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Study on Risk and Value of the Logistics Industry

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Abstract: The logistics industry plays a vital role in the global economy, managing the flow of goods, information and services. The frequent occurrence of black swan events such as the new coronavirus epidemic in 2020 and the Russia-Ukraine conflict in 2022 has intensified the risks of the logistics industry. On the one hand, by studying the current risks faced by the logistics industry, this paper puts forward corresponding suggestions for the risks faced by the logistics industry. For example, the logistics industry can ensure the security of goods and information by utilizing cutting-edge technologies, adopting forward-looking risk management methods, and promoting cooperation with stakeholders, so that logistics companies can enhance their flexibility and optimize performance. And navigate a dynamic business environment. By establishing effective governance mechanisms and regular reviews, logistics companies can improve the strength and agility of their supply chains, effectively manage risks, and navigate the dynamic business environment. On the other hand, through the financial analysis of several representative companies in the logistics industry, this paper believes that the logistics industry has profitability at present and still has great growth potential in the future. The competition in the industry is relatively fierce, and the logistics industry market needs to be further subdivided.

Keywords: logistics industry, COVID-19 pandemic, risk and value

1. Introduction

1.1. Background

In recent years, the occurrence of black swan events such as the novel coronavirus outbreak and the conflict between Russia and Ukraine has increased the uncertainty of the macro environment of the whole market, and the logistics industry is also facing great risks. The study on the risk and investment value of the logistics industry can help logistics companies to evaluate and optimize their investment decisions and capital allocation by analyzing various risks faced by logistics companies (such as market fluctuations, operational disruptions, regulatory changes, security threats, environmental issues, etc.), develop strategies to mitigate or avoid these risks or utilize them to gain competitive advantages. Therefore, the study of risk and investment value plays an important role in improving the management level of logistics enterprises.

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1.2. Related Research

Choi et al collected relevant data, sorted out relevant literature, and found that the biggest risk facing the global logistics industry is the current shortage of skilled workers and high labor costs. Second is the risk of cybercrime, and third is the risk of supply chain disruption. When it comes to specific risks to individual companies, individual companies are also exposed to these risks [1]. Gong and Li found that digitization revealed a series of defects in transportation and transportation companies, which made companies vulnerable to cyber-attacks. They also found that the logistics industry is at greater risk of cyber attacks due to the expanded use of operational technologies, lagging cyber regulations and standards, lack of cyber security awareness and a shortage of cyber defense talents [2]. Atayah et al. reviewed some disruption events in the logistics industry in 2021, such as labor events, geopolitical events, corporate governance events, extreme weather events and drought events. They found that the logistics industry is a large and growing industry that promotes the flow of goods and services between different regions and modes of transportation. The source of supply chain risks in the logistics industry in 2020 is the COVID-19 pandemic [3].

Wilson studied the impact of the COVID-19 pandemic on the global economy in 2020, and found that the COVID-19 pandemic caused countries to take lockdown measures, which led to logistics obstruction, supply chain disruption, supply and demand decline, and thus global economic decline. When most of the lockdowns ended in 2021, supply fell short of demand as supply chains did not recover as quickly, leading to inflation [4]. Abdel-Basset analyzes the risks facing the logistics industry and reviews the literature review of relevant risk solutions. They found that if blockchain technology can be applied to the logistics industry, it will improve the transparency of the logistics industry, improve the efficiency and elasticity of logistics companies, and reduce risks to a certain extent, thus improving the operating profit and value of the logistics industry [5]. Orji et al. proposed a logistics service network design framework under uncertainty and disruption risk in view of some possible risks in the logistics industry, especially supply chain disruption caused by COVID-19. They developed a robust optimization model that takes into account demand uncertainty and outages. They also conducted a case study to illustrate the applicability and effectiveness of their approach [6].

