



How Hermes Survived COVID-19 and Recovered So Quickly?

An Analysis of Hermes's Financial Position and Strategies

Yitong Wu^(✉)

Shanghai University of Finance and Economics, Shanghai, China
jacky.wu@yk-industries.com

Abstract. The COVID-19 outbreak has had a huge impact on the global economy, particularly the retail sector, and Hermes is no exception. However, not only did Hermes manage to avoid heavy losses during the worst of the pandemic, its performance has also exploded in the post-COVID-19 era. This paper attempts to find the reasons for Hermes' successful response to the epidemic and rapid recovery through horizontal and vertical financial statement analysis, observation of Hermes' strategic changes and evaluation of external macro factors. The reasons can be summarized as follows: (1) Hermes has high operational efficiency; (2) Low leverage risk; (3) Online channel development; (4) Vigorously layout the Asian market; (5) Value-preserving attribute can cope with inflation. When it comes to the future revenue forecast, it can be predicted that there are several factors supporting Hermes's revenue growth going forward, but China market is the most uncertain factor for performance growth.

Keywords: Luxury goods · Covid-19 · Inflation · Financial statements

1 Introduction

1.1 Background

While the luxury fashion industry is known for its stability and remarkable ability to respond to change, the COVID-19 outbreak in the winter of 2020 still rocked the industry. In a Bain & Company's report of luxury industry, researchers found that the luxury industry has been heavily impacted by the Covid-19 crisis in 2020. The overall luxury market—encompassing both luxury goods and experiences—shrank by 20% to 22% at current exchange rates, and is now estimated at approximately €1 trillion globally, back to its 2015 levels [1].

On the supply side, the major manufacturers of personal luxury products are blocked, such as France and Italy. International luxury goods companies who have factories most in China and Southeast Asia and sales outlets all around the world suffered because pandemic has prompted governments to restrict the movement of people and advocate working from home, which has made it impossible for people to work in many factories.

On the consumer side, the closure of offline stores and people's lack of confidence in the future economy have made luxury sales miserable, as most people snap up only

necessities at this time. What's more, as flights have been grounded, and travel restrictions were tightened, the number of consumers who travel abroad for tax-free luxury goods was shrinking, decreasing the total sales. However, Hermes, as one of the world-famous luxury brands group, not only survived the covid-19 but also even had their revenue soared after that.

1.2 Motivation

Hermes is one of the leading groups in the luxury goods industry, and they have adopted a variety of strategies and measures before and after the epidemic, which has enabled them not only to survive the difficult period, but also to achieve a surge in business after the epidemic. The goal is to find out the reasons from its own business structure and characteristics, the effectiveness of their strategy, as well as the external economic situation. At the same time, the research hope to use the results of the survey to predict how the company will perform after 2022, in conjunction with important political events happening in the world today.

2 Literature Review

In a research in March, 2020, a team from Bain predicted that sales of luxury goods could fall up to 35% this year, but companies can still emerge stronger, more innovative and more purposeful [2].

There are researches focusing on how luxury groups survive the crisis of economy.

Brands employed suitable strategies to overcome the crisis, according to their own brand identity. Som and Blanckaert suggests the activities of luxury brands to overcome this crisis. Hermès and Prada employed a globalized strategy through opening new stores in other countries, while Stella McCartney adopted a Cost Rationalization strategy by closing its old store in Moscow. Christian Dior exited logo and accessories businesses to focus on product offering and luxury prominence in order to upscale the brand [3].

In Research on Luxury Consumption in the Background of Financial Crisis, Cao Jiachen indicated that, under the financial crisis, luxury goods consumption is expected to reduce to a certain extent due to the damaged entity economy and consumer purchasing power. At the same time, however, luxury consumption and growth to a great extent, because the financial crisis makes public tend to invest more on luxury products, purchase motivation of many consumers changes, and the competition among various luxury goods companies becomes far more fierce [4].

3 Financial Situation of Hermes During Covid-19

Common-size analysis method are adopted to analyse Hermes' financial data. In order to compare and judge the changes before and after the outbreak, common size analysis was used to compare the data of 2019, 2020 and 2021 [5-7].

3.1 Analysis of Balance Sheet

3.1.1 Data Acquisition and Processing

In analysing the balance sheet, the weight of each item in the balance sheet are calculated, expressed at 100%, on the basis of liabilities and total shareholders' equity. This gives us an idea of Hermes's asset allocation and the proportions of its various funding sources. Results are shown in Table 1.

