CFA Institute Research Challenge

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CZ GROUP

Company name: CZG - Česká zbrojovka Group SE
Exchange: Prague Stock Exchange
Ticker symbol: CZG
Sector/Industry: Industrials/Aerospace & Defense

Recommendation: SELL
Date of valuation: 20.12.2020
Current price: CZK 296 (as of 18.12.)
Target price: CZK 274 (-7.5% decrease)

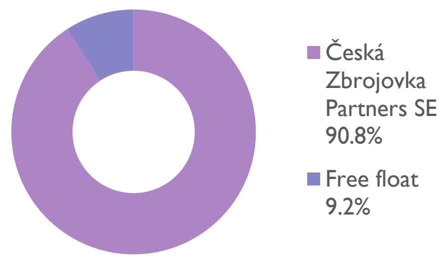
Recommendation: SELL

Figure 1: Summary of stock price

Target Price (CZK)	274
Last Close (CZK)	296
Downside	-7.5%
Market Cap (th.. CZK)	9 660 848
Shared Outstanding (th.)	32 638
All High (IPO)	354
All Low	282
Free Float (%)	9.20%

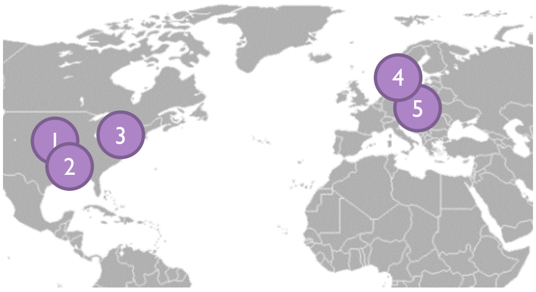
Source: PSE, CZG, Team estimates

Figure 2: Ownership structure



Source: CZG

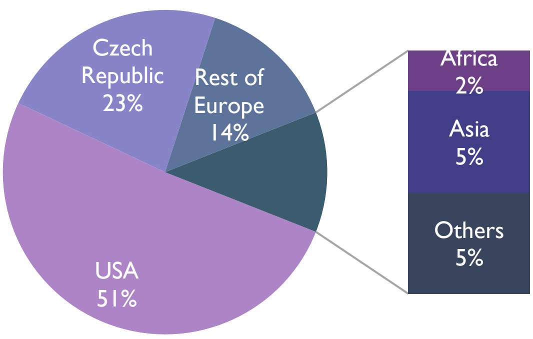
Figure 3: Location of facilities



1	CZ-USA – Kansas City, Kansas, USA
2	new project – Little Rock, Arkansas, USA
3	Dan Wesson – Norwich, New York, USA
4	Spuhr i Dalby – Löddeköpinge, Sweden
5	Česká Zbrojovka – Uherský Brod, Czechia

Source: CZG

Figure 4: Geographical breakdown of sales in 2019



Source: CZG

EXECUTIVE SUMMARY

Česká Zbrojovka Group is a firearms manufacturer with its main production facility in Uherský Brod, Czech Republic. Its products serve civilian as well as military and law enforcement market segments and are available worldwide, with the most important markets being in the US (51% of 2019 revenue), Czech Republic (23%), and Europe (14%).

Notably, **CZG is planning to expand its operations in the US** by building a new production facility in Little Rock, Arkansas. Planned for opening in late 2021, it is set to produce at half the capacity of its main site in Uherský Brod, where 85% of products of the group are currently assembled.

The market for firearms is both highly fragmented and competitive. The American gun market is the largest in the world, with 46% of civilian firearms held in the US. Driven by the Presidential elections, fears surrounding the COVID-19 pandemic, and social unrest, sales of firearms reached their historical maximum in 2020, up nearly 50% since 2019, and are generally expected to maintain their momentum during Biden's presidency, despite slight cooling down of the market.

However, **we forecast that CZG will not keep up with the market** and fall behind its main competitors, thus negatively affecting its future performance and share price. This forecast is based upon several key factors, including (1) the prospect of stricter gun control, (2) delays and losses associated with the Little Rock production facility, and (3) a negative outlook in the field of military and law enforcement contracts.

(1) Biden's presidency brings a significant risk of greater gun control and regulation. President Biden has both a concrete plan and a long history of opposing gun violence, leading significant reforms in the 1990s or as Vice-president. While the fears of stricter regulation will drive the demand further upwards in the short term, CZG currently lacks sufficient capacity to satisfy more orders, which is why it is planning to build a new production facility stateside.

(2) However, the opening of the planned production plant in Little Rock is likely to be delayed. Additional costs are to be expected since it is a new project built from scratch with which CZG has virtually no experience, regardless of the risks and additional difficulties inflicted upon by the global pandemic of COVID-19. CZG is therefore expected to miss out on the short-term swing in demand of American consumers before the new regulation is introduced.

(3) Moreover, diversifying through military contracts is not without its challenges. Revenues from the military segment of CZG come mainly from Europe, whose defence expenditures are projected to be side-tracked in favour of COVID-19 relief and austerity measures. After the global financial crisis, EU-28 defence budgets fell by up to 14%, and similar cuts are already approved for 2021 in the Czech Republic, the group's main customer in the field. As a company without a sufficient track record in the field or ties outside the Czech Republic, CZG will struggle to expand in the field.

Financially, although CZG boasts a relatively good gross margin (40% compared to the industry average of 29%), we expect it to drop when increasing the share of its production in the US. **Signs of ineffectiveness** are manifested through poor inventory turnover and asset management. Another warning signal is the group's low absolute R&D expenditure which is of extreme importance in the highly competitive industry.

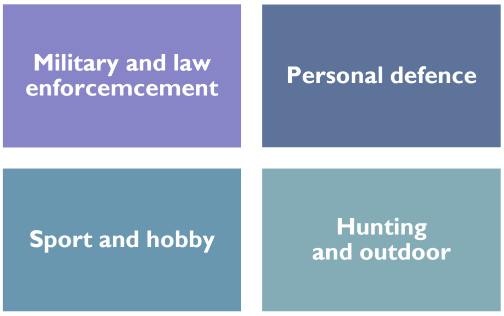
We issue a **SELL** recommendation on the company's shares using a discounted free cash flow model to arrive at a target price of CZK 274 per share, a 7.5% downside from the firm's closing price of CZK 296 per share on December 18, 2020.

Figure 5: Key financials, in millions of CZK

	2017	*2018*	*2019*	*2020F*	*2021F*	*2022F*	*2023F*	*2024F*
Revenue	4 555	5 340	5 959	6 570	6 412	6 630	8 176	8 990
Revenue Growth	-8%	17%	12%	10%	-2%	3%	23%	10%
EBITDA	912	1 026	1 314	1 429	1 329	1 380	1 360	1 619
EBITDA Margin	20.0%	19.2%	22.1%	21.8%	20.7%	20.8%	16.6%	18.0%
CAPEX	307	519	313	475	964	1 240	591	650
ROIC	9.5%	12.2%	15.0%	16.5%	13.0%	10.9%	9.3%	11.7%

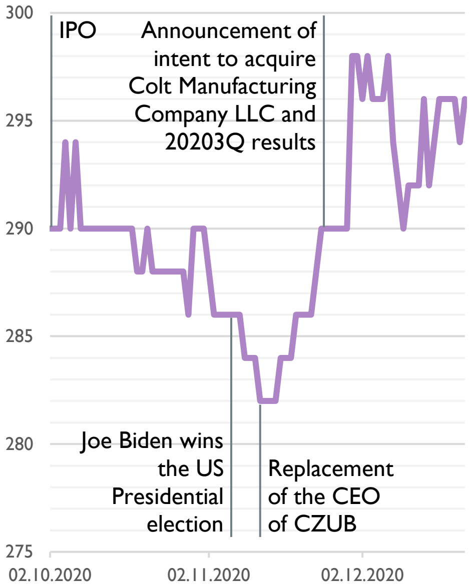
Source: CZG, Team estimates

Figure 6: Product mix



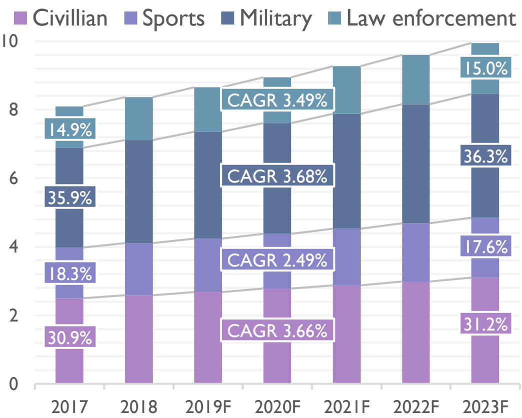
Source: CZG

Figure 7: Share price performance, CZK



Source: PSE, CZG

Figure 8: Global small firearms market, billions of USD



Source: CZG

BUSINESS DESCRIPTION

Česká Zbrojovka Group is a firearms manufacturer based in Uherský Brod, Czech Republic. Founded in 1936 as a company of strategic importance, it has grown significantly, especially since its 1992 privatization, having expanded its production facilities abroad and currently employing over 1600 workers. Members of the group include Česká zbrojovka a.s., CZ-USA, Dan Wesson, Brno Rifles, or 4M SYSTEMS.

Product mix The group's product portfolio includes firearms for military and law enforcement, personal defence, hunting, sport shooting, and other civilian use. Due to the nature of the product, individual shares of the segments on the group's sales are confidential, aside from the military and law enforcement market which constituted around 40% of the group's consolidated sales between 2017 and 2019. In the last year of that period, a total of 374,276 firearms were sold worldwide, with shotguns representing 5.3% of the group's total revenues.

Geographical breakdown of sales Products of CZG were sold in a total of 90 countries worldwide in 2019. 22.9% of these revenues were generated in the Czech Republic, 50.7% in the United States, and 14.0% in the EU (excluding the Czech Republic).

Major investment project The group is expecting a significant capital expenditure into a new production facility in Little Rock, Arkansas, United States. Raising funds for the project was among the main reasons for undergoing the IPO in October 2020. The total budgeted amount ranges from USD 60.0 million to USD 70.0 million (equivalent to CZK 1,497 million and CZK 1,746 million as of March 31st, 2020 respectively), representing between 25.1% and 29.3% of the group's 2019 sales revenue, or 1.59-1.85x its EBIT. Altogether, they raised CZK 812 million at the IPO. According to CZG, the plant is set for opening as early as late 2021 with full production capacity reached early in the year after, producing pistols, semi-automatic and fully automatic firearms, and employing up to 300 workers over the next five years.

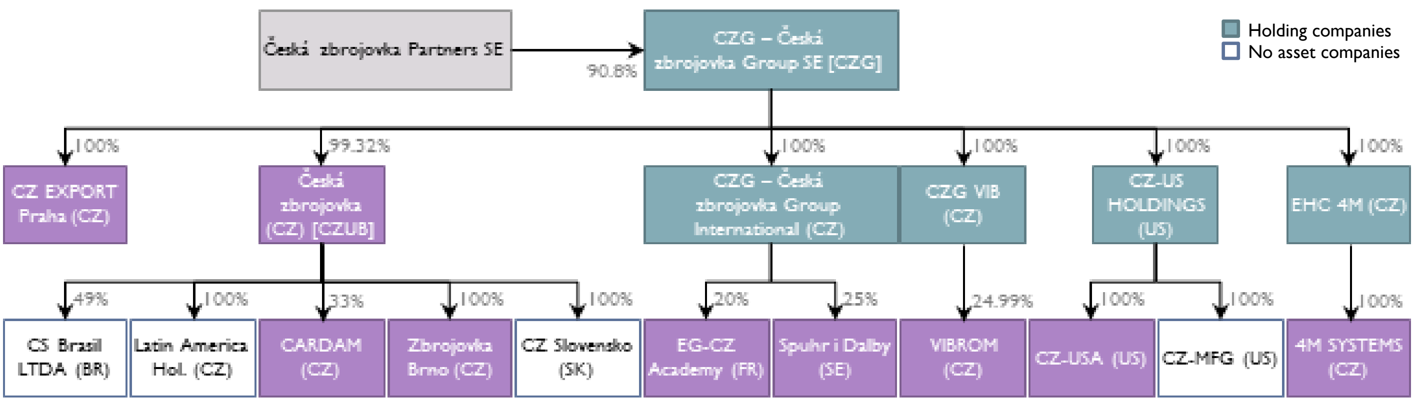
INDUSTRY OVERVIEW & COMPETITIVE POSITIONING

KEY PRODUCTS & MARKETS

Amongst all CZG products, small firearms are the most important. CZG produces a range of firearms including pistols, revolvers, assault rifles, submachine guns, grenade launchers, sniper rifles, shotguns, and rimfire and centrefire rifles as well as components for firearms, additional attachments, and a wide range of suitable accessories. These products are designed both for civilian use and for military and law enforcement use.

