VICRO Valuation

Ticker: VIRC

Model: Discounted Cash Flow

Date of start: 03/07/24

Date of end: 10/07/24

Date format: day/month/year

Made by Roi Dayan

Table of Contents

3 ..... **Opening**
3 ..... history
4 ..... Current state
6 ..... **Length of the model**
6 ..... **wacc – weighted average cost of capital**
6 ..... **Equity**
7 ..... **Risk free rate**
7 ..... **Equity risk premium**
8 ..... **Beta**
9 ..... **cost of equity**
10 ..... **Debt**
10 ..... **cost of debt**
11 ..... **market value of debt**
12 ..... **tax rate**
12 ..... **WACC**
13 ..... **Cash flows**
13 ..... **The story**
14 ..... **Growth rate**
15 ..... **Operating margins**
15 ..... **Reinvestment**
17 ..... **The DCF**
18 ..... **Final Thoughts**
19 ..... **My position**

Opening

Virco corporation is an American **furniture** manufacturer which provides furniture products mostly for educational markets.

Her main products are as followed:

Students tables school tables computer stations folding tables chairs





history

In August 1926 Julian Virtue had cofounded Virtue Chrome Plating with his brother Philip Virtue, initially **providing custom nickel** and **chrome plating** for furniture manufacturers. By the mid-1930s, the company began to directly manufacture its own furniture from its factory, producing **dinette sets** for restaurants and **consumer homes**, chrome-plated **chairs** for offices, and beauty-parlor **equipment**. During World War II, the company became a significant supplier of furniture for the military, providing **furniture** for the sleeping quarters and mess halls of US Navy ships, and thousands of bunkbeds for US Army.

Even after the conclusion of the war, the company remained a significant military contractor, while also expanding further into the consumer furniture market. However, due to a disagreement between the brothers, **Julian Virtue left the company**.

In February 1950, **Virco** was founded by Julian Virtue. To avoid starting his new business entirely from scratch, Virtue also purchased the Slauson Aircraft Company in 1950. Despite its name, in the post-World War II peacetime economy, Slauson Aircraft had become a **school furniture maker and held a lucrative contract with the Los Angeles School Districts**. This acquisition quickly allowed Virco to become the leading manufacturer of school equipment in the Greater Los Angeles area.

Virco further expanded in 1954 with the purchase of **the Dunn Furniture Company**. This purchase established a nationwide presence for the company, allowing for sales along both the East Coast and West Coast and increasing their sales volume significantly. Julian's son Robert joined the company in 1956, after having graduated from college and serving in the

navy. He rose up the corporate ladder and began working quite closely with his father in the management of the company.

In 1964, became a publicly-traded company. With increasing competition and rising labor costs hurting profit margins, the company decided to expand its operations internationally. In 1971, they opened a new factory in San Luis Río Colorado, Mexico directly across the border from Yuma, Arizona. This new facility, operated under the maquiladora concept, helped to drive down labor costs for the company. This, in turn, increased company profitability and allowed it to grow large enough to be listed on the American Stock Exchange in 1977.

The 1980s and early 1990s were a time of continued growth for the company, as well as leadership change. Facilities in Conway not only had their manufacturing capacities increased, but also became distribution and packing centers. Meanwhile, the factory in Mexico grew to nearly 1,200 workers. The company also purchased a 55,000-square-foot facility in Newport, Tennessee. This facility, used for the manufacture of **melamine plastic chair seats**, soon employed 200 workers. Julian Virtue also semi-retired from the company, with his son Robert becoming president in 1982. Julian died in December 1991, with Robert having taken over as CEO and chairman of the board in 1988 and 1990.

In recent years, the company has struggled financially due to the declines in public school funding. The company has also faced increased competition as school and government contracts have increasingly been awarded to local furniture suppliers. As a result, company revenue and profitability has fluctuated greatly over the past twenty years.

The company relocated to its current facility in Torrance in April 1994, shutting down two Los Angeles area facilities to reduce handling and distribution expenses. These facilities, a 200,000-square-foot warehouse and a 160,000-square-foot manufacturing facility, were sold off in April 2000 and November 2003. In 1995, the factory in Mexico was shut down after being damaged by a minor fire in 1993 and in an effort to further reduce operating margins. The company's Newport facility was shut down and donated to the Newport Cocke County Economic Development Commission in 2002.