Choi et al. explored the risk management of logistics systems in several key areas, such as disruption risk management, operational risk control, disaster and emergency management, etc. They put forward the future research direction of promoting the risk management of logistics systems. And they believe that risk mitigation can be achieved through risk avoidance (such as using new suppliers), risk transfer (such as buying insurance), and risk retention (such as logistics companies may decide to retain some risks with low probability or impact or risks that are too expensive or impractical to mitigate). And other ways to control risk [7]. Goel et al. analyzed the relationship between logistics and economic growth using panel data from different OECD countries. It is found that the logistics industry has a significant positive impact on economic growth. The logistics industry can not only promote the development of the domestic economy but also promote global trade, deepen the closeness of global countries, and facilitate the deeper communication and exchange of global culture [8]. Zhang and Chen found that the logistics industry has positive social impacts in various aspects, such as environmental sustainability, social inclusion and human development. The logistics industry has worked hard to reduce its environmental impact by adopting green measures such as optimizing routes, reducing emissions, improving fuel efficiency and using renewable energy sources. The logistics industry also promotes social inclusion and equity by providing goods and services to underserved populations and regions, particularly in rural areas and developing countries. The logistics industry also supports human development by enhancing the education, health, and well-being of its employees and customers

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through training, safety, and health programs [9]. Chen studied the impact of financial and operational risks on enterprise value in the logistics industry from 1993 to 2006 and found that the financial risk and business risks of logistics companies are essential determinants of enterprise value. The higher the financial and operating risks, the lower the enterprise value. It is suggested that logistics enterprises should adopt appropriate capital structure and management strategy to improve competitiveness and profitability [10].

1.3. Objective

This paper studies the current risks and values of the logistics industry. Next, this paper's second chapter studies the logistics industry's risks and Development Environment. In the second chapter, the status quo and existing risks of the logistics industry are discussed, and the solutions to the risks are put forward. The third chapter of this paper studies the value of the logistics industry. The third chapter explores the future growth potential of the logistics industry by comparing the profitability, weighted average cost of capital and valuation of the three companies in the logistics industry.

2. The Risk and Development Environment

The logistics industry plays a significant role in the global economy by effectively managing the movement of goods, information, and services from their source to the final destination. Over time, the industry has undergone significant changes in response to the evolving economy and technological advancements. However, in the past decade, instances of supply chain vulnerabilities and disruptions have led to costly recalls in industries such as electronics and automotive, amounting to hundreds of millions of dollars. Operating in a dynamic environment that presents both risks and opportunities, the logistics industry must employ various methods to manage these factors.

To effectively manage risks and create value, logistics companies leverage cutting-edge technologies. They adopt advanced security systems, implement stringent data protection measures, and embrace automation to streamline operations and optimize performance. Additionally, logistics companies adopt a proactive risk management approach to identify, assess, and mitigate potential risks. They implement comprehensive security measures, conduct regular audits to evaluate vulnerabilities and establish robust contingency plans. By taking these proactive measures, logistics companies minimize the impact of disruptions, enhance resilience, and ensure the smooth functioning of their operations. In the logistics industry, there is a constant risk of theft, pilferage, and security breaches during transportation and warehousing processes. Safeguarding the security of goods and information is paramount to mitigate losses and uphold the integrity of the supply chain. Implementing robust security measures, including surveillance systems, access controls, and data encryption, logistics companies can minimize the risks associated with theft, pilferage, and unauthorized access. These measures ensure the safe and secure handling of goods throughout the supply chain.

Collaboration with key stakeholders, including technology providers, government agencies, and industry associations, plays a vital role in addressing risks and maximizing value in the logistics industry. Partnerships allow for the exchange of best practices, access to specialized expertise, and effective risk management. By fostering collaboration, logistics companies gain valuable insights, stay updated with industry trends and regulations, enhance operational resilience, and drive innovation. These partnerships enable the industry to navigate challenges more effectively and unlock shared benefits for all stakeholders involved.

The fifth step is to establish effective governance and conduct regular reviews. A robust governance mechanism is critical in ensuring supply chain risk management. This includes regular

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reviews of supply chain risks and the identification of corresponding mitigation measures to enhance the resilience and agility of the supply chain. An effective supply chain risk management governance mechanism typically involves a cross-functional risk committee, with members representing various value chain segments. This committee is composed of line managers who act as risk owners and are responsible for identifying and implementing mitigation measures. In many cases, the risk committee receives additional support from a central risk management function equipped with an expert team to provide further guidance on risk identification and mitigation. Regular reviews are an integral part of the governance mechanism, ensuring the effectiveness of risk management strategies and facilitating necessary adjustments based on changing circumstances. The frequency of these regular reviews depends on the characteristics of the supply chain and the dynamic nature of the risks. By establishing a robust governance mechanism and conducting periodic reviews, companies can better manage supply chain risks, mitigate potential impacts, and improve the resilience and agility of their supply chains. This allows businesses to respond effectively to the ever-changing market environment and risk challenges.