Focus on small guns gives CZG an advantage. Based on Figure 8, the total global market for small firearms has the CAGR (compound annual growth rate) at 3.51%. With respect to the current volatility on global markets, the positive feature of the market for the small/short guns is that it is more stable as the demand is more consistently distributed over the year in comparison to other gun market segments, thanks to which CZG may earn an advantage amongst its competitors that are reliant on more volatile markets.

Figure 9: Group structure



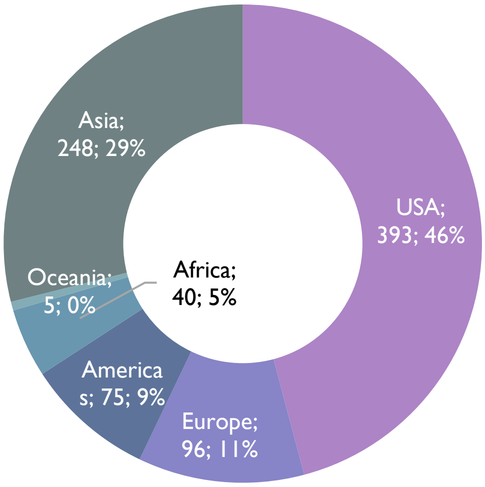
Source: CZG

Figure 10: Peer group of competitors

Company	Ticker	Headquarters	Market Capitalization (USD)	Personal Defence	Military & Law Enforcement	Hunting & Sport shooting
American Outdoor Brands Inc	AOUT	USA	189 787 746			✓
Sturm Ruger & Company Inc	RGR	USA	1 062 001 130	✓		✓
Smith & Wesson Brands Inc	SWBI	USA	845 820 485	✓	✓	
Vista Outdoor Inc	VSTO	USA	1 161 217 625			✓
Chemring Group PLC	CHG.L	UK	942 713 472		✓	
Singapore Technologies Engineering Ltd	S63.SI	Singapore	9 106 692 395		✓	
CZG - Česká zbrojovka Group SE	**CZG**	**Czechia**	**408 195 565**	✓	✓	✓

Source: CZG, Reuters Eikon

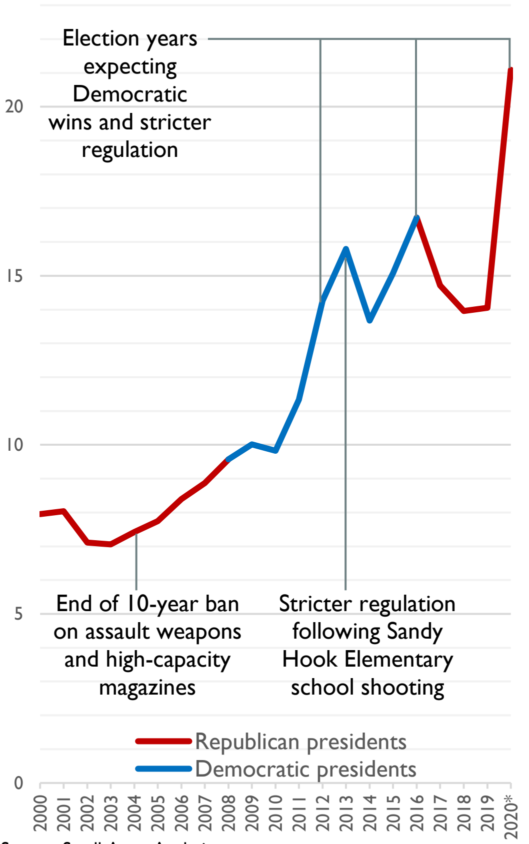
Figure 11: Civilian firearm holdings in 2017, millions of units



Source: Small Arms Survey

Figure 12: Total estimated firearms sales in the US, in millions of units

Note: The count for 2020 is updated up to November. It is noteworthy that the sales of firearms are highly seasonal with an average of 13% of annual sales taking place in December, owing to the hunting and holiday seasons. The final count may thus be significantly higher than reported in the figure.



Source: Small Arms Analytics

MARKET DRIVERS

Half of all guns held by civilians are in the USA. The civilian market segment includes personal defence, hunting, sport shooting, and other civilian use. Nearly 46% of civilian-held firearms were held by civilians located in the United States in 2017. The most populated Asian countries, India and China, follow with significant distance, representing 8.3% and 5.8% of global civilian firearms holdings, respectively. Among the eight countries with the largest number of firearms held by civilians, only Germany shows a decrease (of 36%) as compared to 2006. This information further supports CZG's decision to increase their exposure in the US market but thanks to the current situation – as outlined in the Investment summary section below – we can identify a lot of possible obstacles.

The military and law enforcement segment was expected to grow before the pandemic. According to the (pre-pandemic) BIS Small Arms Market Report, the military and law enforcement market segment will be driven by (i) rising demand for handguns for law enforcement with a high impact over the next one to five years and (ii) an increase in defence expenditures with a medium impact over the next one to two years and a high impact over the next three to five years. Furthermore, there has been an increase in the overall defence spending of various countries worldwide. Global military expenditure is estimated to have reached USD 1,922.10 billion in 2019 as different countries continue to modernize their defence capabilities.

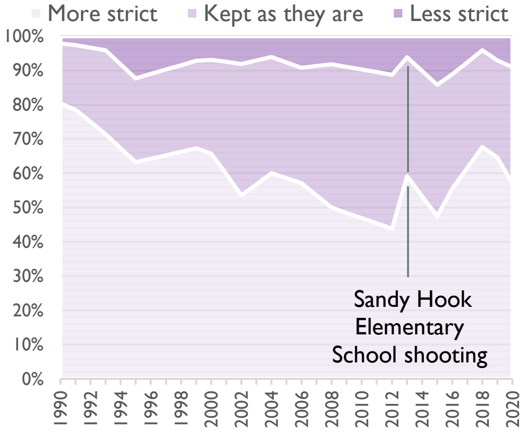
COMPETITIVE POSITIONING AND COMPETITORS

CZG participates in a very competitive market. The civilian market is currently occupied by a large number of entities. Smaller producers together represent a large competitive force, despite having negligible market shares individually. Consequently, there is fierce competition on price and large pressure on successful research & development activities. Furthermore, given the composition of the market and industry overall, there is a higher chance of restructuring and M&A activities. Major events that happened in that field are: (1) Colt Defense LLC filed for bankruptcy in June 2015 after losing the contract to supply the US Army. (2) Remington Outdoor Co. Filed for bankruptcy in 2018 (and then again in 2020) in a response to a significant drop in sales and reputation damage. (3) Heckler & Koch had to face three consecutive years of losses (between 2016 and 2018) and the auditor's report suggests that the company might not be viable in the upcoming years. Currently, Heckler & Koch AG is selling a major stake of its business. This demonstrates that even the position of the pioneers of the industry is not stable and after some shock, the industry can react with restructuring on a large scale. In the period from 2013 to 2020, there was at least one significant M&A operation per year.

CZG must face large as well as small competitors. Aside from small producers, CZG is facing large competitors on the market. Namely, we identified the following competitors: American Outdoor Brands Inc; Sturm Ruger & Company Inc; Smith & Wesson Brands Inc; Vista Outdoor Inc; Chemring Group PLC; Singapore Technologies Engineering Ltd. In comparison to the listed companies, CZG is holding a comparative advantage with respect to its products, prices, and financial performance. Nonetheless, going forward, with increased exposure to the US market and pressures to its margins, we expect the position to deteriorate.

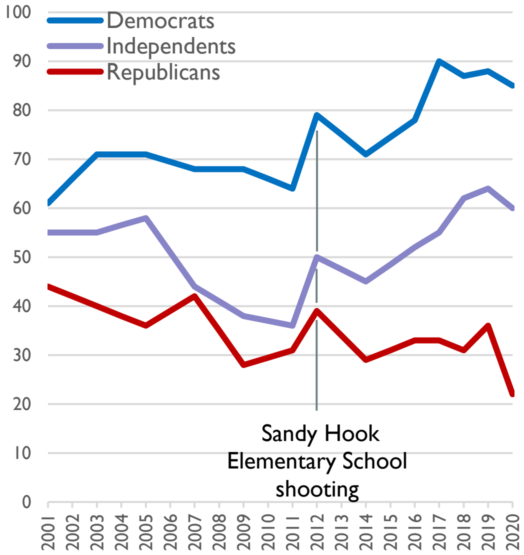
Significant levels of competition are especially notable in the US. With regards to the expansion plans of CZG, the most important competitors will be the ones operating on the US market – especially selling handguns – there are four main names: (1) Ruger sells a vast majority of its products in the US. The company mostly

Figure 13: Americans' preferences on gun laws, in %



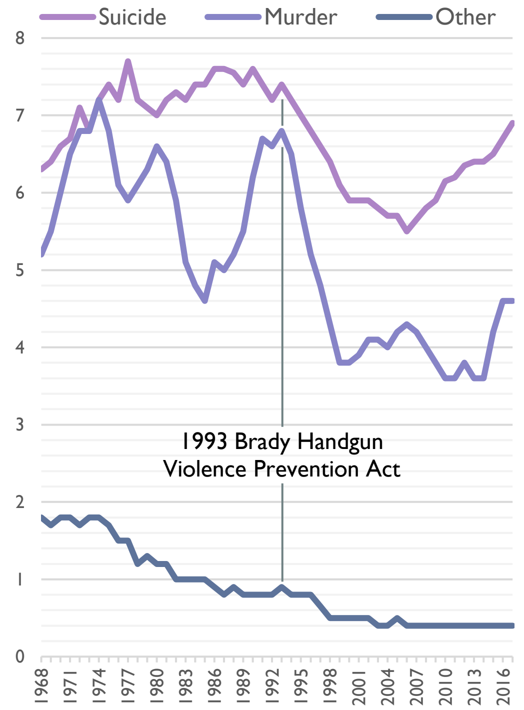
Source: Gallup

Figure 14: Preferences for stricter gun control in the USA by different parties, in %



Source: Gallup

Figure 15: Gun death rate per 100,000 US residents



Source: Centers for Disease Control and Prevention

concentrates on self-defence and hunting/sports shooting. (2) Smith & Wesson represents a significant obstacle for CZG in its efforts of achieving military and law enforcement contracts. S&W produced 1.4 million guns in 2018 and – apart from self-defence – it is also active in military and law enforcement segments. As a company with a substantial legacy and some previous ground-breaking innovations (Model 1 Revolver, .38 Military & Police revolver, Model 19), it can represent a difficult competitor. (3) Remington and (4) Vista Outdoor represent the remaining two competitors but they are mostly active in the hunting/sport shooting segment.

INVESTMENT SUMMARY

We issue a sell recommendation on the company's shares using a discounted free cash flow model to arrive at a target price of CZK 274 per share, a 7.5% downside from the firm's closing price of CZK 296 per share on December 18, 2020. The company is intending to expand on the US market, which represents around half of both the world's firearms market and CZG's 2019 sales, thus exchanging higher transportation costs and customs duties for higher personnel costs. However, there are several key factors negatively affecting the expansion as well as the overall share price. Firstly, Biden's presidency brings a significant risk of greater gun control and regulation, and while the fears thereof will drive the demand further upwards, CZG currently lacks sufficient capacity to satisfy more orders. Secondly, the opening of the planned production plant in Little Rock is likely to be delayed whilst bringing additional costs as a new project built from scratch with which CZG has little to no experience, regardless of the risks and additional difficulties inflicted upon by the global pandemic of COVID-19. CZG may therefore miss out on the short-term swing in demand of American consumers before the new regulation is introduced. Thirdly, diversifying through military contracts is not without its challenges that CZG as a company without a sufficient track record in the field or ties outside the Czech Republic will struggle to overcome.

BIDEN'S PROMISES OF STRICTER GUN CONTROL LOOM AHEAD

President Biden has a long history of opposing gun violence. He was the leading figure behind reforms that were passed in the 1990s, such as the 1993 Brady Handgun Violence Prevention Act, establishing the background checks system, or the 10-year ban on assault weapons and high-capacity magazines, active between 1994 and 2004. In 2013, following the Sandy Hook Elementary School shooting shortly after the re-election of President Obama, the Obama-Biden administration took a number of actions, including narrowing the so-called "gun show loophole," increasing the number of records in the background check system, and expanding funding for mental health services.