Table 1. Balance sheet analysis

EUR in Million	Dec-19		Dec-20		Dec-21	
Assets						
Current assets:						
Total cash	4384	44.37%	4733	42.83%	6696	48.36%
Receivables	318	3.22%	250	2.26%	333	2.40%
Inventories	1133	11.46%	1289	11.67%	1449	10.46%
Other current assets	256	2.59%	378	3.42%	367	2.65%
Total current assets	6090	61.64%	6650	60.18%	8845	63.88%
Non-current assets:						
Property, plant and equipment						
Gross property, plant and equipment	4772	48.29%	5546	50.19%	6264	45.24%
Accumulated Depreciation	-2276	-23.03%	-2454	-22.20%	-2866	-20.70%
Net property, plant and equipment	2496	25.26%	3092	27.98%	3398	24.54%
Goodwill	16	0.16%	42	0.38%	42	0.30%
Intangible assets	184	1.86%	221	2.00%	257	1.86%
Deferred income taxes	510	5.16%	475	4.30%	546	3.94%
Other long-term assets	584	5.91%	570	5.16%	759	5.48%
Total non-current assets	3791	38.36%	4401	39.82%	5002	36.12%
Total assets	9881	100.00%	11050	100.00%	13847	100.00%
Liabilities						
Current liabilities:						
Short-term debt	20	0.21%	24	0.22%	1	0.01%
Capital leases	196	1.98%	196	1.77%	248	1.79%
Accounts payable	406	4.10%	372	3.37%	450	3.25%
Taxes payable	360	3.64%	218	1.97%	347	2.51%

(continued)

Table 1. (continued)

EUR in Million	Dec-19		Dec-20		Dec-21	
Other current liabilities	1042	10.54%	1028	9.30%	1529	11.04%
Total current liabilities	2024	20.48%	1839	16.64%	2575	18.60%
Non-current liabilities:						
Long-term debt	30	0.30%	18	0.17%	24	0.17%
Capital leases	896	9.07%	1448	13.10%	1529	11.04%
Deferred taxes liabilities	25	0.25%	22	0.20%	15	0.11%
Pensions and other benefits	270	2.73%	275	2.49%	220	1.59%
Minority interest	8	0.08%	11	0.10%	12	0.09%
Other long-term liabilities	61	0.62%	58	0.52%	71	0.51%
Total non-current liabilities	1289	13.05%	1832	16.58%	1871	13.51%
Total liabilities	3313	33.53%	3670	33.21%	4446	32.11%
Stockholders' equity						
Common stock	54	0.54%	54	0.49%	54	0.39%
Additional paid-in capital	50	0.50%	50	0.45%	50	0.36%
Retained earnings	1528	15.47%	1385	12.54%	2445	17.66%
Treasury stock	-509	-5.15%	-464	-4.20%	-551	-3.98%
Accumulated other comprehensive income	5445	55.11%	6355	57.51%	7403	53.46%
Total stockholders' equity	6568	66.47%	7380	66.79%	9401	67.89%
Total liabilities and stockholders' equity	9881	100.00%	11050	100.00%	13847	100.00%

3.1.2 Results: Impact on Balance Sheet is Small

In terms of Assets, current assets account for about 60%, and most of them are cash. Non-current assets account for about 40%. Such asset structure shows that Hermes has good cash flow and strong ability to withstand risks. In 2020, when COVID-19 was raging, Hermes' asset structure did not change much, with only a slight tilt of 1% towards non-current assets.

In terms of liabilities, total liabilities accounted for about 33% and stockholders' equity accounted for 67%. This healthy liability structure also enabled Hermes to smoothly pass through the most difficult year of 2020.

Entering 2021, as the impact of COVID-19 on the world gradually decreases, Hermes' assets are growing rapidly, its debt ratio (from 33.21% to 32.11%) and its existing assets ratio (from 60.18% to 63.88%) are healthier. This is mainly due to the rise in their share prices – after falling slightly during the epidemic, they bottomed out at 69 in March 2020, and immediately rebounded to reach over 170 by the end of 2021.

