

Valuation Analysis of Medical Imaging Industry under COVID-19 in China

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Abstract. As a matter of fact, the shadow of the pandemic has been hanging over China for three years, dealing a severe blow to the real economy, while the surge in demand for medical devices has made the medical imaging industry both challenging and exchanging. This study uses the three-year financial data of Mindray Medical, United Imaging Medical, and Yirui Technology, three representative companies in China's medical imaging industry, to estimate the enterprise value by using the DCF model and the EVA model, and concludes that the EVA model is closer to the real value, and the predicted value is lower than the market value. According to the analysis, it is predicted that the performance of all three companies will grow and recover after the pandemic. The study analyzes the data of the special period to verify the applicability of the conclusions generated by the comparison of the two models. These results shed light on guiding further exploration of valuation analysis.

Keywords: DCF model; EVA model; medical imaging industry; COVID-19.

1. Introduction

In late 2019, there was an outbreak in China of a novel coronavirus that induces an acute respiratory infection. The main symptoms of infected people are persistent fever, chest tightness, cough, runny nose, etc., and then pneumonia [1]. One of the main diagnostic methods for people with pneumonia is chest X-ray. The main instrument used in chest X-ray examination is the CT machine, and its production belongs to the medical imaging industry. As a result, the global demand for medical supplies has surged. Unlike many industries, where economic performance has generally stagnated or regressed, this is both an opportunity and a challenge for the medical imaging industry [2]. The purpose of this study is to analyze the enterprise valuation of three representative leading companies in the medical imaging industry affected by the new crown epidemic through two valuation models with similarities, and explore the impact of the epidemic on enterprise value and valuation expectations. This study can complement the academic research on the "impact of the three-year epidemic" and provide future researchers with a perspective that is relatively closest to the end of the event. At the same time, research can also provide a basis for the strategy of the industry and the company, and deepen the understanding of the relationship between the various variables that affect the value of the company. The innovation of this paper is that it can first use the post-epidemic data to value the medical imaging industry with development potential, explore the difference between the cash flow reflected in the DCF model and the real income level of assets reflected in the EVA model.

Many investors choose to use the DCF model to evaluate corporate assets and make their own investment decisions. However, after widespread research by scholars around the world, the academic community generally believes that the DCF model has certain flaws, which are due to the omission of asset values that do not generate cash flows when calculating. Canessa proposed that in dealing with practical situations, the calculation method of excluding operating cash is unreasonable due to the inability to meet certain conditions, and all cash should be counted as non-operating assets [3]. Reinert compared the DCF model with another model (GIA) and conducted the first large-scale empirical comparison of these two models in the same market, verifying the theoretical controversy that the DCF valuation is relatively high and the overall performance return is relatively unstable [4]. The measure of economic value added, which captures the shortcomings of using traditional return rates, has developed into a new enterprise asset valuation model (EVA). Tripathi reviewed the

functions, structures, calculations, and defects of EVA, and summarized the main fields and current trends of EVA research [5].

Due to the unique characteristics of various industries, different valuation methods are applicable to different industries. Cheng conducted applicability analysis on four models: DCF, DDM, PB, and PE, and obtained the applicable conditions of the models [6]. From the perspective of the life cycle, Chen analyzed two mainstream value evaluation methods - cash flow discount method and relative comparative valuation method. Combining with the actual situation in China, he provided a train of thought for studying and optimizing the value evaluation, value creation, and value management of Chinese listed companies [7]. Furthermore, Li analyzed the valuation models applicable to different segmented markets in the medical device industry from this perspective. However, the applicability analysis of valuation models generally does not focus on the EVA model [8], and in recent years, many valuation analysis papers newly published in the Chinese academic community have mostly used this model, which is more inclined to use the EVA model than the DCF model. Shen conducted empirical analysis on the impact of EVA on the capital structure of the listing formula, and believed that the EVA indicator may not be the best indicator to reflect the operational status of enterprises under current conditions in China [9]. Scholars such as Zhou Xingyu have made different revisions to the model [10]. Li concluded in 2011 that the EVA evaluation method is more objective and scientific from the comparative analysis of these two models [11]. Overall, research on the DCF model and EVA model has reached a relatively complete level, with relevant analysis and research conducted for different industries and even segmented markets. Nevertheless, global scholars are still revising existing models to further improve the accuracy of valuations.