Biden's current platform involves a number of concrete measures. These involve re-enacting the 1994 ban on assault weapons and high-capacity magazines, holding gun manufacturers accountable for their products, or putting America on the path to ensuring that 100% of sold firearms are smart guns, all of which pose a serious threat to CZG's current business strategy. Biden's future path towards curbing firearm sales could be lacking a traditional opponent of such efforts – namely the influence of the National Rifle Association, due to its ongoing legal proceedings and financial struggles. The new regulation could seriously hinder the civilian gun market in CZG's largest export country and at the same time put pressure on the group's research & development, especially in the smart guns sector, the capacity for which is questionable and discussed in section Financial Analysis.

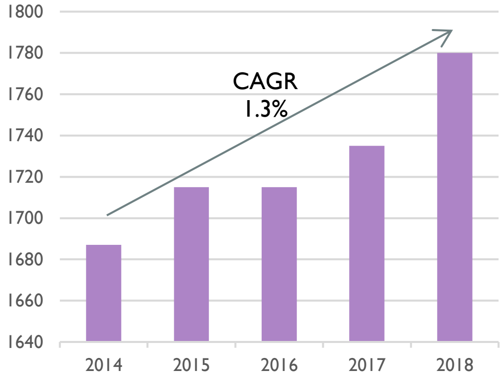
Keeping these promises is directly tied to the January 2021 election in Georgia. In 2021, the Democratic party will control the White House and the House of Representatives, but its policies could be obstructed by the Senate, the control of which depends on the result of the runoff election in Georgia, scheduled for early January 2021. If both seats are won by Democratic candidates, the Senate would be equally split between the two leading parties with a deciding 101st vote belonging to the Vice President, Democrat Kamala Harris. The importance of the election is recognized by both the leading parties with President Trump joining the active campaign as the race is about to become one of the most expensive Senate campaigns. Since there is a growing disconnect between Democrats and Republicans, whose support for further restrictions is at a record low, this runoff election is of paramount importance to the passage of stricter laws. Current predictions show very close margins with no clear favourite, all within the range of statistical errors, though the Democratic candidates faired slightly better for the majority of December.

Figure 16: Top 10 importers of hand- and long guns to the US in the third quarter of 2020

Country	*# of guns*	%
Turkey	428,126	23.5%
Austria	385,804	21.1%
Brazil	265,159	14.5%
Croatia	156,400	8.6%
Italy	117,995	6.5%
Germany	90,811	5.0%
Czech Republic	72,793	4.0%
China	63,933	3.5%
Canada	63,277	3.5%
The Philippines	39,243	2.1%
Total top 10	**1,683,541**	**92.2%**
Total	**1,825,496**	**100%**

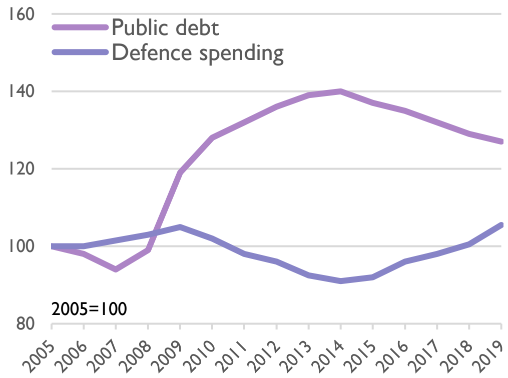
Source: Small Arms Analytics

Figure 17: Global military spending, billions of USD



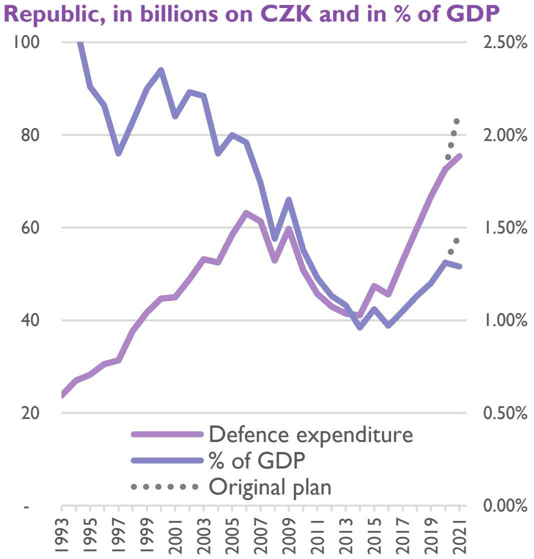
Source: Stockholm International Peace Research Institute

Figure 18: Changes in public debt and defence expenditure of EU-28



Source: CSIS.org

Figure 19: Defence expenditure of the Czech Republic, in billions on CZK and in % of GDP



Source: Ministry of Defence of the Czech Republic

Fears of stricter control drive sales higher. Since the year 2000, there have been three notable spikes in the sales of guns. In 2013, the aforementioned Sandy Hook Elementary School shooting resulted in a number of new stricter measures of gun control, the fears of which drove the sales of both handguns and long-guns to then-unprecedented heights. The volume of trade in the gun industry grew steadily since Obama's first term and reached its second significant summit before the 2016 presidential election in anticipation of the victory of Hillary Clinton and further restrictions. A slight decrease that followed is sometimes denoted as the Trump slump, but it was under Trump's administration that the absolute record sales were reported. Fears of the pandemic, social unrest, and the re-awakening of the Black Lives Matter movement, together with the anticipation of the presidential election all combined in never-before-seen demand for firearms. The long-term persistence of the record demand is difficult to predict, but additional fear and uncertainty can drive the short-term sales further up the unchartered territories throughout Biden's presidency. However, we forecast a slight decrease as compared to the unprecedented levels recorded in 2020.

Public support for gun control remains high. 57% of Americans want stricter gun laws. Support for stricter controls increases when a mass shooting occurs, which is less likely during the pandemic. Recently, there has been a notable shift in the demographic of first-time buyers which now includes more people who traditionally oppose gun ownership – people of colour, women, liberals, Democrats, people in states with stricter gun control in place. However, the change in preferences is not significant as the five million new gun owners represent only 2% of the adult US population; therefore, support for gun control remains high.

Increased awareness of gun deaths by suicides could further sway public opinion. While public support for gun control is affected mainly by the incidence of mass shootings, the effects of COVID-19 could influence it through a different channel. The majority of gun-related deaths are suicides, the rates of which surpassed murders in every year of the past 45 years. With the increased rates of depression and suicidal ideation recorded in 2020, suicide prevention is becoming ever-frequently associated with gun control. Aside from newly established cooperation between suicide prevention organizations with gun sellers, fairs, and associations, the link could receive legal support as one of the points of Biden's plan for gun safety. Increased mental health awareness in the general public could reinforce calls for stricter gun control.

THE LITTLE ROCK PROJECT IS LIKELY TO ATTRACT DELAYS AND FURTHER COSTS

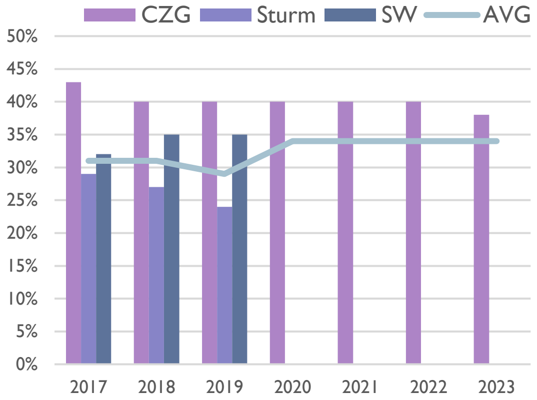
CZG has very limited experience in building a new production facility. The company's main production site in Uherský Brod has been in operation for over 80 years, and the group's global expansion has been driven through either extending the production capacity in Uherský Brod, or active acquisition of new entities. CZG has virtually no experience with developing a project of this scale from zero. Therefore, both delays and additional costs are to be expected.

The opening is expected to be further delayed. Investment into a new factory on American soil is a major expenditure and the primary reason for conducting the IPO. The plant in American Little Rock is, according to CZG, set for opening as early as late 2021 with full production capacity reached early the year after. Nevertheless, the currently circulating information is conflicting. In addition, Komerční banka reports expected opening and full operation capacity a full year later. Accordingly, we expect the opening to be scheduled for 2023.

The pandemic also affects the schedule through a shortage of materials and labour. During the first wave of the pandemic, factories and mines in the United States were closed. Together with the abnormal demand for firearms, this has led to an acute shortage of ammunition in all of the United States. Unintuitively, construction workers had the greatest rate of infections among all occupations. Despite the ongoing distribution of vaccines, the development of the Little Rock production plant could be further delayed due to a shortage of materials or labour.

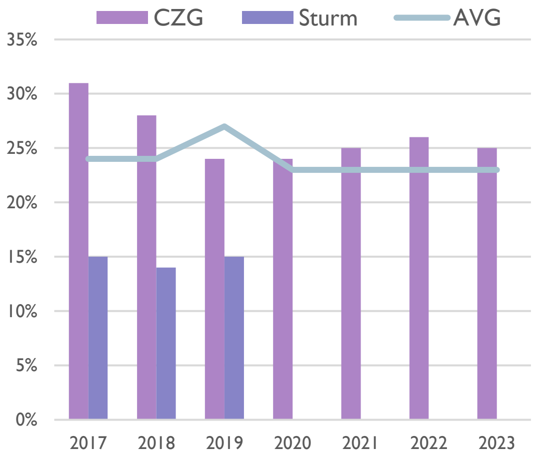
Delays would be costly not only with direct financial consequences but also with missed opportunities on the American market. The group is currently occupying around 2-3% of the market, making the Czech Republic one of the ten largest import countries to the American market for hand- and long-guns. However, the company has already reached its capacity limits in supplying firearms to the US. In the short term, with further growth of the market in fear of greater regulation and expected delays of the Little Rock production plant, we expect its market share to deteriorate. In a market this competitive, its former position would be hard to win back.

Figure 20: Gross margin forecast



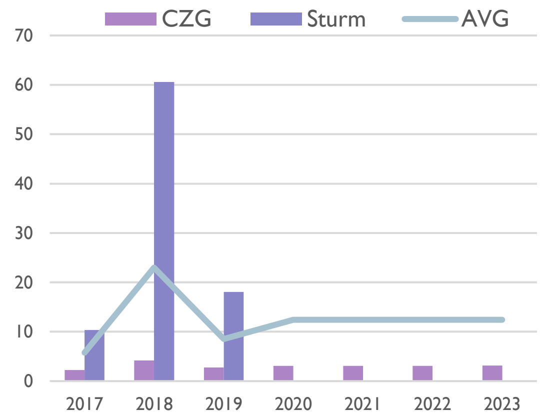
Source: Reuters Eikon, CZG, Team analysis

Figure 21: Operating expenses forecast



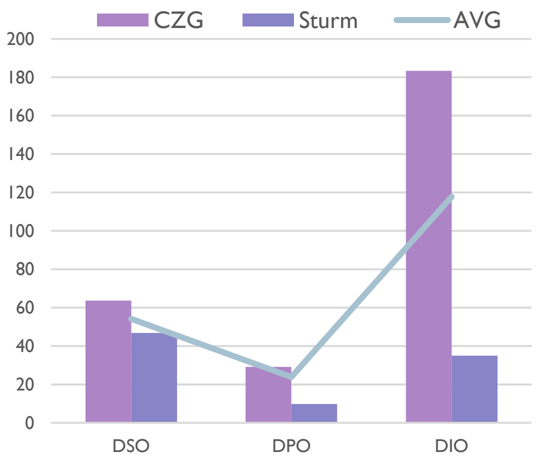
Source: Reuters Eikon, CZG, Team analysis

Figure 22: Working capital turnover forecast



Source: Reuters Eikon, CZG, Team analysis

Figure 23: DSO, DPO, DIO comparison in 2019



Source: Reuters Eikon, CZG, Team analysis

EXPANSION INTO MILITARY WILL BE DIFFICULT

Military budgets worldwide are expected to be hit by the pandemic. In most developed countries, military spending will likely be side-tracked in favour of austerity measures, as is already happening in the Czech Republic. On one hand, experts say that an international armed conflict is more likely to occur in the near future, particularly due to confrontation becoming more popular for resolving conflicts, as opposed to a dialogue. On the other hand, it is improbable to take place in the US or Europe where CZG supplies most of its products. Lower budgets will translate to less public tenders, thus reducing CZG's revenue from this area.

