

Clemson University

**TigerPrints**

---

Honors College Theses

Student Works

---

5-2023

## **Fairness Opinion**

Chris Charlton

Gabby Costello

Hannah Erspamer

Adian Vollick

Elizabeth Whalen

Follow this and additional works at: <https://tigerprints.clemson.edu/hct>

---

## Fairness Opinion

Fin 4020/4040

Chris Charlton, Gabby Costello, Hannah Erspamer, Adian Vollick, Elizabeth Whalen

The following addresses the financial fairness of the per share merger consideration to be received by iRobot Corporation. This opinion is based on information regarding financial, economic and market conditions as of April 30, 2023. In arriving at this opinion, we have reviewed the merger agreement, publicly available financial statements, and iRobot's business information. The following is a summary of the material analyses performed in connection with our opinion dated April 30, 2023.

iRobot was founded in 1990 by 3 members of MIT's artificial intelligence lab Rodne Brooks, Colin Angle, Helen Greiner. Colin Angle is currently the chairman and CEO and Julie Zeiler is CFO. As of 2020 iRobot has sold more than 30 million home robots and has deployed more than 5,000 defense and security robots. On August 5, 2022, Amazon announced plans to acquire iRobot in a deal worth \$1.7 billion or for \$61 per share. The deal will deepen Amazon's presence in consumer robotics as subscription revenues are becoming increasingly important for companies needing long-term commitment and revenue. Amazon could turn its iRobot acquisition into a subscription service. According to Alan Pelz-Sharpe, founder of consulting firm Deep analytics, iRobot is a natural extension to Amazon's existing home products, including Ring, Alexa, and its general smart home ambitions. Bringing in iRobot also adds a customer base of 30 million users, he said. The FTC requested more data in 2022 from both companies amid concerns about Amazon's market share and privacy implication of gaining information about customer floorplans so the merger is still in the works. There is a possibility that the deal may not go through as it is subject to review by regulatory authorities.

### **Financial Forecasts**

When projecting financial statements for the next five years, the assumptions that were made were based on a variety of factors. The future sales growth rate was determined to be 10%. From the beginning of 2022 to the end of 2022 there was a negative sales growth rate of -24.38%, but it was a positive 9.41% for the prior year. With the synergy benefits from the potential acquisition, it is fair to assume that Amazon can help iRobot get their sales growth rate back up to 10% for the near future.

Cost of sales was determined to be 55% of sales, which was also a result of costs being cut as a result of being acquired by Amazon. Cost of sales has seen equal increases over the past few years, from 53% of sales in 2020 to 70% in 2022. With sales expecting to increase and synergy benefits from Amazon, it seems reasonable that this number will drop back down to 55%. It is also reasonable to suspect that the cost of sales was so large in 2022 due to different shortages in different inputs that are necessary for iRobot's manufacturing. In 2022, operating expenses as a percentage of sales increased from 35% to 50%. Due to this dramatic increase and taking the acquisition into account once again, we decided to go with a number that was closer to the 2021 estimate of 35%. Accrued expenses and other current assets were also calculated using a percentage of sales. Those settled in at respective values of 8% and 4.5%, which were about the average of the percentage of sales for the past two years. Since they are small values without much movement, this seems reasonable.

For balance sheet accounts such as cash, accounts receivable, inventory, and accounts payable, we used a ratio to forecast. Days sales in cash were used to forecast future cash balances. For the past two years, this was 47 days and 36 days. It is probably unlikely to see this continue to decrease. With a smaller average collection period also included, we settled in at 50 days for a long-term average value here, assuming that being acquired will help this value stay high. The average collection period was used to determine accounts receivable, with the previous two years being 26 days and 35 days. In the long run, it seems safe to use the average of 31 days here. For the inventory conversion period, the previous two years were 120 days and 125 days. Given synergy benefits, the hope is to keep operating with this period being 125 days. The final ration used was payables period, 2021 and 2022 had values of 91 days and 81 days for this. As a result, we settled around the middle with a value of 86 for the future.

For depreciation/gross PPE, we decided to use a rate of 10% based on the 2022 value, assuming a 10-year life. We have limited information about how close assets are to being fully depreciated or what their useful lives are. Since gross PPE is growing at the sales growth rate for our assumptions, it makes sense to have depreciation have a similar 10% of gross PP&E.