2. Industry Analysis

There are currently 13 medical imaging companies listed on the A-share market, including Mindray Medical, United Imaging Medical, Yirui Technology and many other medical imaging companies. It can be broadly divided into three types (business models): platform, where the company has abundant products and continues to launch new products, with growing brand power, balanced business at home and abroad, and the ability to resist risks in reorganization; product upgrading, where the company's high-end products continue to increase in volume, driving the company's profitability and making it easier to obtain individual stock income in the downward industry environment; technology extensibility, where the company has mastered the underlying technology, which is widely used in the downstream, and achieves performance growth by expanding new fields.

From the perspective of the industry, foreign companies still occupy a very important market share, especially GPS (GM, Philips, and Siemens), in many fields including monitors, ultrasound, MRI and so on, still firmly occupy the leading position in the industry. However, with the process of domestic substitution and the slow advancement of medical infrastructure, related companies are also gradually rising. Some companies have been affected by the epidemic and there has been a two-level differentiation, e.g., Yirui Technology, Wandong Medical, Kangtai Medical, all of which have promoted the rise of the company's overall business due to the rise in market demand for the company's downstream or other businesses involved. Other companies (Mindray Medical, Kaikai Medical, Haitai Xinguang, Aohua Endoscopy, etc.) have been hit by the epidemic, and with the opening of the epidemic, their revenues have begun to recover slowly and their performance has begun to rise. Of course, there are also companies with a large scale like Xinhua Medical, which cannot see the impact of the epidemic on them from the performance indicators alone.

3. Business Valuation Methods

3.1. DCF Model

The full name of DCF model is discounted cash flow model, which is a common method used by individuals and institutions when valuing the value of enterprises. Enterprise value actually represents

the ability of the enterprise to make profits in the future, and this ability can be manifested as the cash flow brought by operating activities, so the essence of the DCF method is to discount the expected cash flow of the enterprise in a specific period in the future. The overall structure of the model is shown in Fig. 1. In this paper, the construction of the DCF model is divided into three steps according to Fig. 1, which are: calculate free cash flow, calculate the discount rate and discounting. One first calculates free cash flow

$$FCFF = (NP + T + IE) * (1 - r) + DA - FCE - \Delta WC \quad (1)$$

$$EBIT = NP + T + IE \quad (2)$$

Here, FCFF denotes free cash flow. NP denotes net profit. T denotes income tax. IE denotes interest expense, r denotes tax rate. DA denotes depreciation and amortization, FCE denotes capital expenditure, ΔWC denotes change in working capital, and EBIT denotes Earnings before interest and tax. Then, one calculates the discount rate. In general, the weighted average cost of capital (WACC) is used as the discount rate.

$$WACC = \frac{E}{V} * Rf + \frac{D}{V} * Rd * (1 - r) \quad (3)$$

$$E = C_0 + C_1 \quad (4)$$

$$D = K_1 + K_2 + K_3 + K_4 \quad (5)$$

Here, R_e denotes the cost of equity, R_d denotes the cost of debt, E denotes the market value of the firm's equity, D denotes the market value of the firm's financing, $V (=E+D)$ denotes total market value of the firm's financing. E/V denotes the percentage of financing that is equity, D/V denotes the percentage of financing that is debt, r denotes the corporate tax rate, C_0 denotes common shareholders' equity, C_1 denotes minority interests, K_1 denotes long-term borrowings, K_2 denotes non-current liabilities due in one year, K_3 denotes bonds payable, K_4 denotes short-term borrowings.

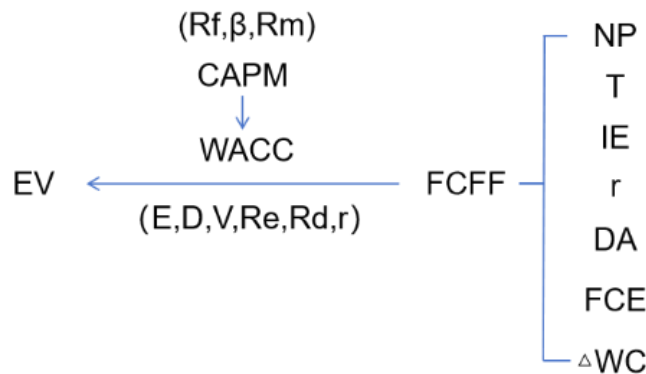


Fig 1. The overall structure of DCF model.