Securing contracts may prove challenging, especially abroad. Income from the military segment is contingent on winning tenders. The group's reputation has already come into question with its supply of CZ BREN 2 to the Ministry of Defence of the Czech Republic in April 2020. Its criticism stems from the fact that no public tender was issued for the selection of the supplier and that the rifle price was almost double its alternatives. Furthermore, the purchase follows on the supply of problematic rifles CZ 805 BREN and BREN 1A1. Delivered between 2010 and 2016 with a life expectancy of 20 years, the rifles showed high rates of failure and were thus pulled off. The total value of the contract for the supply of 16,000 BREN 2 rifles together with 21,000 CZ P-10 pistols was CZK 2.35 billion, which represents nearly 40% of CZG's 2019 sales. Jeopardizing its reputation in the military sector could thus have grave effects on the group's future performance. While this decision received some support on the grounds of supporting strategic domestic businesses, such alleviations cannot be presumed abroad.

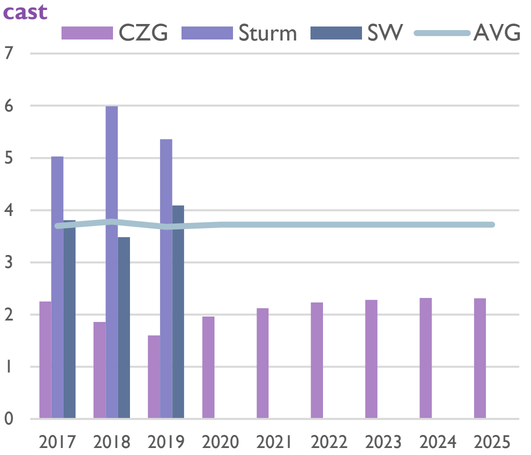
Successful delivery is another issue with postponement and cancellations. Contracts can sometimes be postponed or cancelled, as noted by Meopta, a Czech optical devices manufacturer, who claims that despite its increasing sales stemming from the military segment, it is still below target precisely due to postponements and cancellations. Another risk arises from obtaining the required certification, as experienced in the case of the unsuccessful supply of ballistic vests. In 2015, the CZG secured a contract worth CZK 68.0 million for the supply of ballistic vests to the Ministry of Defence of the Czech Republic, which it failed to deliver due to the refusal of the Defence Certification Authority to grant it the required certification. The whole issue was eventually brought to court. While small in relative terms (representing less than 2% of the group's 2015 sales revenue), the contract's consequences demonstrate important challenges the group could face in the future when larger contracts are concerned.

Improving its standing in the field through the acquisition of Colt can prove problematic. In November 2020, the group announced its time-limited exclusivity for conducting due diligence to acquire a 100% stake at Colt Holding LLC, which indirectly controls Colt Manufacturing Company LLC, an American firearms manufacturer founded in 1855. One of the motivating factors for the acquisition is Colt's track record in the military and law enforcement segment. Colt used to be the sole contractor and supplier for the US army for the production of M4 and its derivates. However, it was the loss of a military contract that significantly contributed to Colt's filing for bankruptcy in 2015 and subsequent restructuring the following year. While chances of securing military contracts in the United States can be consolidated through M&A actions, neither they can guarantee success nor mitigate the risks of losing the contracts.

FINANCIAL ANALYSIS

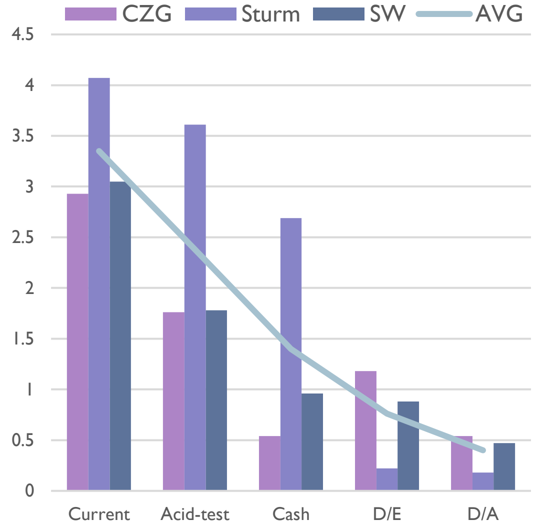
CZG has the top gross margin but only average operating margin, which indicates certain inefficiencies in its operational processes. CZG has the top gross margin thanks to lower costs of labour, which attributes approximately 20% of the net sales figure. The labour wage share of net sales is expected to increase, as a third of the production is looking to be set in the Little Rock plant, which will incur higher wages in comparison to the current level in Uherský Brod, therefore, decreasing the group's gross margin. Furthermore, as Figure 21 suggests, the group has significantly higher operating costs than the industry average and its direct competitor. This indicates that the group has inefficiencies in the operating segment, which is expected to even further deepen after ramping up the production in Little Rock, as the efficiency of remote plants is usually lower than the ones in close proximity. Moreover, the group's advantageous lower-wage environment is not sustainable in the long run, as labour mobility in the EU is increasing. The group needs high-skilled workers, as it is indicated by the group's programme for high-school graduates in the region, thus importing a lower qualified workforce will not help to cover this problem.

Figure 24: PPE turnover comparison and forecast



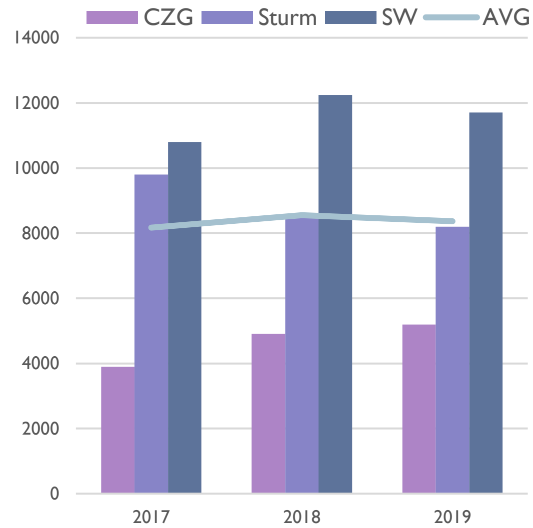
Source: Reuters Eikon, CZG, Team analysis

Figure 25: Liquidity and leverage ratios in 2019



Source: Reuters Eikon, CZG, Team analysis

Figure 26: R&D cost comparison, in thousands of USD



Source: Reuters Eikon, CZG, Team analysis

Figure 27: DuPont breakdown, with industry averages in brackets

	2017	*2018*	*2019*
nPM	0.11 (0.08)	0.11 (0.08)	0.12 (0.10)
ATO	0.66 (1.10)	0.74 (1.02)	0.78 (0.96)
EM	1.89 (1.63)	2.28 (1.76)	2.18 (1.76)
ROE	0.14 (0.14)	0.18 (0.14)	0.21 (0.17)

Source: Reuters Eikon, CZG, Team analysis

The group's efficiency is not among the best and with the expansion plans, the group is not in the prime position to take full advantage of the opportunity and might even hurt itself. The group's working capital turnover (WTO) is one of the lowest among the peer group and indicates inefficiencies in the inventory and accounts management. This is also confirmed by the below-average performance in the days in sales outstanding (DSO), days in payables outstanding (DPO), and days in inventory turnover (DIO). A high value in DSO means that the company is not able to collect cash in time and may be forced to discount it as bad debt, affecting the company's bottom line. A high value in DPO indicates that the company is not able to meet the payments on time, and thus may incur some penalty in the form of interest for late payments. A high value in DIO shows that the company is not able to sell products as quickly as the industry, thus indicating inefficiencies that can affect the bottom line due to costs such as warehouse costs. The WTO did not improve over the last 3 years. It is fair to say then that the WTO is expected to not remain at the same level, but possibly decrease as the company will be ramping up the distant production unit in Little Rock. In comparison, its direct competitor Sturm, Ruger & Co are showing very high efficiency in its processes as the DPO, DIO is almost four times lower than for the group. Forecasting the indicators as the average of the last 3 years, the group's efficiency will still be significantly below the average level.

The group employs the highest ratio of fixed assets over total assets; however, the fixed assets turnover (FXO) is significantly below the rate of the competitors, which again indicates certain inefficiency. The group currently has the lowest fixed assets turnover (FXO) at a value of 1.6. Although the forecasted values are estimated to be slightly higher with the highest forecast FXO at a value of 2.32, it is still far below the forecasted average of 3.72, which is the average of the industry in the previous 3 years. Such low FXO means that there is again inefficiency which is expected to be amplified by the ramping up of the distant production Little Rock unit, which also affects the bottom line.

CZG does not have a significant advantage in liquidity or financial leverage. As a result of the upcoming possible acquisition of Colt, the vision of one-stop-shop can be quite expensive. Accounting also the inefficiencies in the group's operations, it is expected to affect the group's bottom line negatively. CZG has a slightly below average current, acid-test ratio, and significantly below average cash ratio. On the other hand, the debt-to-equity ratio and debt ratio are above average, indicating that the group has higher financial leverage than its competitors. As the group is dealing with inefficiencies as pointed out previously and not brimming with excess cash ready for acquisition, the Colt acquisition might be both financially and operatively exhausting and thus negatively affecting the bottom line of the group.

DuPont breakdown analysis confirms our point, top-ranked net profit margin (PM), severely below-average asset turnover (ATO), and slightly above average equity multiplier (EM). PM is stable similarly to the industry average, ATO of the group in FY19 increases even though the trend in FY19 was decreasing, and EM changes according to the industry trends. As mentioned above, the group has extraordinary net profit margins (NPM) due to the competitive advantage of operating in a lower-wage country, despite its unsustainability in the long run. The asset turnover (ATO) is significantly below average, indicating inefficiency. The equity multiplier is above the average of the industry.

CZG spending on R&D might be enough to keep the current products competitive but with new technology, the company might increase the R&D spending to catch up to other competitors, thus lowering the bottom line. The R&D expenditure is similar across the industry in terms of net sales. With 2% spending on R&D, we expect that this can sustain the competitiveness of the product line. However, if new technology and trends arise (such as smart or IoT guns), then in terms of absolute spending, CZG would have to significantly increase their R&D to be able to keep up with the spending of others. That would imply at least doubling the expenditure to its rival's spending.

VALUATION

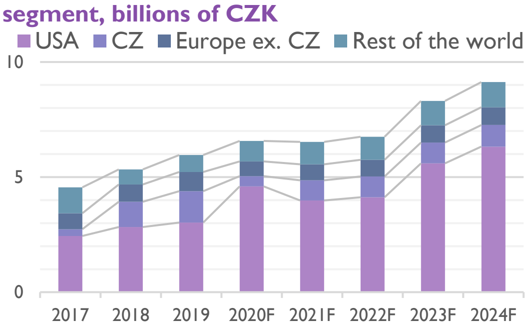
We used a discounted cash flow model (DCF) to arrive at our target price of CZK 274 per share, a 7.5% downside from the group's closing price of CZK 296 per share on December 18, 2020. Given the future expansion plans of the group, the DCF model suits the situation the best as assumptions can be tailored according to the group plans. As a sanity check, multiples were deployed to incorporate the valuation of the industry,

Figure 28: Key revenue drivers and forecasted CAGR 2021-2024

US	civilian market, Little Rock	16.2%
CZ	contract with Czech Ministry of Defence	27.9%
Europe	increased presence in Western Europe (Germany)	11.0%
ROW	growing military and law enforcement market	11.3%
Total		***16.0%***

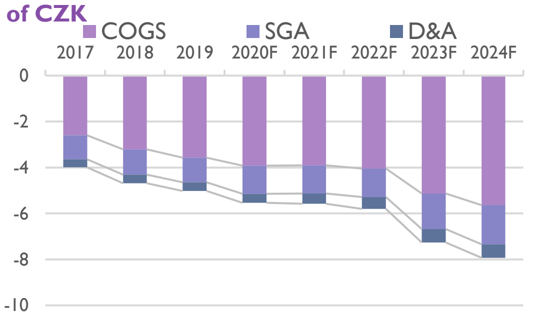
Source: CZG, Team analysis

Figure 29: Forecast of revenue per geographic segment, billions of CZK



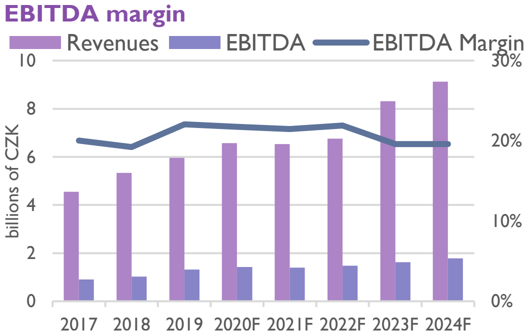
Source: Team analysis

Figure 30: Forecast of operating costs, billions of CZK



Source: Team analysis

Figure 31: Forecast of total revenue and EBITDA margin



Source: Team analysis

resulting in a valuation of 294 CZK. To control for the volatility of the target price, we conducted sensitivity analysis and a Monte Carlo simulation.