Current state

As companies pass their mature phase, they enter the last part of their life cycle, the decline. At 1998, virco showed her first signs of struggle, closing factories, cutting off employees, shrinking margins, virco's revenues were barley growing while her margins shrined.

the company's share price slowly declined, from 17$ per share to about 3$ per share, from 2009 to 2022, revenues weren't growing and the company held a stagnant position and her price hung around 3$.

In 2023 the company had showed signs of revival, revenues were growing, margins were improving and net income were increasing.

Length of the model

Deciding the length of the model is deciding when does the firm will become mature, virco is currently experiencing high growth rates, but she shows signs of slowing down, although she has time to grow, a 7 year model would fit for the firm in my opinion.

wacc – weighted average cost of capital

the weighted average cost of capital, or as it known, the "wacc", is the discount rate, in which we discount the future cash flows back to their present value, the weighted average cost of capital represents how risky the firm is; with high wacc causing the present value of the cashflows to decrease than a lower wacc.

The value of the wacc is as 'simple' as the answer for the following question.

How much does investors should ask in return for investing in the firm?

The wacc can be broken into 2 main pieces, the equity and the debt, as the name implies, the weight average cost of capital is the weighted average of the cost of equity and the cost of debt.

Note that we use the market value of equity and debt, and not the book value.

Equity

Cost of equity

To get the cost of equity, we would use the CAPM model;

The cost of equity = Rf + (beta*erp)

Where:

Rf – risk free rate

Beta – relative risk measure

Erp – equity risk premium

Risk free rate

To get an estimate of the risk-free rate, I would use the rate of return of the 30Y us treasury bond, as the us is the most riskless nation in the world, her bond is the safest.

I would rather use the 30Y bond than the 10Y because I think that the ongoing war in the middle east inherit some risk to the next 10Y in the us.

The current rate of return on the 30Y us Treasury is 4.50%. I don't feel much comfortable to try to asses the future risk free rate, and its also doesn't play a big role in the valuation, but in a nutshell, the rate of return can be traced back to the interest rates.

Inflation shows first signs of cooling down, which will make interest rates to fall. I think that the bond rate would get around the historical median of about 3%.

Equity risk premium

The equity risk premium is the rate of return in which investors demand for investing in the us equity market, since investing in us equity bears within it more risk than risk free investments, there is some premium investors would demand for doing so.

For that reason, the formula of the ERP is;

ERP = rm-rf

Where:

Rm – return of the market

Rf- risk free investment

Furthermore, because the us is considered the safest market to invest in, there is a premium investors demand for investing in other countries, this premium comes from the risk that the country will default, thus, one way of calculating the equity risk premium for a country is;

ERP country x = ERP of the safest country to invest + country x default risk

= ERP of the us + country x default risk.

To calculate the equity risk premium for a firm, we first want to understand where the firm's risk comes from.

Talking about virco, its risk doesn't come from the place she (the firm) operate, but the places **she sell**, thus, the risk in the firm bear's within the countries where she sells.

Unfortunately, virco doesn't specify **at all** in the report's notes about revenues by country or region, but from reading the last annual report, I understood clearly that she sells almost only in the us, so we would use the current implied equity risk premium.

As time goes on we can assume that the equity risk premium would be around the historical median of 4.12%.

equity risk premium

the firm didn't specify revenues by country/region
but from reading the annual report, she mainly of not souly operate and sell in the us.

current equity risk premium:	3.97%
historical average equity risk premium:	4.12%

Equity Risk Premium Assumption

3.97% → 4.12%

Beta

The last ingredient we need to compute the cost of equity is the relative risk measure, the beta.

The current 5y regression beta of virco is 0.66, the average industrial unlevered beta corrected for tax rate and debt is 0.88.

We can safely assume that within the years, the beta will move towards the average industry unlevered beta.