According to the CAPM model:

$$R_e = R_f + \beta * (R_m - R_f) \quad (6)$$

Here, R_f denotes the risk-free rate. R_m denotes the market expected rate of return, and β denotes the market risk. In China, the risk-free interest rate R_f will adopt different benchmarks according to different needs, and the Shanghai Interbank 3-Month Interbank Offered Rate (SHIBOR) can also be used to use the yield of the corresponding maturity treasury bonds. Market Expected Yield R_m . The market risk β calculated from:

$$\beta = \frac{Cov(R_i, R_m)}{\sigma_m^2} \quad (7)$$

Where $Cov (R_i, R_m)$ is the covariance between asset i and market returns, β describes the relationship between the volatility of a particular security and the overall market volatility, as shown in Fig. 2.

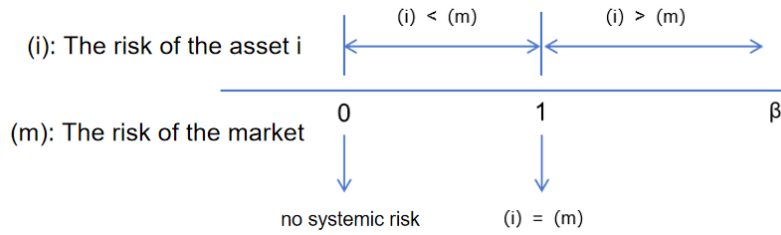


Fig 2. The meaning of the value size of β .

Subsequently, for discounting one has:

$$EV = \sum_{i=1}^n \frac{FCFF_i}{(1+WACC)^i} \quad (8)$$

Where EV denotes enterprise value, and n denotes the longevity of the company. According to the sustainable growth model, assuming that the future growth of the enterprise is stable, that is, the growth rate is constant and k , $n \rightarrow \infty$, then (8) can be expressed as

$$EV = \sum_{i=1}^{\infty} \frac{(1+k)^i}{(1+WACC)^i} * FCF * (1+k) = \frac{FCF*(1+k)}{(WACC-k)} \quad (9)$$

Here, k denotes the corporate sustainability growth rate, and FCF is free cash flow for the last year of the forecast period.

3.2. EVA Model

The full name of EVA model is economic value added model. The traditional enterprise value valuation model focuses more on the short-term business performance of the company and ignores the risks of the company's operation, which makes it difficult to achieve the long-term performance of the enterprise. The EVA theory, on the other hand, focuses on the opportunity cost of the company, so the cost of capital invested is excluded from the net operating profit after tax, so that the value created by the company for the company's shareholders can be better reflected. In this paper, the construction of the EVA model is divided into three steps according to Fig. 3, which are: calculate economic value added, calculate the discount rate and discounting.

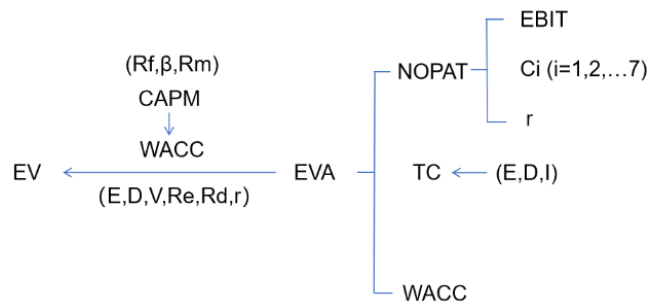


Fig 3. The overall structure of EVA model.

Firstly, one calculates economic value added

$$EVA = NOPAT - TC * WACC \quad (10)$$

NOPAT denotes net operating profit after tax and TC denotes total capital.