3.2 Analysis of Income Statement

3.2.1 Data Acquisition and Processing

In analysing the income statement, the net operating income is adopted as the basis for comparison and convert each item of the income statement into a percentage of net operating income. In this way, the relative importance of each item in the income statement is visualized clearly with numbers. The processed data contributes to understanding the cost structure and profit structure of Hermes and grasping the key factors that affect the performance of the company.

3.2.2 Results: Income Fell Slightly in 2020 and then Soared in 2021.

According to the analysis of the income statement (Table 2), net profit accounts for about 70% of the revenue, which is also outstanding in the luxury industry. It can be seen that Hermes has a very strong profitability and a very high commodity premium. Even in 2020, when the epidemic was severe, there was not much impact on the structure. In 2020, the share of the operating expense will increase slightly by around 1%, which is due to the decrease in business volume and the decrease in efficiency due to quarantine measures.

The impact of the epidemic on Hermes in the past three years is mainly reflected in the changes of Revenue, net income and EBITDA. In 2020, the decrease of consumer end and the increase of operating cost reduced the Revenue by about 500 million euros.

But in 2021, Hermes's sales soared by \$2.5 billion as pent-up consumer demand was released, online channels opened and people bought luxury goods to combat inflation. Compared to 2019 when there was no COVID-19, it's also grown about 30%, compared to previous years, when growth was around 10%. So in a way, COVID-19 fuels Hermes to expand its business greatly.

4 Keys Behind Hermes' Successful Fight Against COVID-19

For internal reasons, Hermes' own financial position and financial structure are the key, as is their strategic deployment during Covid-19. From a macro point of view, the global inflationary phenomenon to stimulate the economy to recover has also helped Hermes.

4.1 Efficiency and Health of Financial Structure

This part evaluates Hermes' performance through a horizontal comparison of important financial indicators of companies in the industry.

Table 2. Analysis of income statement

EUR in Million	19-Dec		20-Dec		21-Dec	
Revenue	6883	100.00%	6389	100.00%	8982	100.00%
Cost of revenue	2125	30.87%	2013	31.51%	2580	28.72%
Gross profit	4758	69.13%	4376	68.49%	6402	71.28%
Operating expenses						
Sales, General and administrative	1816	26.38%	1698	26.58%	2137	23.79%
Other operating expenses	576	8.36%	642	10.05%	669	7.45%
Total operating expenses	2391	34.74%	2340	36.63%	2806	31.24%
Operating income	2367	34.39%	2036	31.86%	3596	40.04%
Interest Expense	24	0.35%	32	0.51%	32	0.36%
Other income (expense)	-72	-1.05%	-17	-0.26%	-129	-1.44%
Income before taxes	2270	32.98%	1986	31.09%	3435	38.24%
Provision for income taxes	751	10.91%	613	9.59%	1015	11.30%
Other income	16	0.23%	16	0.25%	34	0.38%
Net income from continuing operations	1535	22.30%	1390	21.75%	2454	27.32%
Other	-7	-0.10%	-4	-0.06%	-9	-0.10%
Net income	1528	22.20%	1385	21.68%	2445	27.22%
EBITDA	2742	39.84%	2533	39.64%	4030	44.87%

The companies involved into the comparison are Hermes, LVMH, KERING, PVH, Richemont, Ralph Lauren, Tapestry, Prada, Burberry and Ferragamo, which are viewed as the world's largest luxury goods group [8–17].

Financial indicators are selected from three big dimensions: size, leverage (risk) and profitability. Net sales (EUR Mil), gross margin (%) and EBITDA (EUR Mil) are used to evaluate the size of business; Financial leverage and debt/equity ratio reflects the leverage of a company; Net margin (%), ROA (%) and ROE (%) are the most direct and clear ratios of profitability.

Results are shown in Table 3.

4.1.1 Business Size

In terms of business size, judging from the incentives of net sales, gross margin and the EBITDA in Table 3, Hermes's net sales and EBITDA are both lower than the industry average.

However, it should be noted that LV, the leading brand in the industry, has a large scale and occupies a large proportion as it make revenues of 64215 million euros, nearly the 5 to 20 times of others'. LVMH's much higher earnings than the industry makes the average less fair and convincing, so it is more fair to compare Hermes with the industry median instead of the average.