Industry Name	*Number of firms*	*Beta*	*D/E Ratio*	*Effective Tax rate*
Office Equipment & Services	17	1.14	52.57%	17.12%

Unlevered beta	*Cash/Firm value*	*Unlevered beta corrected for cash*
0.82	6.76%	0.88

current 5y regression beta:	0.67
average market industry unlevered beta:	0.88

beta Assumption

0.67 → 0.88

cost of equity

by the values we estimated:

	current	terminal
risk free rate	4.50%	3%
equity risk premium	3.97%	4.12%
beta	0.67	0.88
cost of equity	7.2%	6.6%

cost of equity Assumption

7.16% → 6.63%

year	current	1	2	3	4	5	terminal
cost of equity	7.16%	7.07%	6.98%	6.89%	6.80%	6.71%	6.63%

Market value of equity

the market value of equity is fairly simple; value per share times the amount of shares:

market value of equity		
price per share:	$ 13.30	
shares outstanding:	16,210.00	thousands
market value of equity:	$ 215,593.00	thousands

Debt

cost of debt

The cost of debt is the rate of return lenders demand for lending money for the firm, thus, riskier firms have higher cost of debt and safer firms have lower cost of debt.

Cost of debt = rf + country default risk*x + company default risk

Where:

rf – risk free rate

country default risk – the default risk of the country the firm is operating in

x – the precent of exposure of the firm to the country

virco is operating in the us, and as we already discussed that the us default risk is 0, so:

cost of debt = rf + 0*x + company default risk = rf + company default risk

we already have an estimate of the risk-free rate, so we only need to estimate the default risk of virco, there are firms like Moody's who's their job is the rate firms, unfortunately, virco does not have a rating nor a bond, so we will estimate a synthetic ratting with an interest coverage ratio.

Interest coverage ratio = operating income / interest expenses = 2971/208 = 14.283

By the chart:

14 interest coverage ratio

Translates as 0.59% default risk.

Current cod = 5.09%

Terminal cod = 3.59%

For smaller and riskier firms

If interest coverage ratio is			
greater than	≤ to	Rating is	Spread is
-100000	0.499999	D2/D	20.00%
0.5	0.799999	C2/C	17.00%
0.8	1.249999	Ca2/CC	11.78%
1.25	1.499999	Caa/CCC	8.51%
1.5	1.999999	B3/B-	5.24%
2	2.499999	B2/B	3.61%
2.5	2.999999	B1/B+	3.14%
3	3.499999	Ba2/BB	2.21%
3.5	3.9999999	Ba1/BB+	1.74%
4	4.499999	Baa2/BBB	1.47%
4.5	5.999999	A3/A-	1.21%
6	7.499999	A2/A	1.07%
7.5	9.499999	A1/A+	0.92%
9.5	12.499999	Aa2/AA	0.70%
12.5	100000	Aaa/AAA	0.59%

cost of debt Assumption

5.09% → 3.59%

year	current	1	2	3	4	5	terminal
cost of debt	5.09%	4.84%	4.59%	4.34%	4.09%	3.84%	3.59%

market value of debt

To estimate the market value of the debt, we would treat the future debt as **bonds,** thus, the coupon rate will be the interest payment, and the discount rate will be the cost of debt.

To estimate how many years does this "bond" has before expiring, we would calculate a rough estimate of how many years are there to all interest-bearing debt is to be paid fully by the firm.

We can find the debt information in the companies notes:

The long-term debt repayments are approximately as follow as of January 31, 2024 (in thousands):

Year ending January 31,		
2025	$	248
2026		258
2027		269
2028		280
2029		291
Thereafter		3,038
	$	4,384

Management believes that the carrying value of debt approximated fair value at January 31, 2024 and 2023, as majority of the long carries a mortgage on a man

year		
2025	$	248
2026	$	258
2027	$	269
2028	$	280
2029	$	291
thereafter	$	3,038

average year debt due:	$	269
thereafter/average year debt due =		11.28528975

The average thereafter years is about 11 years, 2025 – 2029 is 5 more years, total of 16 years until all debt is to be paid.

Now we can calculate the market value of debt, where the bond has 16 years until maturity, the discount rate is the cost of debt, and the coupon rate is the trailing twelve month interest expenses.

year	1	2	3	4	5	6	7
interest exp	2175	2175	2175	2175	2175	2175	2175
cost of debt	5.09%	4.99%	4.89%	4.79%	4.69%	4.59%	4.49%
present value	2069.654582	1973.164939	1884.764118	1803.764768	1729.55056	1661.568626	1599.323