$$NOPAT = EBIT + C_1 + C_2 + C_3 + C_4 + C_5 - C_6 - C_7 * (1 - r) \quad (11)$$

Here, C_2 denotes the increase in deferred tax credits. C_3 denotes reserve added during the year. C_4 denotes the impairment of goodwill during the year. C_5 denotes the capitalized amount of R&D expenses. C_6 denotes the increase in deferred tax debits. C_7 denotes non-operating income and expenditure. Besides, one has

$$TC = E + D + I \quad (12)$$

$$I = C_3 + A_1 + C_5 + A_2 - A_3 - C_7 * (1 - r) \quad (13)$$

$$A_2 = C_6 - C_2 \quad (14)$$

Where I denotes the adjusted amount of invested capital, A1 denotes the accumulated goodwill impairment, A2 denotes the net amount of deferred tax, and A3 denotes the construction in progress. Then one calculates the discount rate, as with the DCF model, WACC is calculated as the discount rate. For discounting, similar to the DCF model, depending on the needs of valuation, one can choose a one-stage growth model (perpetual growth model), a two-stage growth model, or a three-stage growth model. In essence, it is assumed that enterprises have a constant growth rate at the same stage, and in order to facilitate the comparison of the two models, this paper uses the sustainable growth model for discounting.

$$EV = V + \frac{FCF * (1+k)}{(WACC-k)} \quad (15)$$

Here, V denotes the total capital of the enterprise in the base year.

3.3. Similarities and Differences

From the perspective of the calculation process, EBIT is included in the calculation of both models, and the WACC (weighted average cost of capital) is also used as the discount rate for discounting, and in the process of discounting, one or more stage models can be selected for calculation. Compared with the DCF model, the prediction of the EVA model is more subjective, but after excluding the cost of invested capital, the calculation of enterprise value of the EVA model is more scientific. As a result, both models are designed to predict corporate value, and the predicted value of the EVA model is smaller than that of the DCF model, which is closer to the true value.

Table 1. Mindray's DCF model prediction process and results.

Fiscal Year Ended	Historical					Forecast			
	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	
NP	665,960.33	800,404.59	961,071.68	1,153,286.02	1,383,943.22	1,660,731.86	1,992,878.24	2,391,453.88	
T	77,883.70	101,303.90	134,283.38	176582.6447	232206.1778	305351.1238	401536.7278	528020.797	
IE		863.42	1,068.68	1335.85	1656.454	2020.87388	2425.048656	2910.058387	
EBIT	743,844.03	902,571.91	1,096,423.74	1331204.511	1617805.851	1968103.861	2396840.012	2922384.738	
r	15%	15%	15%	15%	15%	15%	15%	15%	
EBIT* (1-r)	632,267.43	767,186.12	931,960.18	1131523.834	1375134.973	1672888.282	2037314.01	2484027.027	
+ DA	79,613.73	124,941.23	157,435.62	210333.9883	273434.1848	341792.731	427240.9138	534051.1422	
- CE	118,271.07	140,249.39	191,552.84	260511.8624	338665.4211	423331.7764	529164.7205	661455.9006	
-ΔWC	-28,599.60	-68,949.09	613,021.62	429115.134	579305.4309	782062.3317	1055784.148	1425308.6	
FCFF	565,010.49	682,928.87	1,510,864.58	1,510,461.09	1,889,209.17	2,373,411.57	2,991,174.35	3,781,930.87	

4. Case Analysis

4.1. Mindray

Seen from Table 1, the epidemic broke out at the end of 2019, but the impact was not immediate. In 2020, Mindray Medical still maintained a net profit growth rate similar to that in 2018 and 2019. In 2021 and 2022, Mindray Medical was impacted by the epidemic and made adjustments, maintaining a net profit growth rate of 20%. The company's listing has survived the five-year juncture, the growth momentum will likely slow down, and it is expected that net profit growth will continue to maintain around 20%. The growth rate of T is taken as the average of the growth rates in 2021 and 2022. It is expected that there will be a process of growth of IE that first rises, then declines, and finally stabilizes growth. The growth rate of CE and DA in 2023 is based on the average of the previous three years, and growth is expected to slow down thereafter. As it reversed from negative to positive in three years, it is expected that the ΔWC will first regress and then grow steadily. It is available from the table that $FCF_1 = 3,781,930.87$. According to Mindray's 2022 annual report, the data is 11.40%-12.50%, and the value used in this article is 12%. Based on the expectation of the company's growth, it is assumed that the sustainable growth rate $k_1 = 5\%$. Therefore, $EV_1 = 56,728,963.03$. Seen from Table 2, the growth rate of C1 is taken as the average of the growth rates in 2021 and 2022. The value of C3 is constantly being controlled, but it is expected to remain unchanged when it is reduced to a certain value. The value of C4 and A1 is not expected to change. The growth rate of C5 in 2023 is based on the average of the previous three years and is expected to accelerate. According to the growth trend of the past three years, the growth rate of A2 will first rise and then decline. C7 is expected to resume growth in the future, but the growth rate is slower than in the past three years. The growth rate of A3 and C0 in 2023 is based on the average of the previous three years and is expected to be stable. K2 is expected to grow steadily and slowly in the future. It is available from the table that $EVA_1 = 1,786,091.63$. According to data from Mindray's 2022 annual report $V_1 = 4,213,973.39$. Therefore, $EV1 = 31,005,347.85$.