### Discounted Cash Flow Analysis

DCF Analysis	Jan. 01, 2022	Dec. 31, 2022	Dec. 31, 2023	Dec. 31, 2024	Dec. 31, 2025	Dec. 31, 2026	Dec. 31, 2027
EBIT	\$ 28,284	\$ (261,683)	\$ 108,790	\$ 119,669	\$ 131,635	\$ 157,529	\$ 182,510
x (1-T)	\$ 22,344	\$ (206,730)	\$ 85,944	\$ 94,538	\$ 103,992	\$ 124,448	\$ 144,183
Depreciation	\$ 31,100	\$ 32,500	\$ 18,344	\$ 20,178	\$ 22,196	\$ 11,685	\$ 3,626
Change in NWC		\$ (227,610)	\$ 110,109	\$ 32,177	\$ 35,395	\$ 38,935	\$ 42,828
Cap Ex		\$ (5,038)	\$ 16,676	\$ 18,344	\$ 20,178	\$ 22,196	\$ 24,415
FCF	\$ 58,482	\$ 36,704	\$ (24,165)	\$ 62,361	\$ 68,597	\$ 72,783	\$ 104,980

Figure 1

Using the financial forecast models created for the next 5 years, we were able to get to EBIT for each year and estimate the cash flows of the firm. All values seen in Figure 1 are in thousands of dollars. As seen in the figure, the free cash flow is initially negative for 2023 after being acquired; however, this eventually begins to produce positive cash flows in 2024. Once the change in net working capital settles in after the reduction in current liabilities in 2023, we see the cash flows become far more stable. The present value of these cash flows at the WACC of 8.13%, calculated previously, is \$209.541 million

The terminal value shown in Figure 2 was calculated using an assumed free cash flow growth rate of 3%. This assumes that the growth rate of free cash flows eventually slows down once the acquisition is five years old. Using this constant growth number, we were able to get a terminal value of nearly \$2.109 billion, which is around \$1.427 billion in present value.

<b>PV(FCF)</b>	\$ 209,541
<b>TV(Dec 27)</b>	\$ 2,109,672
<b>PV(TV)</b>	\$ 1,427,197.25
<b>Enterprise Value (in thousands)</b>	\$ 1,636,737.83
<b>Debt</b>	\$ 29,366
<b>Equity</b>	\$ 1,607,372
<b>Shares Outstanding (in thousands)</b>	27,424
<b>Price Per Share</b>	\$ <b>58.61</b>
<b>WACC</b>	8.13%
<b>FCF Growth</b>	3.00%

Figure 2

The present value of the cash flows and terminal value produce an enterprise value of about \$1.636 billion and a price per share of around \$58.61. As of now, Amazon is planning to pay \$1.7 billion, all cash, for iRobot. This will turn out to about \$61 per share. As of April 30<sup>th</sup>, iRobot is trading at \$39.33. The estimate that we made shows that Amazon will possibly underpay, however the assumptions we used could be subject to change and may not translate to reality. Changes in these assumptions could cause the estimated share price to be lower or higher than what we determined it to be at \$58.61.

Some of the more important assumptions were redone with sensitivity analysis. The assumptions we chose to do sensitivity analysis with are sales growth, cost of sales, and operating expenses. Sales growth sensitivity analysis went from negative 20%, which is close to what the value was in 2022, up to 50% to show how the stock price would change based on this metric. The sales growth sensitivity analysis shows that as the sales growth increases from -20%-15% the price of iRobot stock will also increase. From 20% - 50% the price of iRobot stock starts to decrease and then goes negative when sales growth is 45% and 50%. In the cost of sales sensitivity analysis, the percentage ranged from 20%-75% to see how much the iRobot stock price varied. This is pictured in Figure 3 to see how much the stock price varies with even a 5% change. At around a 50% cost of sales the sensitivity analysis shows the stock price would be \$105.63, which makes the stock nearly double in price compared to the 55% cost of sales. This shows that the price of iRobot stock is very sensitive to cost of sales as a percentage of sales changes. Operating expenses was the other sensitivity analysis done since it was so volatile between 2020-2022 numbers. These numbers also show how volatile the stock price is to a change in operating expenses.

Cost of Sales Sensitivity Analysis	
20%	\$ 388.30
25%	\$ 341.20
30%	\$ 294.10
35%	\$ 247.01
40%	\$ 199.91
45%	\$ 152.81
50%	\$ 105.71
55%	\$ 58.61
60%	\$ 11.51
65%	\$ (35.58)
70%	\$ (82.68)
75%	\$ (129.78)

Figure 3

### Selected Companies Analysis

We compiled information for four firms that are comparable to iRobot. All four of these companies either make household technology items or manufacture items to be used in commercial buildings. The five multiples that are used are enterprise value to revenue (EV/Revenue), enterprise value to EBITDA (EV/EBITDA), enterprise value to net income (EV/Net Income), market-to-book of equity, and the price-earnings (P/E) ratio.