8	9	10	11	12	13	14	15	16
2175	2175	2175	2175	2175	2175	2175	2175	2175
4.39%	4.29%	4.19%	4.09%	3.99%	3.89%	3.79%	3.69%	3.59%
1542.368	1490.305	1442.776	1399.459	1360.067	1324.343	1292.058	1263.008	1237.012

total:	$ 25,073.19	in thousands
total debt:	$ 19,175.00	
market value of debt:	$ 44,248.19	

tax rate

estimating the future tax rate of a firm is quite hard, we don't know what kind of tax benefits the firm can gain and we don't know what her future income will be, but as a rule of thumb, we want to start with the **effective tax rate** and slowly move torwards **corporate marginal tax rate** which currently is 21%.

tax rate Assumption
effective tax rate → marginal tax rate

us coroprate marginal tax rate: 21%
current virco's effective tax rate: 25.46%

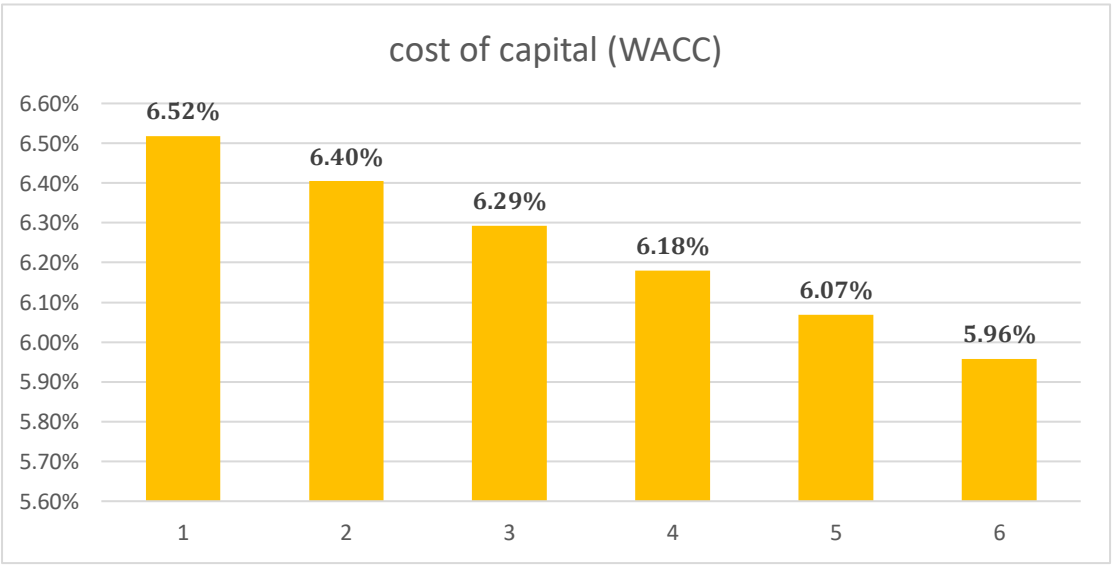
tax rate assumption Assumption
25.46% → 21.00%

year	current	1	2	3	4	5	terminal
tax rate	25.46%	24.72%	23.97%	23.23%	22.49%	21.74%	21.00%

WACC

Now we have all the ingredients to compute the weighted average cost of capital.

period	1	2	3	4	5	terminal
cost of equity	7.07%	6.98%	6.89%	6.80%	6.71%	6.63%
market value of equity	$ 215,593.00	$ 215,593.00	$ 215,593.00	$ 215,593.00	$ 215,593.00	$ 215,593.00
cost of debt	4.84%	4.59%	4.34%	4.09%	3.84%	3.59%
tax rate	21%	22%	22%	23%	24%	25%
after tax cost of debt	3.824%	3.592%	3.364%	3.140%	2.919%	2.703%
market value of debt	$44,248.1877	$ 44,248.1877	$ 44,248.1877	$ 44,248.1877	$ 44,248.1877	$ 44,248.1877
debt porion of capital	17.03%	17.03%	17.03%	17.03%	17.03%	17.03%
equity portion of capital	82.97%	82.97%	82.97%	82.97%	82.97%	82.97%
cost of capital (WACC)	6.52%	6.40%	6.29%	6.18%	6.07%	5.96%



Cash flows

The **wacc** is an important ingredient in the DCF, but not as important as the cash flows, if you mess up a DCF, it's because you got the cash flows awfully wrong, not because you were wrong about the wacc.

To conclude and compute the future cash flows, we need a storyline that will guide us.