DISCOUNTED FREE CASH FLOW MODEL

Our DCF model inclusive of 8 years of explicit forecast valued CZG at CZK 274 per share using a WACC of 6.6% during 2021-2024, and 7.6% in the remaining period. A forecast horizon of eight years, including an expansion and convergence period, was used to account for the expansion plans of the business to the US and to reduce forecast dependency on the terminal value. Firm cash flow represents the net cash flow generated by the group calculated by forecasting revenues, operating costs, capital expenditure, and changes in working capital. Terminal value was estimated using the perpetuity growth formula, where we assumed a terminal growth rate for a mature company of 2%. Terminal value was calculated by the Gordon growth model.

Revenues We forecasted the group's revenues for each of its geographical segments with identified key revenue drivers. In 2021-2022, we expect stagnation caused by temporary civilian market saturation in the US and the limited production capacity of the group, which is currently around 400,000 guns. Consequently, in 2023-2024, we forecast a double-digit growth of revenues driven by the completed new production facility in Little Rock with an approximated capacity of 150,000 guns per year. At the same time, we expect revenues to be driven by military and law enforcement contracts, especially in the Czech Republic. In the remaining period to the terminal state in 2029, we expect the group's revenues to converge to the mature state. A detailed projection of revenues can be found in the Figure 29 and in the appendix.

Operating costs We estimated the group's future margins to be decreasing in 2021-2023 reflecting the company's production and sales expansion plans, which will result in higher operating costs. We expect personnel costs to increase due to the higher cost of labour in Western markets and COGS to increase due to the opening of a new manufacturing facility in the US which will result in negotiation with new suppliers. We forecast the annual depreciation rate to be 12.9%, which is in line with the past figures. After 2024, we assumed the group's operating margins to stay at 11.5%, which is a 4% decrease compared to the 2020 level. We assume this margin to be constant in the remaining period due to lower margins from state contracts (caused by the media turmoil), more efficient production of competitors (caused by higher absolute R&D spending), and expected shift of production to currently developing countries, which will have lower production costs.

Operating asset turnover (CAPEX and change in working capital) We expect the group's CAPEX to sales ratio to be 7.2%, based on its past values and the group's expectations. This will not hold in 2021 and 2022 when the production of the new manufacturing facility Little Rock is planned with expected one-time costs of CZK 1.5 billion. We expect the construction of the new plant to be delayed one year as explained in the section Investment summary. We forecast working capital based on a 2-year average of ratios days sales outstanding, days payable outstanding, days inventory, and days for other current A&L.

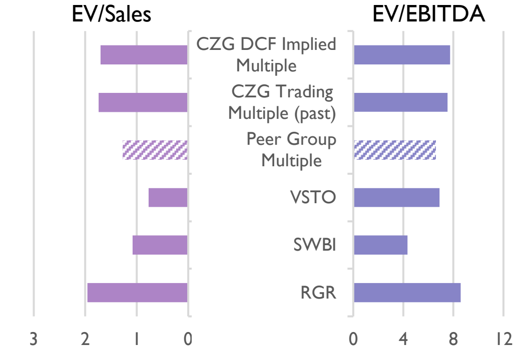
WACC We divided the calculation of WACC into 2 periods as we see the current period of low risk-free rate to be unsustainable. We arrived at a WACC of 6.6% during 2021-2024 and 7.6% in the remaining period. The breakdown of our assumptions is presented in Figure 32. A more detailed explanation of our assumptions is in the appendix.

Figure 32: WACC methodology

Assumption	***Rate***	***Methodology***
Risk-free rate 2021-2024	0.75%	Implied yield on 10y gov bond of US, CZ and EU (weighted based on revenues)
Risk-free rate	1.72%	Weighted US, CZ and EU risk free rates (Fernandez, 2020) - current levels not forward looking
Market risk premium	5.94%	Weighted US, CZ and EU market risk premiums (Damodaran, 2020)
Adjusted unlevered Beta	0.66	Derived from peer group median value, adjustment according to Blume
Adjusted relevered beta	0.70	Implied Firm levered market Beta (Damodaran, 2020)
Size premium	1.58%	Size premium for small-cap (Duff & Phelps, Valuation Handbook 2019)
Country premium	0.55%	Weighted US, CZ and EU country risk premiums (Damodaran, 2020)
Cost of equity	8.02%	Calculated via CAPM (forward-looking)
Cost of debt	3.50%	Yield on current bond
Debt ratio	8.54%	Capital structure derived from peer group median value (Reuters Eikon)
Tax rate	19.50%	Corporate income tax rate (EY Worldwide Corporate Tax Guide)
WACC	**6.62%**	2021-2024
WACC	**7.57%**	Forward-looking

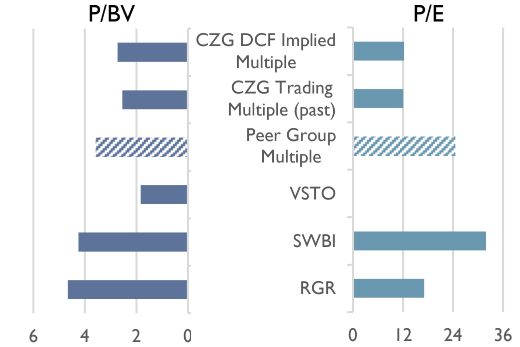
Source: CZG, Fernandez 2020, Damodaran 2020, Reuters Eikon, Team analysis

Figure 33: Enterprise value multiples



Source: Reuters Eikon

Figure 34: Equity multiples



Source: Reuters Eikon

Figure 35: Multiples valuation

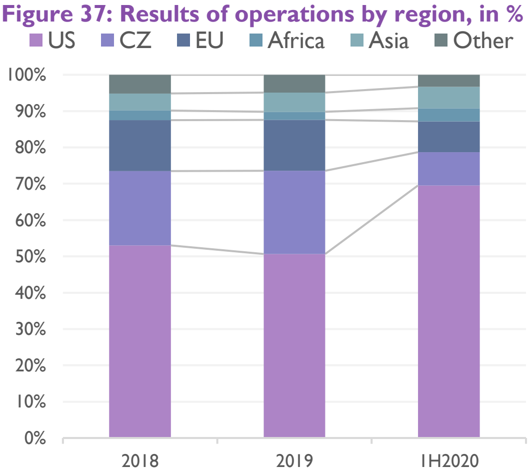
Peer group multiple	*Multiple*	*Implied value per share*
EV/Sales	1.27x	195
EV/EBITDA	6.6x	228
P/BV	3.58x	359
P/E	24.53x	547
Share price		***294***

Source: Reuters Eikon, Team analysis

Figure 36: Monte Carlo Valuation

Source: Team analysis

Figure 37: Results of operations by region, in %



Source: CZG

RELATIVE VALUATION

Our multiples analysis yielded a relative valuation of CZK 294 per share from a derivation of EV/Sales, EV/EBITDA, P/E, and P/BV multiples of the comparable set – Smith & Wesson Brands, Sturm Ruger & Company, Vista Outdoor. The three listed gun manufacturers were selected as appropriate comparables given the global presence and similar operating models with a focus on the same markets as CZG. The multiples method is suggesting the overvaluation of the group were EV/Sales and EV/EBITDA, whereas P/BV and P/E signalled undervaluation. The resulting valuation was computed as a median value of all four multiples. The target price from relative valuation is suggesting an overvaluation of the group with a lower gap compared to the DCF model. This is a result of a small number of direct publicly traded competitors, which have a different market presence and product mix.

SENSITIVITY ANALYSIS AND MONTE CARLO VALUATION

We ran a sensitivity analysis to check the effect of changes to our WACC and terminal growth assumptions, which have the highest impact on the final value of the group. We observe that a 1% decrease in WACC would highly likely change our price recommendation, which outlines the importance of both assumptions and their correct derivation. Finally, the average stock price of the middle 9 buckets resulted in CZK 282.

Lastly, we conducted a Monte Carlo valuation method with 10,000 runs by flexing revenue growth, operating margin, asset turnover, and WACC to yield a valuation value of CZK 274 with a 20% quantile of CZK 263 and an 80% quantile of CZK 285. Details of our Monte Carlo model can be found in the appendix.

INVESTMENT RISKS

The majority of operations take place in the US which is signalling upcoming volatility. At least half of the group's income from operations come directly from the US market, where most of their activities serve the civilian market. The current situation in the US could bring significant volatility into the retail gun market, which would thus be transferred to CZG through its significant exposure to this market and the remaining exposures might not be sufficient to compensate for potential losses. Furthermore, the ongoing Little Rock project suggests that this exposure will be increasing over the upcoming years, and therefore, the situation in the US gun market will become even more important for the company (the share of revenues from the US is expected to be 70% by 2028). However, CZG is also highly exposed to the European market, in particular to the Czech market, so in case of any disruptions in the USA, CZG can cover some losses by its European operation, which sets CZG apart from the competition that is only oriented to the US market.

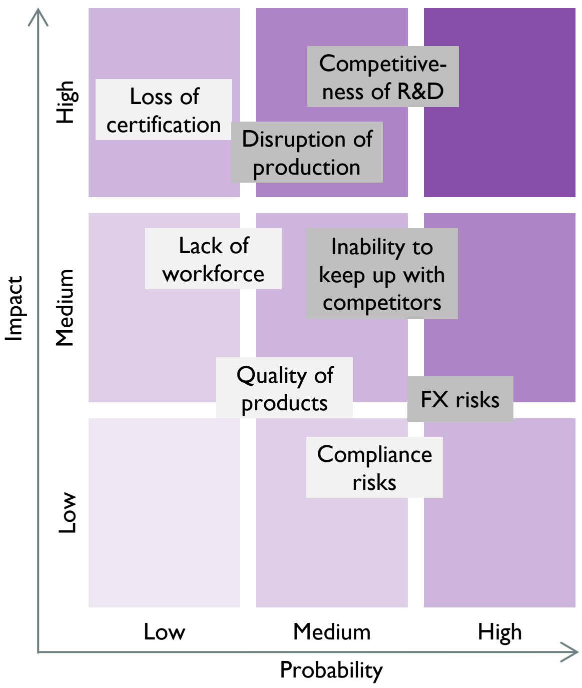
CZG might be unable to keep up with its competitors. Due to the low overall market share in the global market (outside the Czech Republic), CZG is not entirely recognised as a competitor, and therefore, there are no significant actions from the company's competitors to override them. This could change dramatically, most likely in the US, if CZG would participate in government contracts, making CZG more visible. Consequently, the company could become understood as a notable competitor.

Insufficient R&D in absolute terms could further threaten its competitive position. CZG does have a solid R&D division, but from the global perspective (of smart guns for example), the current state of this division is not sufficient to keep up with the global competition in absolute terms. The problem might persist even if Česká Zbrojovka Group was to reroute all available funds to R&D. Unless a substantial transformation to mitigate this risk is undergone, the threat from the competition may be ever-growing.

Production can be easily disrupted with significant consequences. Disruption of production in Uherský Brod even for a short period of time would have detrimental effects on the group's supply. The company itself states that its mitigation of this risk is not sufficient since the production in Uherský Brod represents 85 % of the company's output. The risk will to some extent be mitigated through the opening of a production facility in Little Rock, but the majority of production will still take place in Uherský Brod.