Therefore, the logistics industry plays a crucial role in the global economy, managing the flow of goods, information, and services. Despite facing supply chain vulnerabilities and disruptions, logistics companies employ various methods to manage risks and create value. By leveraging cutting-edge technologies, adopting proactive risk management approaches, safeguarding the security of goods and information, and fostering collaboration with stakeholders, logistics companies enhance their resilience, optimize performance, and navigate the dynamic business environment. By establishing effective governance mechanisms and conducting regular reviews, logistics companies can improve the strength and agility of their supply chains, effectively manage risks, and navigate the dynamic business environment. Through these efforts, the logistics industry continues to adapt and thrive in the face of challenges and opportunities.

3. Compare and Analysis

From the perspective of profitability, refer to Table 1, UPS has the highest profit rate of 10.9%, and its return on equity and return on total assets are 60.76% and 11.24% respectively. The profit on net assets is much higher than the return on total assets, which indicates that UPS has a strong financial leverage effect. UPS uses the cost of borrowing funds to be lower than the rate of return on total assets, thus increasing the rate of return on net assets. In other words, the company has a high debt ratio, but it can effectively control the debt interest rate, so that the return on total assets is higher than the debt interest rate. UPS has strong profitability, but it also has large financial risks. Once the market environment changes or business conditions deteriorate, it may lead to a debt crisis [11]. On the other hand, AG had a negative profit in 2022, which is the worst profitability, followed by FDX. Still, the profit margin is only 3.23%, return on equity and return on total assets are 12.15% and 3.68%, respectively. To sum up, UPS has the strongest profitability, AG has the weakest profitability, followed by FDX. The return on equity of UPS and AG is much higher than the return on total assets, and the loss ratio of net assets of AG is much higher than the total assets loss ratio, which indicates that the enterprise may use higher financial leverage and borrow more low-cost funds to invest in high-yield projects. This can improve the profitability of enterprises, but also increase the financial risk of enterprises.

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Table 1: Profitability.

2022	ROA	ROE	Profit Margin
AG	-4.93%	-16.05%	-35.59%
UPS	11.24%	60.76%	10.90%
FDX	3.68%	12.15%	3.23%

From the perspective of financial leverage, refer to Table 2, AG has the lowest asset-liability ratio of 33.11%, that is, only about one-third of its assets are liabilities, which indicates that AG company has strong solvency and low financial risk. UPS and FDX have similar debt-to-asset ratios of 72.16% and 71%, respectively, meaning that nearly three-quarters of UPS and FDX's assets are liabilities. This indicates that the solvency of UPS and FDX is weaker than that of AG, and the financial risk is higher. However, UPS and FDX have higher profitability and asset turnover than AG, so AG's financial position is not better than UPS and FDX's.

Table 2: Leverage ratio.

	D/V	E/V
AG	33.11%	66.89%
UPS	72.16%	27.84%
FDX	71.00%	28.99%

From the perspective of weighted average cost of capital, WACC=D/V*Rd*(1-tc)+E/V*Re, where D/V represents the proportion of book debt in total assets, E/V represents the proportion of net assets in total assets, Rd represents the return on debt, and Re represents the return on equity [12]. According to Yahoo Finance, Re can be calculated using the CAPM model, ER=rf+β* (RM-RF), rf=5.2%,rm=5.9%,tc=21%. Refer to Table 3. Beta is a measure of the volatility of a stock relative to the market. AG has the lowest beta at 0.93, meaning it is slightly less volatile than the market. UPS has a beta of 1.09, meaning it is slightly more volatile than the market. The FDX has the highest beta at 1.34, meaning it is significantly more volatile than the market. According to the CAPM formula, the Re of AG, UPS and FDX is 5.85%, 5.96% and 6.14%, respectively. According to the calculation formula of WACC, the weighted average cost of capital of AG, UPS and FDX companies is 5.03%, 3.3% and 3.89% respectively. This indicates that AG has the highest capital cost and UPS has the lowest capital cost.