The story

As we discussed in the opening, virco is a company that went from young, to growing, to mature, to decline, and now to growing phase again.

Virco stated in her annual report that the surge in efficiency (margins) are from fixing the production line from the crisis of 2020 and the post corona year of 2021. For the reason, we should not expect major growth from the firm.

Virco itself isn't an outstanding firm, although she has a healthy balance sheet, she doesn't seem to show any indication of desire to spread towards new industries, making acquisitions, or taking new risks to achieve great growth. For that reason, I strongly believe that virco will experience mediocre growth in her free cash flow.

My story about virco, is a **turnaround** story about an old firm, that went through all parts of the life cycle of a company, but from declining, the management managed to sort the company to be profitable again.

Because they are sticking to the old model, virco would become mature in the near future, experiencing median growth rates, on the other hand, the business model is already established and is basic, so virco wont need to reinvest much.

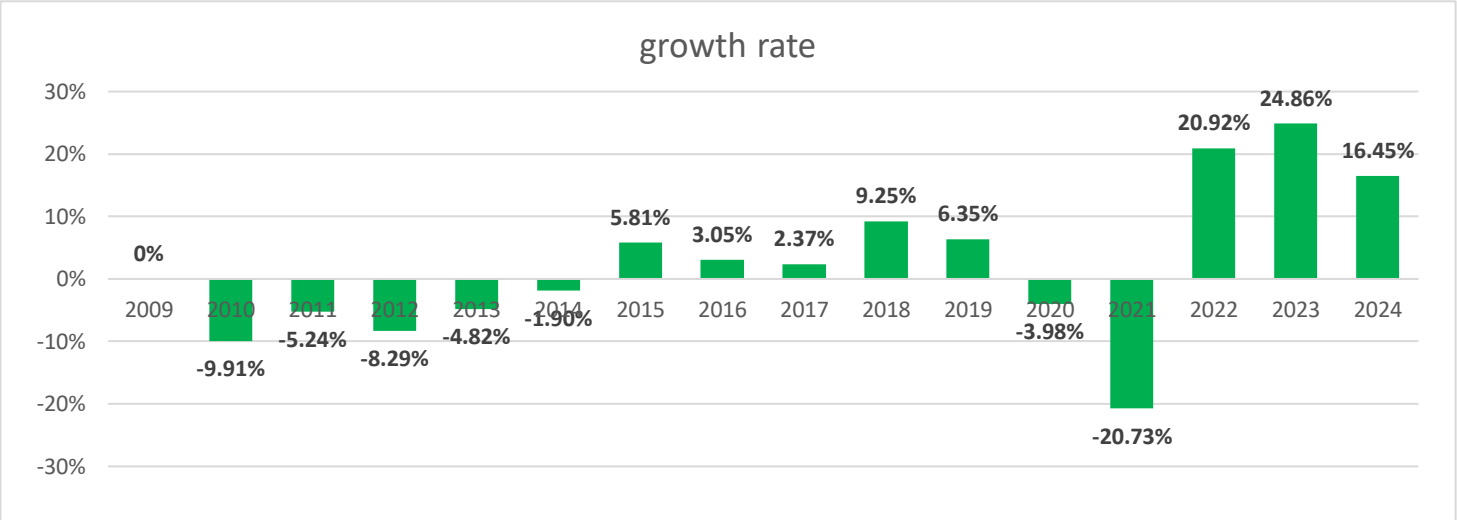
Virco is a simple educational furniture creator, that works by her old model, but managed to sort things out.

Keys values: **stable margins, low growth, low reinvestment**

Growth rate

By my story, the virco is a turnaround that uses her old model, thus she very fast would experience median growth rates.

Her historical growth rates are as followed:



Since virco is declining since 2000, this data is not really that useful, with that being said, at 2015-2019 virco showed signs of **turnover**, but much slower one, we can assume that at maturity, she will experience somewhat the same growth rates.

The average growth rate between 2015-2019 is 5.31%, the median is 5.81%, and the average industry growth rate is 4.5%, so these numbers pretty much line up.

I feel comfortable to assume that towards the terminal, the growth rate would be about 5%.

The lowest growth rates of this period are from 2016 and 2017, of 3% and 2.37%, virco managed to gain 3% growth in "bad years", so I feel comfortable to assume a terminal growth rates of 3%.