Table 2. Mindray's EVA model prediction process and results.

Fiscal Year Ended	Historical			Forecast				
	2020	2021	2022	2023E	2024E	2025E	2026E	2027E
EBIT	743,844.03	902,571.91	1,096,423.74	1,335,904.43	1,630,331.13	1,993,140.21	2,441,326.37	2,996,495.11
-C1	1,275.05	1,524.28	1,828.70	2194.4448	2633.33376	3160.000512	3792.000614	4550.400737
+C3	27,520.32	26,118.87	24,317.67	22712.7077	21577.07232	21145.53087	21356.98618	21356.98618
+C4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
+C5	22,623.04	20,158.65	26,835.85	30861.23026	37033.47631	46291.84539	60179.39901	81242.18866
-A2	50,189.26	59,642.85	75,507.89	100425.4937	131557.3967	164446.7459	205558.4324	256948.0405
C7	-1,671.98	-4,863.22	-3,696.44	-4435.728	5322.8736	6387.44832	7664.937984	8814.678682
-C7*(1-r)	-1421.183	-4133.737	-3141.974	-3770.3688	4524.44256	5429.331072	6515.197286	7492.476879
NOPAT	792,213.26	894,864.59	1,077,040.05	1,295,017.69	1,564,542.06	1,904,720.17	2,327,611.52	2,854,189.12
C3	27,520.32	26,118.87	24,317.67	22,858.61	21,715.68	21,281.37	21,494.18	21,494.18
+ A1	9,447.14	9,447.14	9,447.14	9,447.14	9,447.14	9,447.14	9,447.14	9,447.14

+C5	22,623.04	20,158.65	26,835.85	32203.02 288	38643.62 746	46372.35 295	55646.82 354	66776.18 824
+A2	50,189.26	59,642.85	75,507.89	100425.4 937	131557.3 967	164446.7 459	205558.4 324	256948.0 405
+ A3	92,984.04	112,630.9 5	180,268.2 1	225335.2 625	281669.0 781	352086.3 477	440107.9 346	550134.9 182
- C7*(1 -r)	- 1421.183	- 4133.737	- 3141.974	- 4712.961	- 6126.849 3	- 7352.219 16	- 8822.662 992	- 10587.19 559
I	204,184.9 9	232,132.2 0	319,518.7 4	394,982.4 9	489,159.7 8	600,986.1 8	741,077.1 8	915,387.6 7
C0	2,327,763 .10	2,695,280 .32	3,198,082 .51	3,837,699 .01	4,605,238 .82	5,526,286 .58	6,631,543 .90	7,957,852 .68
plus	1,275.05	1,524.28	1,828.70	2,194.44	2,633.33	3,160.00	3,792.00	4,550.40
E	2,329,038 .15	2,696,804 .60	3,199,911 .22	3,839,893 .46	4,607,872 .15	5,529,446 .58	6,635,335 .90	7,962,403 .08
+K2		9,721.69	10,092.97	11102.26 7	13322.72 04	15987.26 448	19184.71 738	23021.66 085
D	0.00	9,721.69	10,092.97	11,102.27	13,322.72	15,987.26	19,184.72	23,021.66
E+D	2,329,038 .15	2,706,526 .29	3,210,004 .19	3,850,995 .73	4,621,194 .87	5,545,433 .85	6,654,520 .62	7,985,424 .74
TC	2,533,223 .14	2,938,658 .49	3,529,522 .93	4,245,978 .22	5,110,354 .65	6,146,420 .02	7,395,597 .79	8,900,812 .40
EVA	488,226.4 8	542,225.5 8	653,497.3 0	785,500.3 0	951,299.5 0	1,167,149 .77	1,440,139 .79	1,786,091 .63

4.2. United Imaging Medical

Seen from Table 3 and Table 4, the growth rate of NP, T, DA and CE are taken from the average value of 2021 and 2022, and the growth rate is expected to gradually tend to 25%. The value of IE is expected to increase gradually, and WC is expected to usher in a regression after the growth in 2023 and then resume growth. It is available from the table that $FCF_2 = 1,586,596.62$. According to the data of United Imaging Medical's 2022 annual report, the WACC value used in this article is 12%.