IROBOT CORP	1. Enterprise Value/Revenue	2. Enterprise Value/EBITDA	3. Enterprise Value/Net Income	4. Market to Book of Equity	5. P/E
Enterprise Value	4530.24	491.91	878.62		
Equity Value	3091.82	442.22	828.93	1625.00	1.13
Share Price	\$114.49	\$16.38	\$30.69	\$60.17	\$27.77

Figure 4

For the four firms, we compiled these multiples for them and took the averages for each multiple across the peer firms. We then used these with iRobot's numbers to get enterprise values and equity values for iRobot. Figure 4 displays the results of this information. Three of the multiples have an estimated share price of less than \$31, which is less than the company's current selling price. The main reason for this is the low EBITDA and net income values for iRobot in comparison to the comparable firms. For the two multiples that didn't hinge on earnings, enterprise value-to-revenue has the highest share price of \$114.49, with market-to-book value of equity has an estimated share price of \$60.17.

### Selected Transaction Analysis

We compared eleven peer firms that have been acquired recently. All of these target firms were either in the household appliances or the semiconductors and electronics industries. We reviewed the

target's enterprise value, revenue, book value of equity, number of shares outstanding, and total market capitalization to calculate the enterprise value to revenue (EV/Revenue) multiple and market to book ratio. The transactions used are listed in Figure 5.

	Precedent Target Firm	Precedent Acquirer Firm	Enterprise Value	Revenue	Book Value of Equity	Number of Shares Outstanding	Stock Price	Market Cap
8/31/16	Nortek Inc	Nice	3625	2,526.10	12.30	16.40	43.62	715.42
11/7/16	Rofin Sinar Technologies	Coherent	942	519.60	542.61	28.36	27.11	768.84
11/29/21	Raven Industries	CNH Industrial	2100	96.60	331.34	35.87	21.61	775.14
4/3/19	Arris International	CommScope	7400	6,614.39	3,005.85	174.12	24.45	4,257.14
2/22/22	Vocera Communications	Stryker	2970	234.19	162.10	35.04	39.85	1,396.38
8/26/22	Plantronics	HP Inc	3300	1,455.79	20.16	43.70	25.88	1,130.95
6/1/16	SL Industries	Handy & Harman Ltd.	4000	199.86	77.00	3.96	32.49	128.69
2/9/15	Orbital Sciences Corporation	Northrop Grumman	9200	1,365.27	795.30	60.55	20.66	1,250.92
1/14/16	PMC Sierra	Microsemi Corporation	2500	525.60	626.49	202.36	9.46	1,914.31
3/29/19	Integrated Device Technology	Renesas	6700	842.76	0.65	129.26	26.58	3,435.85
4/24/15	Riverbed technology Inc	Thoma Bravo	3600	1,089.00	840.60	157.78	20.59	3,248.72
	iRobot			1,183.38	475.72	27.42	45.36	1,243.94

Figure 5

Based on an analysis of the targets' EV/Revenue multiple, we determined an average EV/Revenue of 7.62 and median of 4.76. To reduce the effects of outliers, we utilized the median when estimating iRobot's enterprise value of about \$5,628.69 million and equity value of about \$5,599.33 million. Based on these estimates, iRobot's imported price per share value is \$204.18. We also used the median market to book ratio of 3.06 to estimate iRobot's equity value at about \$1,453.60 million. This amounts to a price per share of about \$53.01.

### Conclusion

The final stock prices that we calculated from performing the discounted cash flows, comparable firms and comparable transactions analyses are similar to Amazon's offer price of \$61 per share. Therefore, we conclude that this is a fair offer price. However, the stock price determined from the comparable transactions EV/Revenue multiple, and comparable firms EV/Revenue multiple likely overestimates iRobot's share price. Likewise, the comparable firms EV/EBITDA, EV/Net Income and P/E ratios likely underestimate the share price. It is important to consider the potential risk that iRobot may not be able to improve their earnings which would result in a lower share price. The DCF probably has the most elaborate estimation of the stock price and the DCF results a share price of \$58.61 per share, which is slightly below what Amazon will pay. However, the sensitivity analyses display how easy it is to improve this valuation by decreasing the cost of sales as a percentage of sales even further. The key to Amazon getting a good return will be to keep expenses down in order to improve profitability. It is also worth noting that for greater profitability, sales need to increase at least back to 2021 levels. This issue is possibly attributable to supply chain issues and a global chip shortage, hopefully these issues will continue to be resolved and iRobot will increase sales back to normal levels.