A 3% terminal growth rate is also less then the risk free rate and the rate of growth in the economy, so it lines up with the assumption that a firm cant grow faster then the economy in perpetuity.

current year growth: 16.45%

growth rate Assumption

16.45% → 5.00%

year	current	1	2	3	4	5	terminal
growth rate	16.45%	14.54%	12.63%	10.73%	8.82%	6.91%	5.00%

terminal growth rate Assumption

→ 3.00%

Operating margins

When discussing the operating margins, virco is already showing signs of maturity, virco's current operating margin is 6.4% (2024 1Q), where the industry median is 5.84%.

Thus, its safe to assume that within the years, virco's margins would shift towards the industry median.

Operating margin Assumption

6.40% → 5.84%

year	current	1	2	3	4	5	terminal
operating margin	6.40%	6.31%	6.21%	6.12%	6.03%	5.93%	5.84%

Reinvestment

To estimate a reinvestment rate, I would use a sales to invested capital ratio.

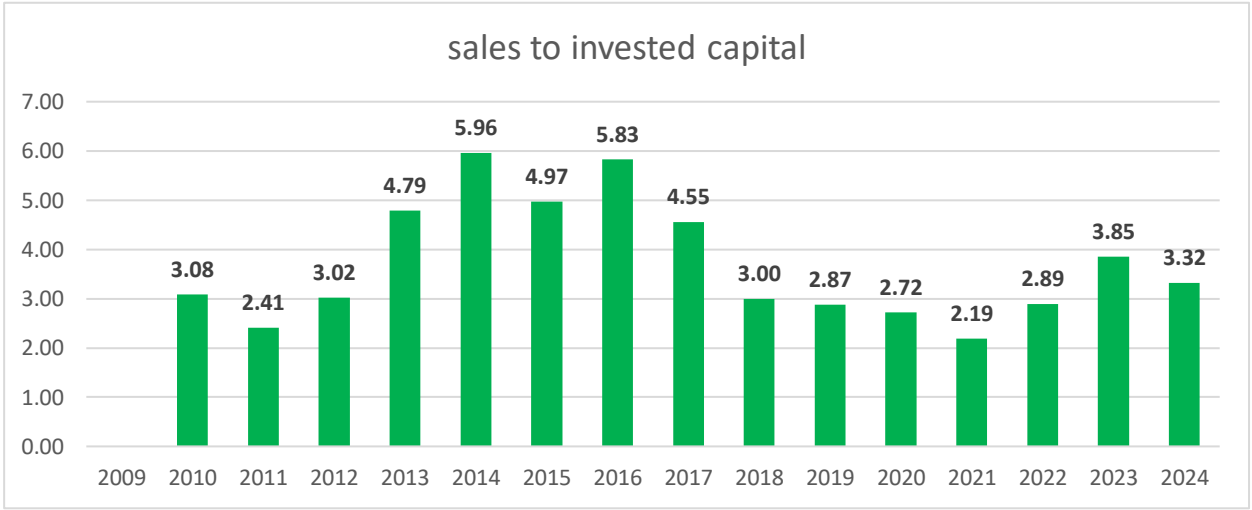
$$sales\ to\ invested\ capital\ ratio = \frac{Revenues\ of\ year\ t}{invested\ capial\ of\ year\ t-1}$$

where the invested capital = total equity + total debt – cash.

This ratio allows us to then calculate the reinvestment amount:

$$reinvestment = \frac{change\ in\ revenues}{Sales\ to\ invested\ capital\ ratio}$$

The historical sales to invested capital ratio of virco is as followed:



This graph can tell us a story. First, the first failed turnover of virco, from 2012-2017 was a period where surprisingly virco managed to gain a lot of revenues without reinvesting much.

On the other hand, in the period of the corona and post corona, virco barley managed to make sales for her reinvestment.

Excluding those extremes, we get a sense that when virco is operating as a mature firm, thus not reinvesting a lot and not in a crisis, virco can get about **3** revenues for each dollar invested.