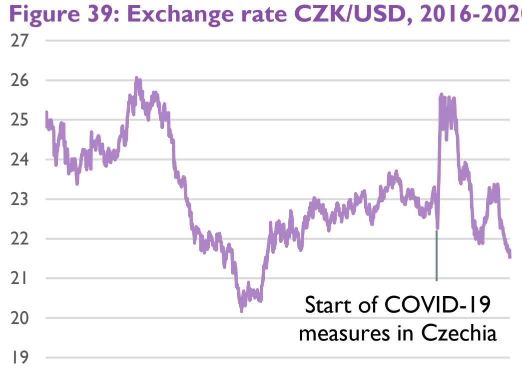
The local labour market might not be able to supply enough workforce. CZG employs over 1600 people, and it is an important job provider in the region of Uherský Brod. In case of sudden shocks to the local labour market (e.g. if a new large-

Figure 38: Risk matrix



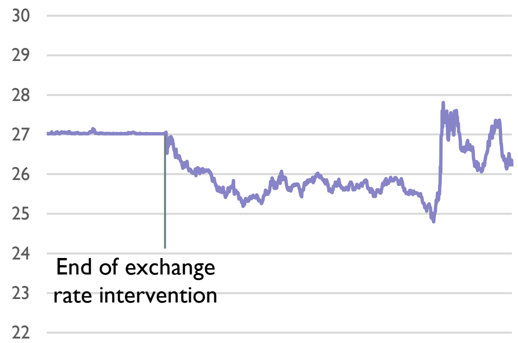
Source: Team analysis

Figure 39: Exchange rate CZK/USD, 2016-2020



Source: ČNB

Figure 40: Exchange rate CZK/EUR, 2016-2020



Source: ČNB

Figure 41: CZG Corporate history

2018

- Contamination of the soil and underwater uncovered on the premises of the plant in Uherský Brod
- CZG's hunting rifles involved in poaching in South Africa and Mozambique

2020

- Company-wide Code of Ethics adopted
- Jan Zajíc replaced Ladislav Britaňák as the CEO of CZUB

Source: CZG

scale job provider would enter the region), the position of CZG could change, suggesting an outflow of labour that would implicitly result in a disruption of production. Furthermore, labour is scarce even in the pandemic as the unemployment rate remains close to the all-time-low around 2 %. In case of further expansion of the company in the region, they might be seriously limited in finding new workforce, despite offering wages above the market average.

Contracts with supplying partners can complicate the production. Despite the ambition to be a fully vertically integrated company, CZG is still reliant on a few supplying partners. One supplier, HM ARZENAL Zrt., is identified as risky by the company itself, as the cooperation will not bring expected benefits and possible enforcement of agreed cooperation could be problematic and difficult. To mitigate risks during the lockdown, the company decided to stockpile to avoid disrupting the production; however, this further negatively affects their inventory turnover.

Due to the global exposure of CZG, the company faces various financial risks. Most of the group's revenue is denominated in EUR and USD, while the majority of the costs, capital expenditures, and investments are denominated in CZK. Furthermore, foreign exchange fluctuations impact the value of fixed assets held abroad (e.g. in the United States CZK 244.4 million as of 30 June 2020). The mitigation of this particular risk is not entirely sufficient and CZG does not have an adequate hedge made of derivatives and other contracts that would cover the optimal foreign currency exposure. We can see the expansion to the USA as a tool for mitigation of this risk. Nevertheless, achieving that would require the Little Rock project to establish a sufficient position in the US market.

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE

Shareholder structure Free float of just 9.8% limits the control investors can assume, especially when the management of CZG would be seen as ineffective. Furthermore, the investor base of the firm is constrained by the nature of the product CZG offers, as certain funds exclude companies involved in firearms. While this exclusion only pertains to controversial weapons in certain cases, additional transparency can be required even for small arms manufacturers such as CZG, thus negatively affecting the group's prospects and price.

There has been a recent unexpected change in the Board of Directors. The executive committee is composed of seven board members (two of whom are women), each in charge of a different aspect of management. Additionally, they are supported by committees for audit, regulatory, and ethical matters, remuneration, and acquisition. Notably, there has been a recent change in the position of the CEO of CZUB, Česká Zbrojovka a.s., which is the main source of the group's revenues. In 2019, more than 85% of the group's products were produced at the facility in Uherský Brod; therefore, an unexpected change in its top management should be viewed with extra caution, especially so shortly after the group's IPO. In particular, the former CEO Ladislav Britaňák was replaced by the then-CFO Jan Zajíc who only joined the company a year prior. Aside from the management's assurance that the departure was amicable, no explanation of the change has been provided, lending itself to further doubts about the firm's performance.

Environmental policy is implemented up to, but not beyond the extent required by law. Its plant in Uherský Brod has been in operation for over 80 years, raising concerns about its environmental sustainability. For example, soil and underwater contamination were discovered (and remedied) in 2018. Further monitoring is carried out periodically while other legally required environmental policies are implemented. Also in 2018, there arose a controversy surrounding the use of hunting rifles by poachers in South Africa and Mozambique, and their production has since been discontinued. As demands for bolder environmental protection arise in the future, both legally and in the minds of investors, CZG can struggle to keep up.

Corporate social responsibility expenditure could be higher given the nature of the product. CZG committed around 8.0 million CZK in 2019 to a wide range of projects, including sports, health, education, or culture. The sum fades in comparison to the group's consolidated sales as it represents less than 0.14% thereof (or 0.85% of operating profit). This could become another problem in the future as investors begin to place more emphasis on the sustainability and social responsibility of companies.

APPENDIX

APPENDIX 1: BOARD OF DIRECTORS

Lubomír Kovařík
Chairman of the Board of Directors

- Group Chairman since 2018
- CEO of key subsidiary (CZUB) between 2006 and 2017
- Almost 15 years with CZG

Jan Drahota
Vice-chairman of the Board of Directors
Head of Finance

- Head of Finance since 2018
- 15 years of experience in investment banking
- With CZG at the shareholder level since 2014

Alice Poluchová
Vice-chairwoman of the Board of Directors

- CEO of CZ-USA since 2004
- 20+ years of experience with US firearms market
- With CZG since 1995

Andrej Chrzanowski
Member of the Board of Directors

- Head of R&D since 2018
- 15+ years of experience in R&D
- With CZG since 2013

David Aguilar
Member of the Board of Directors

- Independent, non-executive member of the Board of Directors
- 35 years of experience with US Customs and Border Protection and the US Border Patrol
- With CZG since 2016

Jana Růžičková
Member of the Board of Directors

- CZG Corporate Secretary
- 15+ years of experience in managerial positions and executive roles
- With CZG since 2015

Jan Zajíc
Member of the Board of Directors

- CEO of CZUB since 2020
- With CZG since 2019

Source: CZG

APPENDIX 2: SIMPLIFIED CONSOLIDATED BALANCE SHEET

All figures in millions of CZK.

Assets	***2017***	***2018***	***2019***	***2020F***	***2021F***	***2022F***	***2023F***	***2024F***	***2025F***	***2026F***	***2027F***	***2028F***
Total non-current assets	2 744	2 897	2 839	2 917	3 441	4 156	4 171	4 240	4 348	4 476	4 621	4 769
Inventories	1 747	1 772	1 747	2 054	2 004	2 073	2 556	2 810	3 035	3 187	3 346	3 446
Receivables	461	669	1 038	984	960	993	1 224	1 346	1 454	1 526	1 603	1 651
Cash and cash equivalents	232	1 239	686	1 340	1 671	1 842	1 695	1 980	1 148	1 533	1 933	2 404
Total current assets	2 440	3 680	3 472	4 377	4 636	4 907	5 475	6 137	5 636	6 246	6 882	7 501
Total assets	***5 184***	***6 578***	***6 311***	***7 294***	***8 077***	***9 063***	***9 646***	***10 377***	***9 985***	***10 722***	***11 503***	***12 271***

Equity and Liabilities	***2017***	***2018***	***2019***	***2020F***	***2021F***	***2022F***	***2023F***	***2024F***	***2025F***	***2026F***	***2027F***	***2028F***
Total equity	3 411	3309	3469	4008	4389	4767	5104	5663	6251	6849	7479	8121
Bank loans and bonds	1 481	2210	2250	2311	2726	3293	3305	3360	2297	2364	2441	2519
Total non-current liabilities	1 481	2210	2250	2311	2726	3293	3305	3360	2297	2364	2441	2519
Current bank loans and overdrafts	33	35	43	44	52	63	63	64	44	45	47	48
Payables	313	324	285	355	346	358	456	502	542	569	598	615
Other current liabilities	-53	700	264	576	562	581	717	788	851	894	939	967
Total current liabilities	292	1059	592	975	961	1003	1237	1355	1437	1508	1583	1631
Total liabilities	1 773	3268	2842	3286	3687	4295	4542	4714	3734	3873	4024	4150
Total equity and liabilities	***5184***	***6578***	***6311***	***7294***	***8077***	***9063***	***9646***	***10377***	***9985***	***10722***	***11503***	***12271***

Source: CZG, Team analysis

APPENDIX 3: SIMPLIFIED CONSOLIDATED PROFIT AND LOSS ACCOUNT

All figures in millions of CZK.

	2017	2018	2019	2020F	2021F	2022F	2023F	2024F	2025F	2026F	2027F	2028F
Revenues	4 555	5 340	5 959	6 570	6 412	6 630	8 176	8 990	9 709	10 194	10 704	11 025
EBITDA	912	1 026	1 314	1 429	1 329	1 380	1 360	1 619	1 710	1 782	1860	1 917
Depreciation and amortization	-350	-365	-371	-398	-440	-525	-576	-582	-594	-610	-629	-649
EBIT	562	661	944	1 031	890	854	785	1 037	1 117	1 172	1 231	1 268
Net profit	***500***	***751***	***675***	***764***	***636***	***590***	***533***	***736***	***833***	***877***	***922***	***949***

Source: CZG, Team analysis

APPENDIX 4: SIMPLIFIED CONSOLIDATED CASH FLOW STATEMENT

All figures in millions of CZK.

	2020F	2021F	2022F	2023F	2024F	2025F	2026F	2027F	2028F
Operating cash flow before working capital changes	1 250	1 180	1 241	1235	1446	1515	1577	1644	1695
Inventories	-306	49	-68	-483	-254	-225	-152	-159	-100
Receivables	54	24	-33	-231	-122	-108	-73	-76	-48
Payables	70	-9	12	98	45	40	27	28	18
Other net current liabilities	312	-14	19	136	71	63	43	45	28
(Increase)/Decrease of net working capital	130	51	-70	-481	-259	-229	-155	-163	-102
Net operating cash flow	1 380	1 230	1 171	754	1 186	1 286	1 422	1 481	1 592
Net investing cash flow (CAPEX)	-475	-964	-1 240	-591	-650	-702	-737	-774	-798
Interest paid	-88	-104	-126	-126	-128	-88	-90	-93	-96
Debt financing	62	423	577	13	56	-1 083	69	78	80
Dividends	-225	-255	-212	-197	-178	-245	-278	-292	-307
Capital decrease	0	0	0	0	0	0	0	0	0
Net financing cash flow	-251	65	239	-310	-250	-1 416	-299	-307	-324
Change of cash and cash equivalents	654	331	171	-147	286	-833	385	400	471
Cash and cash equivalents at the beginning of the year	686	1 340	1 671	1 842	1 695	1 980	1 148	1 533	1 933
Cash and cash equivalents at the end of the year	***1 340***	***1 671***	***1 842***	***1 695***	***1 980***	***1 148***	***1 533***	***1 933***	***2 404***

Source: CZG, Team analysis

APPENDIX 5: DCF VALUATION

All figures in millions of CZK.

		Period 1				**Period 2**			
	2020F	**2021F**	**2022F**	**2023F**	**2024F**	**2025F**	**2026F**	**2027F**	**2028F**
EBIT	1 031	890	854	785	1 037	1 117	1 172	1 231	1 268
Taxes	-201	-173	-167	-153	-202	-218	-229	-240	-247
D&A	398	440	525	576	582	594	610	629	649
CAPEX	-475	-964	-1 240	-591	-650	-702	-737	-774	-798
WC Change	130	51	-70	-481	-259	-229	-155	-163	-102
FCFF	883	242	-97	135	507	561	662	683	770
Discount factor		0.94	0.88	0.83	0.77	0.69	0.65	0.60	0.56
Discounted FCFF		**227**	**-85**	**112**	**392**	**389**	**427**	**410**	**429**

Sum of discounted FCF Period 1	646
Sum of discounted FCF Period 2	1 656
Discounted Terminal value	7 863
Long-term growth	2,0%
Enterprise value	10 164
Net debt and minority interest	1 231
Equity value	8 933
Per share (CZK)	***274***

Source: CZG, Team analysis

APPENDIX 6: DETAILED WACC COMPUTATION

All figures in thousands of CZK.