Table 3. Comparison of key indicators with peer companies

Dimension	Indicator	Hermes	LVMH	KERING	Burberry	.....	Average	Median
Size	Net Sales (EUR Mil)	8982	64215	17645	3198.46	.....	12483.15	6184.15
	Gross Margin (%)	71.3	68.3	74.1	71.1	.....	69.2	70.7
	EBITDA (EUR Mil)	4030.0	23281.0	6130.0	1112.7	.....	4053.5	1221.4
Leverage	Financial Leverage	1.47	2.66	2.33	2.34	.....	2.28	2.34
	Debt/Equity Ratio	0.17	0.51	0.49	0.75	.....	0.61	0.67
Profitability	Net margin (%)	27.22	18.74	18	17.59	.....	14.84	12.99
	ROA (%)	19.64	10.29	10.75	13.09	.....	9.66	10.29
	ROE (%)	29.14	28.48	25.24	33.59	.....	22.08	23.35

Hermes ranks among the top five in terms of revenue in the fashion and luxury sector, nearly half higher than the median. But it is still far smaller than the industry leaders, such as LVMH and KERING, which have many strong brands and tried to buy Hermes. Therefore, it can be concluded that the sales scale of Hermes is in the first tier in the field of fashion luxury goods, but there is a big gap between Hermes and top leaders such as LVMH and KERING.

4.1.2 Leverage Ratio

Compared to the industry, Hermes has the least financial leverage, which shows that their leverage is very healthy. They have sufficient assets to carry out their day-to-day business operations and have sufficient capacity to repay their debts, which has laid the foundation for Hermes to successfully cope with the COVID-19 crisis and to recover quickly in the future. The Debt/Equity Ratio of Hermes is also the same, almost 1/4 of the industry average and the industry median, indicating that Hermes has a very good financial security situation.

However, the fact that it is so much less leveraged than its peers suggests that Hermes has not yet reached its full potential. This gives us endless imagination: If Hermes gradually changed its conservative strategy and gradually increased its leverage, even to the industry average, its business volume could increase rapidly.

4.1.3 Profitability

In terms of profitability, Hermes Net Margin, ROA and ROE are much higher than the industry average. Net Margin and ROA are at the top of the list. This shows that Hermes

has very strong profitability, high utilization rate of assets and equity, and excellent operational efficiency.

4.1.4 Conclusion: Hermes Has a Healthy and Highly Profitable Financial Structure

It can be concluded that Hermes has a healthy financial position and the highest profitability in the industry. And this may be the best reason why Hermes suffers little from covid-19. During the worst months of the coronavirus pandemic, stores closed and demand waned, this should have had a significant impact on cash flow, as fixed costs such as store rent and staff base salaries are not reduced, while sales are significantly lower. But Hermes has survived these months with an already healthy, low-debt financial system. After the global economy recovered, Hermes quickly recovered and grew with the best operational efficiency in its industry.

4.2 Strategy of E-retailing

According to ‘The categories of marketing actions of the luxury fashion brands dealing with the COVID-19’ released by International Journal of Costume and Fashion Vol. 20 No. 2 2020, just like other companies in the industry, Hermes implemented the strategy of E-retailing, which enables people to buy their products on the internet, somehow mitigate the decline of sales during the covid-19 when people are not willing to make offline shopping out of the fear of being infected [18].

With the information age, more and more young people are shifting their offline behaviours online, including shopping. But before the outbreak of Covid-19 forced them to upgrade, compared to other retail industries, the luxury industry did not pay much attention to the operation and competition of online malls.

However, luxury goods companies still need to further improve the construction of their online malls, especially towards how to enable consumers online to feel the same sense of luxury and dignity as when they enter the offline store.

4.3 Expansion in Asia

Asian markets, including China, are emerging as new growth engines for luxury giants.

It is worth noting that Since 2022, Hermes has increased its expansion speed in China. Since mid-March, Hermes reopened its Pacific Place store in Hong Kong and its No.1 Central store in Macau in January and February, respectively, after completing renovations. The first store in Henan also opened in Zhengzhou at the end of March, and almost all the products were sold out on the opening day. According to data released by Bain & Company, personal luxury goods sales on the Chinese mainland rose 36 percent year-on-year to 471 billion yuan in 2021, more than double the pre-COVID-19 sales of 234 billion yuan in 2019. And the trend is set to continue, with China expected to become the world’s largest luxury goods market by 2025 [19].