While some people would look at the period of 2012-2017 and say that virco is capable of gaining much more revenues for each dollar reinvested, by my story, virco will turn mature within the next few years.

current revenues to invested capital ratio = 3.32

RTIC Assumption

3.32  3

year	current	1	2	3	4	5	terminal
RTIC	3.32	3.27	3.21	3.16	3.11	3.05	3.00

The DCF

Now we have all the ingredients to compute a fair value for virco's shares:

DCF by my story:

DCF	fiscal 2024	1	2	3	4	5	terminal
Growth rate		*14.54%*	*12.63%*	*10.73%*	*8.82%*	*6.91%*	*5.00%*
Revenues	$ 269.00	$ 308.1	$ 347.0	$ 384.3	$ 418.1	$ 447.0	$ 469.4
Operating margins		6.31%	6.21%	6.12%	6.03%	5.93%	5.84%
EBIT		$ 19.43	$ 21.56	$ 23.52	$ 25.20	$ 26.52	$ 27.41
Tax rate		24.72%	23.97%	23.23%	22.49%	21.74%	21.00%
EBIT after tax		$ 14.63	$ 16.39	$ 18.05	$ 19.53	$ 20.76	$ 21.66
sales to capital ratio		3.27	3.21	3.16	3.11	3.05	3.00
chg in rev		$ 39.12	$ 38.93	$ 37.22	$ 33.88	$ 28.89	$ 22.35
reinvestment		$ 11.97	$ 12.11	$ 11.78	$ 10.91	$ 9.46	$ 7.45

		1	2	3	4	5	6
FCFF	**Unlevered FCFF**	$ 2.65	$ 4.28	$ 6.28	$ 8.63	$ 11.30	$ 14.20
	WACC	**6.487%**	**6.387%**	**6.286%**	**6.185%**	**6.083%**	**5.980%**
	Present Value of FCFF	$ 2.49	$ 3.78	$ 5.23	$ 6.79	$ 8.41	$ 10.03
	TOTAL =	$ 36.72					

stable growth rate =	3.00%	
x Terminal Value		$ 336.38
Present Value of Terminal Value		$ 237.40
Enterprise Value		**$ 274.12**
+ Cash		$ 5
- Debt		$ 17
Equity Value		**262**
Shares		16.21
x **Fair Share Price**		$ 16.19
current price		$ 13.00
% gain (loss)		24.51%

Fair value per share: 16.19$

Current price 13$

%gain (loss) = 24.51%

Final Thoughts

I first want to address the quality of this DCF, although I believe this DCF is comprehensive, I could have go in **much more depth** when estimating the future cash flows or the wacc, I could have called virco's investor relationship phone to ask for more information, I could have analyze more the annual reports, I could have read more annual reports, as I said, in general I could have go much more in depth in the estimations.

With that being said, I still think this DCF is at high quality, because it yields a general fair value for my story, what I mean is that while the DCF yielded a fair value of 16.19$ per share, I don't think its exactly the fair value, but just a general direction of the value of the stock by **my story.**

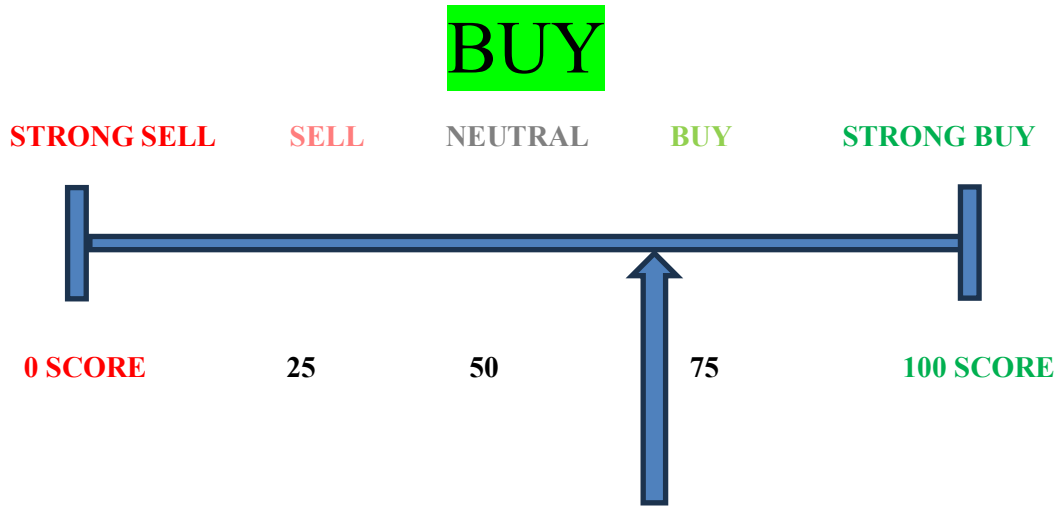
Addressing the fair value we got, first, I think that my story is somewhat pessimistic and conservative, because my story is based on the assumption that very fast the firm would move towards maturity, although if I am wrong, and the firm would have larger growth rates, then it will just enhance the fare value, which is a good thing.

