market.** The remaining 92% go into linear TV. Not surprisingly, digital video advertising and CTV constitute the two fastest growing advertising segments (see table below).

Global Advertising Revenues ( <a href="#">MAGNA</a> )	2022	%	Growth 23e
Search	\$265B	32%	+11.5%
Social	\$158B	19%	+11.0%
Digital Video (ex. CTV)	\$52B	6%	+15.5%
CTV	\$16B	2%	+32.7%
Display & Other	\$42B	5%	(1.6%)
<b>Total Digital</b>	<b>\$534B</b>	<b>65%</b>	<b>+10.8%</b>
Linear TV	\$175B	21%	(3.7%)
Print, Radio, OOH	\$107B	13%	(0.2%)
<b>Total Traditional Media</b>	<b>\$282B</b>	<b>35%</b>	<b>(2.3%)</b>
<b>Total Advertising Revenues</b>	<b>\$816B</b>	<b>100%</b>	<b>+6.3%</b>

The discrepancy between the importance of streaming on CTVs and the small size of the CTV advertising market stems from Netflix & Co.'s initial focus on ad-free streaming. This stance is obsolete. Starting this year, Netflix and Disney+ will be aggressively marketing ad-supported plans as subscriber growth in their legacy business has tapered off. **It will be interesting to see if, and when, the cheaper AVOD plans start to generate more revenue per subscriber than SVOD. This is already the case for Hulu**, as ad revenue per subscriber more than offsets the lower entry price of \$7.99 versus \$14.99/month for an ad-free plan. In any case, the CTV advertising market seems ripe for a shake up and YouTube stands to benefit from it. In five years, the CTV advertising market could grow into today's size of the digital video advertising market (+\$36 bn to \$52 bn). If YouTube captures 25% of incremental budgets, CTV will represent a \$9 bn opportunity for YouTube relative to total advertising revenues of ~\$30 bn in 2022 (+30%). However, the main business remains advertising on smartphones and this category is also showing healthy growth in the double-digits. Here, YouTube is successfully introducing 2) more performance and shopping-oriented formats such as video action campaigns.



These campaigns contain a call-to-action and can lead viewers directly to the advertiser's online shop or an app install. Especially on CTVs, performance-oriented formats are a differentiator to linear TV ads.<sup>4</sup> Coupled with better targeting, YouTube prices CTV ads at \$20-30 CPM, which is 2-3x higher than

<sup>4</sup> A rare exception of a successful call-to-action campaign in linear television was [Coinbase's Super Bowl TV ad](#)



linear TV ads. **After Alphabet acquired Android, it leveraged the OS to guarantee a favorable Search placement on mobile, now it's doing the same for YouTube on CTVs.** But the benefits go further: In a world with less cross-app tracking, ad platforms which know the most about their users without requiring third-party data possess a competitive advantage. YouTube can combine the behavior of logged-in users with proprietary data from Search, Chrome or Maps to show more relevant ads.

Finally, YouTube's advertising revenues should benefit from 3) a new revenue stream: *YouTube Shorts*. The short video format (15-60 seconds length) just launched monetization efforts two years after it was presented as a response to TikTok. TikTok is the international version of Douyin with 271 million monthly active users in 2018, but already >1 billion in 2021. Among users under 18 years of age, the Chinese giant has already shaken off YouTube and Netflix with ~90 minutes of usage time per day vs. 60/45 minutes for the two U.S. players. Shorts tries to win back the attention of young users and currently reaches 1.5 bn MAUs and 30 bn daily impressions. Reels (Instagram) recently surpassed \$1 bn in annualized ad sales at a record pace and TikTok is expected to generate >\$15 bn in ad revenues in 2023, which corresponds to 50% of YouTube's total ad revenues in 2022. What makes me optimistic about Shorts is a) the data and targeting advantages as part of Alphabet, b) the more attractive revenue share for creators compared to TikTok, and c) the less hostile regulatory environment. **Finally, it is interesting that YPP creators so far have received 55% of advertising revenue vs. YouTube 45%. For Shorts, the distribution is reversed, which could lead to a higher margin in the long run.**

*Anything but ads*

So far, I've written a lot about Alphabet's advertising business as it determines the company's medium-term fate with 80% revenue share. In the final part of this letter, however, I would like to highlight two young, promising businesses outside of advertising: *Cloud* and *Waymo*.