4.4 Global Inflation

In early February 2022, UBS stated that “price flexibility” is one of the key characteristics of the luxury industry, noting that “leading brands such as Louis Vuitton have seen average price increases 2.5 times the rate of inflation over the past 20 years.

Against the backdrop of global inflation caused by the covid-19, groups such as Hermes and Louis Vuitton have deliberately created shortages and demand, which have driven several price increases. Luxury goods have been transformed from mere consumer goods into collectibles and investments. Luxury goods, especially limited editions, which have a strong anti-inflation property of scarcity, used to appear as consumer goods for the rich. In recent years, a wave of the middle class has embraced luxury goods as a wealth management product, akin to investing in gold, with the same financial logic behind luxury watches and cars.

5 Prediction of Future Performance

5.1 The Coming of E-commerce Era

During the epidemic, major luxury goods including Hermes have strengthened the construction of online sales channels, and many people have formed the habit of online shopping instead of offline shopping. Online shopping was a remedy for the company’s losses during the COVID-19 pandemic, but in the post-pandemic era, it may become a new growth point.

5.2 Global Inflation Continues

As mentioned in the previous article, the global monetary surge after COVID-19 has resulted in relatively high inflation. Luxury goods are no longer just consumer goods, but become an effective means to fight inflation, which contributes to the booming performance of luxury groups such as Hermes and LV.

Global inflation is difficult to improve in the short term – on the one hand, the global economy is still in the shadow of COVID-19, and on the other hand, the price rise of basic commodities such as energy and food caused by the Russia-Ukraine war, which will indirectly lead to the price rise of various commodities in the future. Therefore, it may become more and more obvious that luxury goods are bought by the masses because of their value preservation properties.

5.3 Uncertainty of China Market

In the 2020 Hermes Annual Report [6], Hermes’ income from Asia-Pacific (Excl. Japan) reached 2,915million, accounting for 46% of the total income. Entering the spring of 2022, China, an important market for Hermes, experienced the strongest wave of omicron epidemic rebound in the past two years, which brought great uncertainty to the future performance of Hermes.

Data from the National Health Commission of China shows that the number of infected people in Shanghai reached the peak of 27,719 on April 13 [20]. The government

imposed a ‘silent’ policy on Shanghai in March - residents must stay at home - until June 1. In the rest of the country, most cities are implementing city-wide suspensions for every case.

The shut-down of cities has brought a huge impact on China’s economy. According to the data released by The National Bureau of Statistics of China in April, the national service industry production index decreased by 6.1%, and the total retail sales of consumer goods decreased by 11.1%, which is obviously shrinking [21]. The big effect of such a contraction is widespread bankruptcies and layoffs. The middle class luxury buyers are gradually losing confidence in the future and reducing their luxury consumption.

6 Conclusion

Hermes has protected itself to the greatest extent through its healthy financial system, conservative leverage and efficient operations in the face of supply chain shortages, office inconvenience and reduced end demand caused by COVID-19.

At the same time, Hermes actively explored online sales channels to reduce the negative business growth during the epidemic.

As the world slowly recovers from the pandemic, luxury goods are rising in price and being snapped up for their inflation-proof financial properties. In line with this backdrop, Hermes has aggressively raised prices and aggressively expanded into The Asian market, rapidly achieving post-COVID-19 business growth.

In the future, with the impact of the Russia-Ukraine war and the repeated epidemic, global inflation will not easily end, and Hermes’s future performance may continue to grow. However, the future of Hermes in The Chinese market is uncertain due to stringent quarantine measures and the precarious economic situation in the region.

Authors’ Contributions. Hopefully, this article could provide some operating implication to companies in the luxury retailing industry, especially when the world is recovering from the economic downturn caused by Covid-19. Also, some insight to potential future Hermes investors and lenders who would like to know the financial performance through a particular historical period could be brought by the analysis.