Table 3. Lianying's DCF model prediction process and results.

Fiscal Year Ended	Historical			Forecast				
	2020	2021	2022	2023E	2024E	2025E	2026E	2027E
NP	93,664.4 5	140,350. 94	165,008.5 6	221,111. 47	287,444. 92	359,306.1 4	449,132.6 8	561,415.8 5
T	21,836.1 6	29,403.3 2	26,970.97	30,612.0 6	34,744.6 8	41,693.62	52,117.02	65,146.28
IE	4,904.67	566.56	642.43	770.91	925.10	1,110.12	1,332.14	1,598.57
EBIT	120,405. 29	170,320. 81	192,621.9 6	252,494. 44	323,114. 70	402,109.8 8	502,581.8 4	628,160.7 0
r	15%	15%	15%	15%	15%	15%	15%	15%
EBIT*(1-r)	102,344. 50	144,772. 69	163,728.6 7	214,620. 28	274,647. 49	341,793.4 0	427,194.5 7	533,936.5 9
=DA	26,409.4 3	21,139.6 6	26,169.74	29,310.1 1	35,172.1 3	43,965.16	54,956.45	68,695.56
-CE	70,257.3 9	34,673.6 6	74,133.52	91,925.5 7	114,906. 96	143,633.7 0	179,542.1 2	224,427.6 5
-ΔWC	71,801.9 1	118,697. 00	1,162,474. 38	813,732. 07	732,358. 86	805,594.7 5	966,713.7 0	1,208,392. 12
FCFF	130,298. 45	249,935. 69	1,278,239. 27	965,736. 88	927,271. 52	1,047,719. 61	1,269,322. 59	1,586,596. 62

Table 4. Lianying's EVA model prediction process and results.

Fiscal Year Ended	Historical			Forecast				
	2020	2021	2022	2023E	2024E	2025E	2026E	2027E
EBIT	120,405.29	170,320.81	192,621.96	229,393.24	273,282.11	327,938.53	393,526.24	472,231.48
+C1	990.75	-376.80	-976.64	-292.99	146.50	439.49	1,098.72	1,648.08
+C3	667.08	2,519.82	7,474.66	17,191.71	34,383.42	58,451.82	87,677.73	122,748.82
+C5	9,482.41	7,987.29	16,012.31	35,227.08	59,886.04	89,829.06	125,760.68	169,776.92
-A2	25,191.69	26,117.57	31,235.37	37,482.44	44,978.93	53,974.71	67,468.39	84,335.49
C7	-2,579.07	141.08	-844.79	-2,196.46	-3,953.63	-5,535.09	-7,472.37	-9,340.46
-C7*(1-r)	-2,192.21	119.92	-718.07	-1,866.99	-3,360.59	-4,704.83	-6,351.51	-7,939.39
NOPAT	152,499.15	154,354.71	183,770.20	243,707.14	322,126.09	421,853.92	539,474.12	690,009.21
C3	667.08	2,519.82	7,474.66	17,191.71	29,225.91	43,838.86	56,990.52	68,388.63
+C5	9,482.41	7,987.29	16,012.31	35,227.08	59,886.04	89,829.06	121,269.23	151,586.54
+A2	25,191.69	26,117.57	31,235.37	37,482.44	44,978.93	53,974.71	64,769.66	77,723.59
+ A3	0.00	1,084.36	22,236.48	17,789.18	16,010.26	19,212.32	24,015.40	30,019.24
-C7*(1-r)	-2,192.21	119.92	-718.07	-1,866.99	-3,360.59	-4,704.83	-6,351.51	-7,939.39
I	37,533.39	37,589.11	77,676.89	109,557.41	153,461.73	211,559.78	273,396.32	335,657.39
C0	360,016.84	503,731.90	1,748,327.53	2,097,993.04	2,517,591.64	2,895,230.39	3,184,753.43	3,503,228.77
+C1	990.75	-376.80	-976.64	-292.99	146.50	439.49	1,098.72	1,648.08
E	361,007.58	503,355.10	1,747,350.89	2,097,700.04	2,517,738.14	2,895,669.88	3,185,852.15	3,504,876.86
+K2	235.51	1,475.07	1,599.32	1,759.25	1,935.18	2,128.69	2,341.56	2,575.72
+K4	58,711.95	2,972.25	1,564.91	527.38	316.43	189.86	132.90	99.67
D	58,947.46	4,447.32	3,164.23	2,286.63	2,251.60	2,318.55	2,474.46	2,675.39
E+D	419,955.04	507,802.43	1,750,515.12	2,099,986.67	2,519,989.74	2,897,988.43	3,188,326.61	3,507,552.25
TC	457,488.43	545,391.54	1,828,192.01	2,209,544.08	2,673,451.47	3,109,548.21	3,461,722.94	3,843,209.64
EVA	96,685.56	87,816.94	-39,269.22	-25,857.24	-4,034.99	42,489.04	117,143.92	221,137.63