Google Cloud	Revenue	Growth	EBIT %	AWS	Revenue	Growth	EBIT %
Q3/22	\$6.9B	+38%	(10%)	Q3/18	\$6.7B	+46%	31%
Q2/22	\$6.3B	+36%	(14%)	Q2/18	\$6.1B	+49%	27%
Q1/22	\$5.8B	+44%	(16%)	Q1/18	\$5.4B	+49%	26%
Q4/21	\$5.5B	+45%	(16%)	Q4/17	\$5.1B	+45%	26%
Q3/21	\$5.0B	+45%	(13%)	Q3/17	\$4.6B	+42%	26%
Q2/21	\$4.6B	+54%	(13%)	Q2/17	\$4.1B	+42%	22%
Q1/21	\$4.0B	+46%	(24%)	Q1/17	\$3.7B	+43%	24%

In the most recent quarter, Google Cloud brought in \$6.9 bn in revenue (\$27.6 bn annualized, 10% of group revenue). Cloud growth of 30-40% lets Alphabet alone grow 3-4% each year. **The table shows Google lagging market leader AWS by approximately four years. Comparing the two hyperscalers at historically comparable sizes, Amazon's ability to generate a ~40 pp higher operating margin catches the eye.** This reflects higher ramp-up costs for Google, GCP's unit cost disadvantage compared to AWS's current scale (Q3/22: \$20.5 bn revenue, 3x Google Cloud) and a more competitive pricing environment. However, CEO Thomas Kurian recently emphasized they are only

investing so aggressively because the profitability threshold is within reach. Market researcher Gartner projects an opportunity-rich industry environment, in which enterprise cloud spending is poised to grow to >\$1 trillion until 2026 (19% CAGR). Assuming slight market share gains for Google, its Cloud division could reach \$60 bn in revenue in 2026. A margin improvement to +10% would translate to an incremental EBIT of \$9 bn vs. ~\$75 bn currently at group level (+12%).

*More profound than fire or electricity: Alphabet as an „AI First“ company*

While historically often driven by IT migration projects, future cloud growth is likely to come from new, computationally intensive workloads in the fields of artificial intelligence (AI in short), industrial automation or complex video games. AI in particular – a discipline known since the 1950s – is currently experiencing a miraculous renaissance. In this context, the terms 1) artificial intelligence, 2) machine learning and 3) deep learning are often used interchangeably, but dissecting the nomenclature is worthwhile. **It applies that: 1) > 2) > 3), since machine learning is only a subfield of artificial intelligence and deep learning is in turn a subfield of machine learning.** Artificial intelligence is best understood as a superordinate concept for computer-aided systems that mimic human intelligence, its thinking, perception, actions and reasoning. Machine learning describes systems that apply algorithms to large amounts of data to perform a specific task by learning from patterns in the data rather than by explicit programming. Those algorithms get better at performing their task over time but have historically required human input of target-relevant features and manual intervention when errors occurred. In contrast, deep learning is capable of *automated* feature extraction from the raw data, so that the results can continuously improve with much less human intervention.

None of what I just stated is new. The foundations of deep learning have existed for 60 years. Google employs a director of machine learning since 2001. But several times in the past, waves of AI euphoria were followed by so-called AI winters, and the hopes people placed on deep learning remained nothing more than a pipe dream until the models were able to use massively larger amounts of data and computing power. Only recently, these two prerequisites have become a reality thanks to the internet, an explosion of collected data as well as cheaper computing infrastructure offered by the hyperscalers.

One important milestone in AI history took place in 2012, when a team led by Geoffrey Hinton outclassed the competition [in a computer vision contest by using deep learning](#) and paved the way for further breakthroughs. **From that moment, Alphabet intensified its AI ambitions, and today not only Hinton works (part-time) for Google, but roughly half of the top 100 AI researchers.** In 2015, Google DeepMind leveraged deep learning to create [the first computer for the board game Go that's superior to world class human players](#). Additionally, [Google Brain developed TensorFlow](#), the world's most widely used machine learning platform with tools for data preparation and pre-trained models.