References

1. Claudia D’Arpizio, Federica Levato, Filippo Prete, Constance Gault, and Joëlle de Montgolfier, Bain & Company. (2021). The Future of Luxury: Bouncing Back from Covid-19. Retrieved from <https://www.bain.com/insights/the-future-of-luxury-bouncing-back-from-covid-19/>
2. Claudia D’Arpizio, Federica Levato, Stefano Fenili, Fabio Colacchio, and Filippo Prete, Bain & Company. (2020). Luxury after Covid-19: Changed for (the) good? Retrieved from <https://www.bain.com/insights/luxury-after-coronavirus/>
3. Som, A., & Blanckaert, C. (2015). The road to luxury: The evolution, markets, and strategies of luxury brand management. Singapore: John Wiley & Sons.
4. Jiachen, Cao. Research on Luxury Consumption in the Background of Financial Crisis. 2022 7th International Conference on Financial Innovation and Economic Development (ICFIED 2022). Atlantis Press, 2022. pp. 2709–2713. DOI: <https://doi.org/10.2991/aebmr.k.220307.441>

5. 2019 Universal registration document (including the annual financial report), Hermes, https://assets-finance.hermes.com/s3fs-public/node/pdf_file/2020-07/1595280621/hermesinternational-urd-2019-en.pdf
6. 2020 Universal registration document (2020 URD, including the annual financial report), Hermes, https://assets-finance.hermes.com/s3fs-public/node/pdf_file/2021-04/1619702282/hermes-urd2020-en.pdf
7. 2021 Universal Registration Document (2021 URD, including the annual financial report), Hermes, https://assets-finance.hermes.com/s3fs-public/node/pdf_file/2022-04/1650894273/HERMES-URD2021-EN_03.pdf
8. Key ratios of Hermes International SA ADR, (2020–2022), Morningstar. Retrieved from <http://financials.morningstar.com/ratios/r.html?t=HESAY>
9. Key ratios of LVMH Moët Hennessy Louis Vuitton SE ADR, (2020–2022), Morningstar. Retrieved from <http://financials.morningstar.com/ratios/r.html?t=LVMUY>
10. Key ratios of KERING SA ADR, (2020–2022), Morningstar. Retrieved from <http://financials.morningstar.com/ratios/r.html?t=PPRUY®ion=usa&culture=en-US>
11. Key ratios of PVH Corp, (2020–2022), Morningstar. Retrieved from <http://financials.morningstar.com/ratios/r.html?t=PVH®ion=usa&culture=en-US>
12. Key ratios of Compagnie Financiere Richemont SA ADR, (2020–2022), Morningstar. Retrieved from <http://financials.morningstar.com/ratios/r.html?t=CFRUY®ion=usa&culture=en-US>
13. Key ratios of Ralph Lauren Corp Class A, (2020–2022), Morningstar. Retrieved from <http://financials.morningstar.com/ratios/r.html?t=RL®ion=usa&culture=en-US>
14. Key ratios of Tapestry Inc, (2020–2022), Morningstar. Retrieved from <http://financials.morningstar.com/ratios/r.html?t=TPR®ion=usa&culture=en-US>
15. Key ratios of Prada SpA ADR, (2020–2022), Morningstar. Retrieved from <http://financials.morningstar.com/ratios/r.html?t=PRDSY®ion=usa&culture=en-US>
16. Key ratios of Burberry Group PLC ADR, (2020–2022), Morningstar. Retrieved from <http://financials.morningstar.com/ratios/r.html?t=BURBY®ion=usa&culture=en-US>
17. Key ratios of Salvatore Ferragamo SpA ADR, (2020–2022), Morningstar. Retrieved from <http://financials.morningstar.com/income-statement/is.html?t=SFRGY®ion=usa&culture=en-US>
18. Xie J, Youn C. How the luxury fashion brand adjust to deal with the COVID-19 [J]. *International Journal of Costume and Fashion*, 2020, 20(2): 50-60. DOI: <http://dx.doi.org/https://doi.org/10.7233/ijcf.2020.2.050>
19. Bruno Lannes and Carrie Zhang, Bain & Company. (2020). China's Unstoppable 2020 Luxury Market. Retrieved from <https://www.bain.com/insights/chinas-unstoppable-2020-luxury-market/>
20. National Health Commission of China (2022,4), The latest situation of the new coronavirus pneumonia as of 24:00 on April 13. Retrieved from <http://www.nhc.gov.cn/xcs/yqtb/202204/ffea7582c77497fbd2fd8789c0e4568.shtml>
21. National Bureau of Statistics of China (2022,4), The spokesperson of the National Bureau of Statistics answers reporters' questions on the operation of the national economy in April 2022. Retrieved from http://wap.stats.gov.cn/jd/202205/t20220516_1830520.html

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