Indicator	Value	Source	Note
Net Debt (Book Value)	1 220 000	CZ 9M 2020	
Minority interest	11 358	CZ 2019	
Equity (Market Value)	9 660 848	PSE	
Weight of Net Debt (Historical)	12.63%	CZ 9M 2020	
Weight of Net Debt (Forecasted)	***8.54%***	***Reuters Eikon***	***Median of peer companies Smith & Wesson Brands, Sturm Ruger & Company and H&K AG - in line with group strategy targeting low debt level***
Yield on US 10Y Sovereign Bonds (weight 65%)	0.92%	investing.com	2021-2024 - assumed period of low rates
Yield on EU 10Y Sovereign Bonds (weight 20%)	-0.57%	ecb.europa.eu	2021-2024 - assumed period of low rates (also representing ROW)
Yield on Czech 10Y Sovereign Bonds (weight 15%)	1.25%	investing.com	2021-2024 - assumed period of low rates
Risk-Free Rate	***0.67%***	***Team calculation***	***Weighted average (forward looking weights based on revenues in 2023)***
Risk free rate - US (weight 65%)	1.80%	Fernandez 2020	Forward looking
Risk free rate - EU (weight 20%)	1.30%	KB report	Forward looking (also representing ROW)
Risk free rate - CZ (weight 15%)	1.90%	Fernandez 2020	Forward looking
Risk-Free Rate	***1.72%***	***Team calculation***	***Weighted average (forward looking weights based on revenues in 2023)***
Market Risk Premium - US (weight 65%)	5.23%	Damodaran 2020	
Market Risk Premium - Western Europe (weight 20%)	8.10%	Damodaran 2020	
Market Risk Premium - CZ (weight 15%)	6.12%	Damodaran 2020	
Equity Market Risk Premium	***5.94%***	***Team calculation***	***Average of CZ and US market risk premiums (Fernandez, 2020)***
Adjusted unlevered Beta	0.66	Team calculation	Derived from Peer Group
Implied Firm Levered Market Beta	***0.70***	***Team calculation***	***Relevered with targeted capital structure***
Country Risk Premium - US (weight 65%)	0.00%	Damodaran 2020	
Country Risk Premium - Western Europe (weight 20%)	2.10%	Damodaran 2020	also representing ROW
Country Risk Premium - CZ (weight 15%)	0.89%	Damodaran 2020	
Country Risk Premium	***0.55%***	***Team calculation***	***Weighted average (forward looking weights based on revenues in 2023)***
Size Mark-Up	***1.6%***	***Duff & Phelps 2019 (small cap)***	***Result of low free float of 9.2% (low liquidity), lower transparency in reporting and environmentally not friendly industry***
Cost of Equity	***9.05%***	***Team calculation***	***Calculated via CAPM***
Industry Cost of Debt - Aerospace/Defense	3.27%	Damodaran 2020	Sanity check
Yield on a Group's Corporate Bond	3.50%	Reuters Eikon	
Interest Expense (before Tax)	85 842	CZ 2019	
Total Debt	2 353 132	CZ 2019	
Borrowing Cost (before Tax)	3.75%	Team calculation	
Cost of Debt (before Tax)	***3.50%***	***Team calculation***	***Used Yield on a Group's Corporate Bond***

Indicator	Value	Source	Note
Tax Rate	***19.5%***	***EY Tax guide***	

Weighted Average Cost of Capital	6.62%	Team calculation	2021-2024
Weighted Average Cost of Capital	***7.57%***	***Team calculation***	***Forward looking***

APPENDIX 7: DERIVATION OF TARGET DEBT LEVEL AND COMPANY BETA

	Head-quarters	Market Cap. (mil USD)	Net Debt (FY0, mil USD)	Beta 3 Year Weekly	Adj. lev-ered beta	Leverage	Tax	Un-levered beta
Smith & Wesson Brands Inc	USA	964	75	0,36	0,57	7,8%	40%	0,545
Sturm Ruger & Company Inc	USA	1 124	-165	0,55	0,70	-14,7%	40%	0,768
H&K AG	Germany	2 509	234			9,3%	30%	
Median						***7,8%***		***0,657***

Source: Reuters Eikon, Team Analysis

APPENDIX 8: DETAILED FORECAST OF REVENUES

All figures in thousands of CZK.

	2017	2018	2019	2020F	2021F	2022F
Revenues	4 555 483	5 339 581	5 958 742	6 569 501	6 411 862	6 630 370
Growth	-8%	17%	12%	10%	-2%	3%

	2023F	2024F	2025F	2026F	2027F	2028F
	8 175 879	8 989 830	9 709 017	10 194 467	10 704 191	11 025 317
	23%	10%	8%	5%	5%	3%

Revenue in segments	2017	2018	2019	2020F	2021F	2022F	2023F	2024F
USA	2 442 869	2 830 049	3 018 113	4 598 650	3 977 832	4 122 228	5 590 929	6 325 280
CZ	296 537	1 093 615	1 366 980	446 726	853 938	870 025	886 672	903 898
Europe ex. CZ	690 879	750 333	832 787	637 242	659 418	682 366	706 112	730 685
Rest of the world	1 125 198	665 584	740 862	886 883	920 673	955 751	992 165	1 029 967

Growth in segments	2017	2018	2019	2020F	2021F	2022F	2023F	2024F
USA	5%	16%	7%	52%	-14%	4%	36%	13%
CZ	-69%	269%	25%	-67%	91%	2%	2%	2%
Europe ex. CZ	-20%	9%	11%	-23%	3%	3%	3%	3%
Rest of the world	43%	-41%	11%	20%	4%	4%	4%	4%

	2017	2018	2019	2020F	2021F	2022F	2023F	2024F
Number of produced guns	324 428	402 055	374 276	429 271	418 970	433 248	534 236	587 422

Explanation	
2020	Growth was calculated by extrapolation from results after 9 months in 2020 based on 9M financial results in 2019 and whole year results
2021	We expect a rebound in all markets (except the US) due to higher military and civilian spending. This growth will be driven by the new sales team in Germany and the contract with the Czech Ministry of Defence as CZG received its first orders in August 2020, with the deliveries to take place in 2021 and beyond. We expect demand in the US to decrease after temporary civilian market saturation caused by a spike in 2020 (we expect a decrease by 14%, which is half of the decrease in 2017, which was caused by a spike mainly due to the 2016 presidential election). In CZ, Europe, and ROW we expect growth estimated from the BIS report (forecasted CAGR). In CZ, we estimated revenue from contract to be uniformly distributed during 2021-2025, we expect 83% of the contract to be realized as in the first year nothing was ordered due to coronavirus crisis and we do not expect the full utilization due to expected decrease in the military budget of the government.
2022	We forecast moderate growth in each market due to the constrained production capacity of the group, which is currently around 400 thousand guns. Forecasted values are based on the BIS report (not counting the growth for the CZ contract).

2023	We forecast revenues driven by the US market due to production in the new manufacturing plant Little Rock – we expect production to be around 100,000 guns (66% of the total capacity). In other markets, we expect growth based on the BIS report.
2024-2029	In the following years, we forecast the capacity of the new manufacturing plant to be fully used and we expect the group to converge to the mature state.

Notes

- The number of produced guns was estimated based on the average revenue of guns for the period 2019-2020, which was 15,300 CZK.
- The blockbuster framework agreement with the Czech Ministry of Defence to supply 39k firearms worth CZK2.35bn over the next five years.
- The company recently set up a sales team in Germany, which is focused on strengthening the brand presence on the western European market. There are ongoing certifications for the P-10 pistol to be used by German law enforcement units.
- The planned Little Rock plant should have a capacity equivalent to about 50% of Uherský Brod, according to company statements.
- The company expects Asia to show growth, especially in the military & law enforcement sector.
- Market decreased by 27% in the US in 2017 after a significant spike caused by the presidential election.
- Past variance in the CZ market was the result of an increase in the number of firearms sold to military and law enforcement customers in 2018 and a sale of grenades and high calibre ammunition to the Czech Ministry of Defence
- There is a possibility of higher production capacity due to the acquisition strategy of the group.

Source: CZG, Team Analysis

APPENDIX 9: DETAILED FORECAST OF OPERATING COSTS

All figures in thousands of CZK.

	2017	2018	2019	2020F	2021F	2022F	2023F	2024F
COGS	-2 598 738	-3 208 997	-3 564 489	-3 925 322	-3 831 132	-3 961 692	-5 048 662	-5 551 282
SGA	-1 045 102	-1 104 240	-1 079 942	-1 215 157	-1 251 612	-1 289 160	-1 766 922	-1 819 930
D&A	-349 644	-365 189	-370 601	-397 962	-439 547	-525 197	-575 688	-581 527
COGS as % of Sales	57%	60%	60%	60%	60%	60%	62%	62%
SGA Growth	9%	6%	-2%	13%	3%	3%	37%	3%

	2017	2018	2019	2020F	2021F	2022F
Operating costs	-3 993 484	-4 678 426	-5 015 032	-5 538 442	-5 522 291	-5 776 049
Operating profit before tax	561 999	661 155	943 710	1 031 059	889 571	854 320
Operating Margin	12.3%	12.4%	15.8%	15.7%	13.9%	12.9%

2023F	2024F	2025F	2026F	2027F	2028F
-7 391 272	-7 952 739	-8 592 480	-9 022 104	-9 473 209	-9 757 405
784 607	1 037 091	1 116 537	1 172 364	1 230 982	1 267 911
9.6%	11.5%	11.5%	11.5%	11.5%	11.5%

Explanation	
2020	Growth was calculated by extrapolation from results after 9 months in 2020 based on 9M financial results in 2019 and whole year results
COGS	Calculated as % of Sales with 2% premium after production expansion to the US
SGA	Assumed growth based on 3Y average growth of wages in Europe by Eurostat. This growth is followed by an increase after production expansion to the US. The new facility would employ up to 300 people (current level of 1,619). For calculation, we used assumptions that the average wage in the group is 9 EUR per hour (CZG), and in the US is 18 EUR per hour (epi.org).

Source: CZG, Team Analysis

APPENDIX 10: DETAILED FORECAST OF OPERATING ASSET TURNOVER, CAPEX AND WORKING CAPITAL

All figures in thousands of CZK.

	2017	*2018*	*2019*	*2020F*	*2021F*	*2022F*
CAPEX	307 154	518 527	312 631	475 196	963 794	1 239 800
CAPEX to Sales Ratio	6.7%	9.7%	5.2%	7.2%	15.0%	18.7%
Depreciation of NFA	349 644	365 189	370 601	397 962	439 547	525 197
Annual Depreciation Rate		12.9%	12.9%	12.9%	12.9%	12.9%
Net fixed assets	2 744 080	2 897 418	2 839 448	2 916 682	3 440 929	4 155 531

	2023F	*2024F*	*2025F*	*2026F*	*2027F*	*2028F*
	591 392	650 268	702 289	737 404	774 274	797 502
	7,2%	7,2%	7,2%	7,2%	7,2%	7,2%
	575 688	581 527	593 781	610 086	628 936	649 235
	12,9%	12,9%	12,9%	12,9%	12,9%	12,9%
	4 171 235	4 239 976	4 348 483	4 475 802	4 621 139	4 769 406

Notes

- Group will invest CZK500m in a logistics centre and the modernization of the foundry by 2021. This investment will be made in the current main factory in Uherský Brod and we distributed in the period 2020-2021.
- In 2021-2022 we accounted for the extraordinary capital expenditure of CZK 1,500m for the new manufacturing plain in Little Rock.

	2017	*2018*	*2019*	*2020F*	*2021F*	*2022F*
Working capital	1 349 934	1 948 112	1 417 947	2 106 277	2 055 736	2 125 793
DSO	42.8	36.9	45.7	54.6	54.6	54.6
DPO	54.3	43.9	36.8	33.0	33.0	33.0
Days inventory	116.6	140.0	121.2	114.1	114.1	114.1
Days for other current A&L (Sales)	28.2	-4.3	47.8	32.0	32.0	32.0
Trade receivables	577 540	460 710	668 941	983 574	959 972	992 687
Trade payables	-421 289	-312 637	-323 711	-354 859	-346 344	-358 147
Inventory	1 575 053	1 746 802	1 772 415	2 053 604	2 004 327	2 072 631
Other current assets & liabilities	-381 370	53 237	-699 698	-576 042	-562 219	-581 379

	2023F	*2024F*	*2025F*	*2026F*	*2027F*	*2028F*
	2 606 523	2 866 016	3 095 297	3 250 062	3 412 565	3 514 942
	54.6	54.6	54.6	54.6	54.6	54.6
	33.0	33.0	33.0	33.0	33.0	33.0
	114.1	114.1	114.1	114.1	114.1	114.1
	32.0	32.0	32.0	32.0	32.0	32.0
	1 224 078	1 345 941	1 453 617	1 526 297	1 602 612	1 650 691
	-456 412	-501 850	-541 998	-569 098	-597 553	-615 479
	2 555 752	2 810 191	3 035 006	3 186 756	3 346 094	3 446 477
	-716 896	-788 266	-851 328	-893 894	-938 589	-966 746

Notes

- Turnovers estimated as 2Y average.