Alphabet wants to harness the powers of AI for its entire core business, such as [ranking in Search](#) or video suggestions in YouTube. A vivid example of this is provided by the semi-automated map creation in Google Maps. Below you can see Lagos, the largest city in Nigeria and second largest in Africa. The city is chaotic, rapidly changing, and there are no accurate base maps from the government. In such

cases Google Maps has to create maps from scratch. First, the roads are drawn on to the map from aerial and street imagery with the help of machine learning (left). Then, three deep learning models insert the outlines of buildings (right), identify house numbers, and recognize stores. The application of these models allows for a level of detail after one year that previously would have taken many years to achieve.



### *Waymo and autonomous driving as AI's supreme discipline*

The models just described may seem complex, but autonomous driving surpasses almost all other AI applications in terms of complexity. **Waymo, Google's subsidiary for autonomous driving, combines maps from Google Maps with data from cameras, lasers and radar to calculate objects and speeds, makes predictions about next movements and decides in real time how the own vehicle should behave.** All of this creates gigantic data and computational demands. Waymo was founded in 2009, four years before most automakers got involved (Cruise has been around since 2013). This first mover advantage is priceless. It has made Waymo the technology leader with >25m fully autonomously driven miles on public U.S. roads (Cruise: ~5m). [In addition, Waymo drives billions of test miles in complex simulations.](#) Thousands of people already use Waymo One (autonomous taxis with no safety driver) in Phoenix – and soon the service will launch in San Francisco and L.A. Except for Phoenix, however, monetization of these rides is not yet permitted. Waymo is therefore reporting losses in the single-digit billion dollar range and some investors are calling for the investments to be scaled back:

*„Unfortunately, enthusiasm for self-driving cars has collapsed and competitors have exited the market. Ford and Volkswagen recently decided to shut down their self-driving car venture, saying: “We have looked at this every way you can and we just see the profitability a long way out.” **Waymo has not justified its excessive investment and its losses should be reduced dramatically.**”*

I strongly disagree with the quoted activist's claim. The fact that competitors are withdrawing from the market is *positive* – not negative. A reduction in Waymo's losses could provide a one-time boost to Alphabet's earnings per share in the low single-digit percent range. Dominating autonomous driving in the long run seems way more lucrative. Los Angeles alone (4% of the U.S. population) has a \$2 bn ride-hailing market. **Globally, Waymo should be able to attack a >\$200 bn taxi and ride hailing market, with strong network effects for the market leader. This stems from the fact that AI results often depend more on the amount of data collected and learning experience than on programming talent.** Waymo has the best learning curve in the industry and each additional vehicle on public roads

shares insights from edge cases with the entire fleet. This can lead to a point where authorities no longer issue public testing permits to startups, since the expected damage per trip must be higher. Therefore, an unwavering further development of Waymo makes sense in multiple ways: on the one hand, to open up new revenue sources apart from advertising, and on the other hand to reduce the over 40,000 annual traffic fatalities in the U.S. (1m worldwide). Moreover, autonomous driving could unlock 50 minutes of screen time per day for YouTube or Search that the average American spends in his car today.

\* \* \*

The bottom line is the following: **Alphabet is an AI company masquerading as a search engine.** Short-term, everything stands and falls on Search. Long-term, Cloud and Waymo offer opportunities. As with all promising investment candidates, there are numerous risk factors that need to be monitored. Recently, a number of AI products like Stable Diffusion, DALL·E 2, Midjourney and ChatGPT have come to market that aren't from Alphabet. ChatGPT in particular – a chatbot from OpenAI replying to text inputs – is strongly reminiscent of some Search functions. Whether ChatGPT is a threat depends on a) whether the innovator gets distribution before Google gets innovation and on b) how easily Search is adaptable. Considering these factors, Google seems well prepared. Technologically, the company is on par (LaMDA), distribution costs serve as barrier to entry and, if necessary, a chatbot can be tested as a new vertical overnight (between Search, images, maps, news). The right timing will be crucial though.

Alphabet currently trades at \$92 per share (analogous to the \$92 cost basis in the fund) and an enterprise value of \$1.1 tn. It's imaginable that the company generates close to \$110 bn in free cash flow after stock-based compensation in 2027. The situation just described makes Alphabet an interesting holding for the Covesto Patient Capital fund.

This summer, I will present the fund in several German cities. If you know someone for whom the investment approach could be a good fit, please contact me [here](#).

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