Based on the expectation of the company's growth, it is assumed that the sustainable growth rate $k_2 = 4\%$. Therefore, $EV_2 = 20,122,688.89$. The value of C1 increases as minority shareholders pay off their liabilities to the company. The growth rate of C3 in 2023 is based on a three-year average and is expected to slow gradually. The growth rate of C5 is expected to rise first and then decline. The growth rate of A2 is expected to increase gradually. The growth rate of C0 and C7 is expected to

slow. The values of C4, A1, K1, and K3 are not expected to change. The value of A3 is expected to decrease first and then increase. The value of K2 is expected to grow slowly. The growth rate of K4 in 2023 is based on the three-year average, and negative growth is expected to slow gradually. It is available from the table that $EVA_2 = 221,137.63$ According to data from Mindray's. 2022 annual report $V_2 = 1,781,653.94$. Therefore, $EV_2 = 4,586,326.36$.

Table 5. Yirui's DCF model prediction process and results.

Fiscal Year Ended	Historical			Forecast				
	2020	2021	2022	2023E	2024E	2025E	2026E	2027E
NP	22,309.40	48,457.41	63,870.91	83,032.18	107,941.84	140,324.39	182,421.71	237,148.22
T	3,120.28	7,535.62	6,998.44	8,888.02	11,287.79	14,335.49	18,206.08	23,121.72
IE	342.65	226.64	1,235.50	2,891.07	3,787.31	4,961.37	6,499.40	8,514.21
EBIT	25,772.33	56,219.68	72,104.86	94,811.28	123,016.94	159,621.26	207,127.18	268,784.15
r	15%	15%	15%	15%	15%	15%	15%	15%
EBIT*(1-r)	21,906.48	47,786.72	61,289.13	80,589.58953	104,564.3959	135,678.0681	176,058.1052	228,466.5266
+DA	3,790.25	5,301.09	7,004.67	9,848.568015	12,803.13842	16,644.07995	21,637.30393	28,128.49511
-CE	1,686.47	19,170.76	71,732.34	107,598.51	134,498.14	168,122.67	210,153.34	262,691.67
-ΔWC	221,071.96	17,982.63	133,494.18	184,221.97	254,226.32	350,832.32	484,148.60	668,125.06
FCFF	245,082.22	51,899.68	130,055.64	167,061.62	237,095.71	335,031.79	471,690.67	662,028.41

Table 6. Yirui's EVA model prediction process and results.

Fiscal Year Ended	Historical			Forecast				
	2020	2021	2022	2023E	2024E	2025E	2026E	2027E
EBIT	25,772.33	56,219.68	72,104.86	94,811.28	123,016.94	159,621.26	207,127.18	268,784.15
+C1	26.11	2,438.03	2,697.66	3,237.20	4,208.35	5,470.86	7,112.12	9,245.75
+C3	174.66	944.26	128.01	174.09	236.76	322.00	437.92	595.57
-A2	455.33	-305.64	235.12	352.67	493.74	641.87	770.24	924.29
C7	276.84	1,004.63	-0.96	-10.56	-31.67	-57.01	-74.12	-96.35
R	15%	15%	15%	15%	15%	15%	15%	15%
-C7*(1-r)	235.32	853.93	-0.82	-8.97	-26.92	-48.46	-63.00	-81.90
NOPAT	25,282.44	59,053.67	74,696.23	97,878.87	126,995.23	164,820.71	213,969.98	277,783.08
C3	174.66	944.26	128.01	174.09	236.76	322.00	437.92	595.57
+A2	455.33	-305.64	235.12	235.12	235.12	235.12	235.12	235.12
+A3	0.00	11,884.41	25,737.25	38,605.88	52,117.94	65,147.43	78,176.91	93,812.29
-C7*(1-r)	-	-	-	-	-	-	-	-
	1421.183	4133.737	3141.974	4,712.96	6,126.85	7,352.22	-8,822.66	-10,587.20