Source: CZG, Team Analysis

APPENDIX 11: DETAILED MULTIPLES VALUATION

All figures in thousands of CZK unless specified otherwise.

Company	***Headquarters***	***Market Cap (USD)***	***EV/Sales***	***EV/EBITDA***	***P/BV***	***P/E***
Smith & Wesson Brands Inc	USA	963 998 795	1.08	4.34	4.25	31.94
Sturm Ruger & Company Inc	USA	1 124 461 493	1.96	8.58	4.66	17.12
Vista Outdoor Inc	USA	1 170 535 319	0.77	6.89	1.84	
Peer Group Multiple			1.27	6.60	3.58	24.53
CZG Trading Multiple (past)	Czech Republic	408 195 565	1.7	7.5	2.6	12.1
CZG DCF Implied Multiple			1.7	7.7	2.7	12.3

	EV/Sales	***EV/EBITDA***	***P/BV***	***P/E***
Implied Enterprise Value	7 580 944	8 680 882	12 954 919	19 092 712
Implied Equity Value	6 349 586	7 449 524	11 723 561	17 861 354
Implied Value per Share	194.5	228.2	359.2	547.3
Share Price (CZK)				***293.7***

Source: CZG. Reuters Eikon. Team Analysis

APPENDIX 12: SENSITIVITY ANALYSIS OF DCF MODEL

All figures in thousands of CZK.

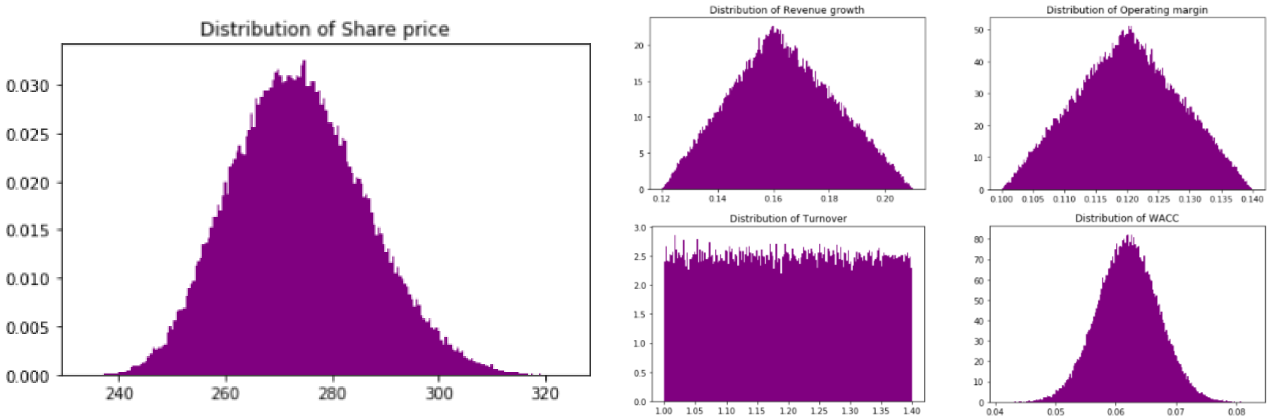
		WACC				
		5.6%	6.6%	7.6%	8.6%	9.6%
Growth rate	1.6%	14 053 642	10 632 475	8 377 433	6 785 628	5 606 587
	1.8%	14 757 169	11 048 327	8 645 542	6 969 087	5 737 695
	2.0%	15 539 493	11 500 567	**8 932 900**	7 163 713	5 875 730
	2.2%	16 414 638	11 994 189	9 241 657	7 370 557	6 021 255
	2.4%	17 400 164	12 535 146	9 574 296	7 590 809	6 174 897

Average equity value of middle nine buckets	9 207 393
Average stock price	282.1

Source: Team Analysis

APPENDIX 13: MONTE CARLO SIMULATION

Variable	***Range in 4Y Period***	***Distribution***	***Rationale***
Revenue	Min: 12%, Mean: 16%, Max: 21%	Triangular	Mean based on forecasted CAGR from DCF. Large range of 5% in both sides due to various possible scenarios.
Operating Margin	Min: 10%, Mean: 12%, Max: 14%	Triangular	Mean based on forecasted average from DCF. Range of 2% added based on the past and mainly dependent on the Little Rock performance.
Turnover	Min: 1, Mean: 1.2%, Max: 1,4	Uniform	Mean based on forecasted average from DCF.
WACC	Mean: 6.6%, Sigma: 0.5%	Normal	Mean derived from DCF.
Perpetual growth	2.0%		
L-T WACC	7.6%		
ROIC	11.5%		
Share price	***273.9***		



Source: Team Analysis

APPENDIX 14: SWOT ANALYSIS

STRENGTHS

- Exporter on a global scale with long history
- High-quality price-efficient products
- Diversification of products. market segments and geography
- Strong financial position
- Experienced management loyal to the company
- Vertical integration of production process

WEAKNESSES

- Strong dependence on one production plant in Uherský Brod
- Potentially smaller base of investors due to the nature of the product
- Highly regulated market
- Uncertainly in terms of winning public tenders

OPPORTUNITIES

- Growth opportunities thanks to planned expansion to the US
- Ambition to increase share of military & law enforcement sales
- Active M&A strategy

THREATS

- Highly competitive market
- Further delays in the Little Rock project and the expansion in the US
- Exchange rate volatility
- Shortage of skilled labour

Source: CZG. Komerční banka. Team Analysis

APPENDIX 15: REFERENCES

ABC News. (2020). Gun restrictions face uphill battle even under Biden. Retrieved from https://abcnews.go.com/US/wireStory/gun-restrictions-face-uphill-battle-biden-74653133

Center for American Progess. (2020). The Gun Industry in America. Retrieved from https://www.americanprogress.org/issues/guns-crime/reports/2020/08/06/488686/gun-industry-america/

Center for Strategic and International Studies. (2020). Toward a New "Lost Decade"? Covid-19 and Defense Spending in Europe. Retrieved from https://www.csis.org/analysis/toward-new-lost-decade-covid-19-and-defense-spending-europe

Centers for Disease Control and Prevention. (2020). Fatal Injury and Violence Data. Retrieved from https://www.cdc.gov/injury/wisqars/fatal.html

Česká Národní Banka. (2020). Kurzy devizového trhu. Retrieved from https://www.cnb.cz/cs/financni-trhy/devizovy-trh/kurzy-devizoveho-trhu/kurzy-devizoveho-trhu/

Česká zbrojovka a.s. (2020). Historie České zbrojovky a.s. Retrieved from https://www.czub.cz/o-firme-historie/

CNN. (2020). First-time buyers fuel pandemic-related surge in gun sales. Retrieved from https://edition.cnn.com/2020/10/24/business/gun-sales-surge-black-americans-women/index.html

CNN. (2020). Gun and ammunition sales soar as defund-the-police movement grows. Retrieved from https://edition.cnn.com/2020/06/24/business/gun-sales-spike/index.html

CNN. (2020). Gun sales expected to set new records after Joe Biden's White House win. Retrieved from https://edition.cnn.com/2020/11/12/business/gun-sales-joe-biden/index.html

Construction Dive. (2020). Study: Construction has the highest COVID-19 rate of nearly any industry. Retrieved from https://www.constructiondive.com/news/study-construction-has-the-highest-covid-19-rate-of-nearly-any-industry/592171/

CZG - Česká zbrojovka Group SE. (2020). Investoři. Retrieved from https://www.czg.cz/cz/investori

CZG - Česká zbrojovka Group SE. (2020). Média. Retrieved from https://www.czg.cz/cz/media

Deutsche Welle. (2020). 8 facts about gun control in the US. Retrieved from https://www.dw.com/en/8-facts-about-gun-control-in-the-us/a-40816418

E15. (2020). Česká zbrojovka si jde na burzu až pro čtyři miliardy. Byznys ale může odradit velké hráče. Retrieved from https://www.e15.cz/byznys/burzy-a-trhy/ceska-zbrojovka-si-jde-na-burzu-az-pro-ctyri-miliardy-byznys-ale-muze-odradit-velke-hrace-1373119

European Commission. (2013). Firearms in the European Union. Retrieved from https://ec.europa.eu/commfrontoffice/publicopinion/flash/fl_383_en.pdf

FiveThirtyEight. (2020). Latest Polls Of The Georgia Senate Runoffs. Retrieved from https://projects.fivethirtyeight.com/georgia-senate-polls/

Forbes. (2020). President-Elect Biden May Ironically Be Good For The Gun Industry. Retrieved from https://www.forbes.com/sites/aaronsmith/2020/11/19/president-elect-biden-brings-a-boost-to-gun-sales/?sh=1b2a9fec258f

Gallup. (2020). Support for Stricter U.S. Gun Laws at Lowest Level Since 2016. Retrieved from https://news.gallup.com/poll/325004/support-stricter-gun-laws-lowest-level-2016.aspx

Global News Wire. (2020). Global Military Ammunition Markets 2020-2025. Retrieved from https://www.globenewswire.com/news-release/2020/11/12/2125258/0/en/Global-Military-Ammunition-Markets-2020-2025-Platform-Land-Force-Navy-and-Air-Force-Product-Missile-Rocket-Artillery-Shell-Bomb-Mortar-Ammunition-Bullet-and-Grenade-and-Guidance.html

International Monetary Fund. (2020). World Economic Outlook. October 2020: A Long and Difficult Ascent. Retrieved from https://www.imf.org/en/Publications/WEO/Issues/2020/09/30/world-economic-outlook-october-2020

Joe Biden. (2020). The Biden Plan To End Our Gun Violence Epidemic. Retrieved from https://joebiden.com/gun-safety/#

Komerční banka. (2020). Česká zbrojovka Group SE (Koupit. 12m cíl = 357 CZK): Největší výrobce zbraní v ČR bude těžit z růstu na trhu v USA. Retrieved from https://trading.kb.cz/CommentsAnalysis/Detail/ea8fd436_ceska_zbrojovka_group_se_koupit_12m_cil__357_czk_nejvetsi_vyrobce_zbrani_v_cr_bude_tezit_z_rustu_na_trhu_v_usa

KSAT.com. (2020). Ongoing ammo shortage due to several factors. gun sellers say. Retrieved from https://www.ksat.com/news/local/2020/11/12/ongoing-ammo-shortage-due-to-several-factors-gun-sellers-say/

Lidovky. (2020). Novým generálním ředitelem České zbrojovky je Jan Zajíc. dosud byl finančním ředitelem firmy. Retrieved from https://www.lidovky.cz/byznys/firmy-a-trhy/novym-generalnim-reditelem-ceske-zbrojovky-je-jan-zajic.A201112_111703_firmy-trhy_sei

natoaktual.cz. (2020). Česká zbrojovka vyváží do stovky zemí. Proč pro výrobu potřebuje vosk? Retrieved from https://www.natoaktual.cz/zpravy/vimeco-mame-zbrojovka-ceska-uhersky-brod-bren-vosk-serial.A201116_141417_na_zpravy_m00

natoaktual.cz. (2020). Svět se přiblížil globálnímu konfliktu. varují vojenští zpravodajci. Retrieved from https://www.natoaktual.cz/zpravy/konflikt-globalni-vojenske-zpravodastvi-vyrocni-zprava-rusko-usa-cina-socialni-site-obrana-tajna-slu.A201111_094757_na_zpravy_m00

Prague Stock Exchange. (2020). CZG. Retrieved from https://www.pse.cz/detail/CZ0009008942

Small Arms Analytics. (2020). SAAF Press Releases. Retrieved from https://smallarmsanalytics.com/saaf-press-releases/

Small Arms Survey. (2017). Civilian Firearms Holdings. 2017. Retrieved from http://www.smallarmssurvey.org/fileadmin/docs/Weapons_and_Markets/Tools/Firearms_holdings/SAS-BP-Civilian-held-firearms-annexe.pdf

Stockholm International Peace Research Institute. (2020). Global military expenditure sees largest annual increase in a decade—says SIPRI—reaching $1917 billion in 2019. Retrieved from https://www.sipri.org/media/press-release/2020/global-military-expenditure-sees-largest-annual-increase-decade-says-sipri-reaching-1917-billion#:~:text=(Stockholm%2C%2027%20April%202020).growth%20in%20spending%20since%202010.

The New York Times. (2020). 'How Did We Not Know?' Gun Owners Confront a Suicide Epidemic. Retrieved from https://www.nytimes.com/2020/11/17/health/suicide-guns-prevention.html