By my conservative story, the firm is undervalued by about 25%, by no means it's a big gap between the market value and the fair value, and it does feel like we "missed the train", for example, pricking the stock at February of 2024 at around 10$ per share would be a strong buy by me.

To top all of that up, from my research, I am not really impressed by the management and the business model, the management is somewhat mediocre, there are no signs (from my research) that the management have any vision to spread towards new industries or to take risks, to seek rapid growth.

On the other hand, considering the healthy turnover the firm had made, and the healthy balance sheet the firm has, and this pessimistic DCF, I do think the stock Is still somewhat attractive for investors.

To conclude this report, I think the stock is a



FINAL SCORE: 70/100

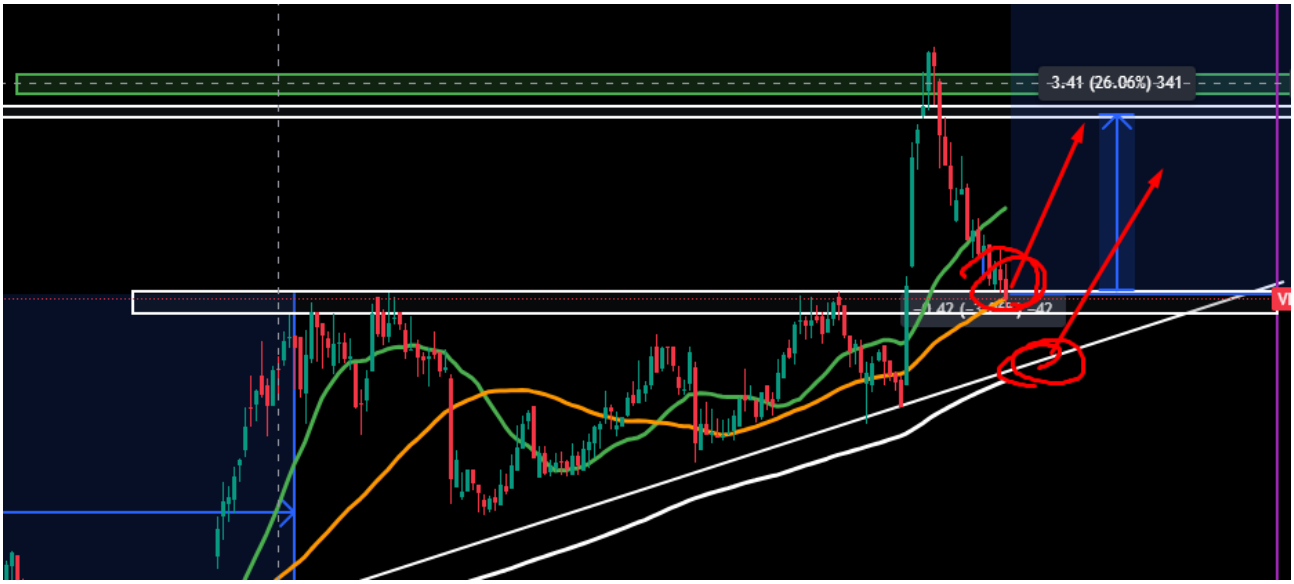
My position

As I said, I find this stock somewhat attractive, although it's not a strong buy, I do think this stock is worth investing while the story holds on.

I came to a decision to open a modest position on the stock as soon as I see a technical turnover, and I will close the position when either:

1. The stock has reached 16$ and the buy power is showing signs of slowing down.

2. The fundamental has shown a shift towards a worsen story than my story.



What I like about doing a DCF is that both ways the stock goes new opportunities are opened, if the stock falls but the fundamental hasn't changed then I will enhance my position, if the stock rises then I make a modest profit, and worst case scenario, if the fundamentals shifts in a way I see as value destroying, I will close the position at a modest lose.