I	2,051.17	16,656.7	29,242.3	43,728.0	58,716.6	73,056.7	87,672.61	105,230.1
		6	5	5	7	6		8
C0	263,353.83	305,217.75	387,672.05	472,959.90	567,551.88	681,062.25	817,274.70	980,729.64
-C1	26.11	2,438.03	2,697.66	3,237.20	4,208.35	5,470.86	7,112.12	9,245.75
E	263,379.94	307,655.78	390,369.71	476,197.09	571,760.23	686,533.11	824,386.82	989,975.39
+K2	1,857.02	903.15	1,831.45	2,197.74	2,637.29	3,164.75	3,797.70	4,557.24
+K3	0	0	117,636.63	141,163.95	169,396.74	203,276.09	243,931.31	292,717.58
+K4	5,511.42	5,151.94	13,068.42	6,534.21	5,227.37	5,750.10	6,037.61	5,735.73
D	7,368.44	6,055.10	132,536.50	149,895.91	177,261.40	212,190.95	253,766.62	303,010.54
E+D	270,748.38	313,710.88	522,906.21	626,093.00	749,021.63	898,724.06	1,078,153.44	1,292,985.94
TC	272,799.55	330,367.64	552,148.56	669,821.05	807,738.30	971,780.82	1,165,826.05	1,398,216.12
EVA	- 10,181.5 0	16,105.8 7	2,916.91	10,802.1 3	21,989.2 5	38,489.2 0	62,412.59	96,014.99

4.3. Yirui Technology

As given in Table 5, Yirui Technology's performance grew rapidly during the epidemic, and now it has entered a correction period, and it is expected that the performance will rise slowly, and the forecast will be very different by taking the average of the three-year growth rate. This paper estimates the company's future growth according to the company's performance in 2022 relative to 2021, and the performance of stable change indicators such as DA will be appropriately estimated with the mean. Seen from Table 6, it is available from the table that $FCF_3 = 662,028.41$. According to the data of Yirui Technology's 2022 annual report, the WACC value used in this article is 13%. Based on the expectation of the company's growth, it is assumed that the sustainable growth rate $k_3 = 3\%$. Therefore, $EV_3 = 6,818,892.62$. Based on Table. 6, this paper predicts that after the end of the epidemic, the company's financial position will continue to grow slowly as it takes longer to go public and the company's financial position becomes more stable. It is available from the table that $EVA_3 = 96,014.99$. According to data from Mindray's 2022 annual report $V_3 = 262,472.58$. Therefore, $EV_3 = 1.251, 426.95$.

5. Conclusion

By analyzing the financial data of the three companies during the epidemic three years and predicting the financial status of the next five years, the conclusions about the similarities and differences between the two models are verified by considering the numerical characteristics of some indicators in the medical imaging industry. EV predicted by DCF model > the market capitalization > EV predicted by EVA model. And the value by EVA model is closer to the real value. In addition, prediction using the EVA model is more subjective than using the DCF model. Because there are too many factors to predict, and the trends and causes of some factors are complex. Meanwhile, it can be estimated that after the epidemic, the performance of all three companies will grow and recover. The limitation is that both models are highly subjective in forecasting, and the accuracy depends on the forecaster's understanding of the macro environment, industry, and firm. The three selected companies have been listed for a short period, in 2018, 2020 and 2022, respectively, with less data and are prone to large fluctuations. There is a big difference in the situation of the three companies, which is not conducive to industry comparison. Due to the short listing time, it is difficult to judge

whether the changes reflected in the financial data are due to the normal fluctuations after listing or the impact of the epidemic when analyzing the financial data of the three companies.

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