Table 3: Cost of capital.

	rb	beta	re	WACC
AG	4.25%	0.93	5.85%	5.03%
UPS	2.88%	1.09	5.96%	3.30%
FDX	3.76%	1.34	6.14%	3.89%

In terms of company valuations, the P/E ratio is a valuation measure of how much investors are willing to pay for a company's earnings. A high P/E ratio may mean that a company's stock is overvalued, or that investors expect the company to have high growth rates in the future [13]. A low P/E ratio can mean that a company's stock is undervalued, or that investors expect the company to have low growth in the future. Referring to Table 4, AG does not have a PE ratio because its earnings per share is -0.83, which means AG is in a poor financial position and may face solvency problems. UPS and FDX have price-to-earnings ratios of 13.85 and 19.31, respectively, which

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means they are profitable. However, FDX has a higher P/E ratio than UPS, which means investors are willing to pay more for FDX's earnings than UPS's earnings, either because it has higher growth prospects than UPS or because it is more popular with investors than UPS.

Table 4: Valuation.

2022	PE ratio	EPS
AG	N\A	-0.83
UPS	13.85	12.39
FDX	19.31	11.61

4. Discussion and Expline

UPS and FDX are delivery services, but they have different strengths and focuses. UPS is a domestic parcel delivery company, while FDX is a global air delivery company. UPS has a higher market share and brand recognition in the U.S. domestic delivery market than FDX. UPS also has a more integrated network, using a single pickup and delivery system to handle different package services. FDX has a higher market share and brand recognition than UPS in the international air express market. FDX also has a more diversified business portfolio to meet different customer groups and needs. UPS operates through a network of independently owned franchisees and provides shipping, packaging and postal services to retail customers and small businesses [14]. FDX operates through a network of third-party logistics providers, complementing its distribution network and expanding its coverage. UPS and FDX have different cost structures and revenue streams. UPS has higher operating margins than FDX because it benefits from economies of scale and lower fuel costs. FDX's revenue growth was higher than UPS's, as it benefited from the boom in e-commerce and increased demand for international delivery services [15]. AG (First Majestic Silver Corp) is not in the same industry as UPS and FDX. AG is a mining company. AG generates revenue by selling gold and silver bars produced at its mines. AG has a completely different revenue stream and customer base than UPS or FDX and does not compete directly with them. AG companies have higher barriers to entry and exit.

From an investor perspective, most investors prefer the express delivery sector. With the booming development of e-commerce, people's demand for fast and reliable express service is increasing, and the diversified demand of consumers also needs to be met. The express industry is still a sunrise industry at present. It can be seen from the financial situation of FDX and UPS that the company can generate stable earnings at present and has growth potential in the future. However, with the outbreak of COVID-19 in 2020 and the Russia-Ukraine conflict in 2022, the inflation rate in the United States and European countries has soared, and the express delivery industry is also facing challenges such as rising costs, fierce competition, regulatory uncertainty and environmental pressure [16]. So investors may prefer UPS, the more profitable part of the industry. FDX operates internationally and is more exposed to political risk. AG belongs to the mining industry, which is a cyclical industry. A company's profitability depends on commodity prices, supply and demand dynamics, and geopolitical risks. In addition, as the requirement of sustainable development becomes more and more prominent, the mining industry also faces the problem of survival of the fittest. If AG company cannot realize green transformation, its profit situation may become worse and worse. In addition, AG company is currently in a state of loss, so the risk of investors investing in AG company is greater. However, both the express delivery and mining industries have a negative impact on the environment. The delivery industry contributes to greenhouse gas emissions, air pollution, traffic congestion and waste generation. The mining industry leads to land degradation,

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water pollution, loss of biodiversity, etc [17]. Both sectors need to improve their ESG reporting to be sustainable and meet investor expectations.

From the perspective of enterprise development, the future development strategy of any company is affected by market conditions, competition patterns, innovation ability, stakeholders' expectations and so on. Different companies may have different development. First, at the industry level, UPS and FDX are in an industry that may be more competitive in the future, but the industry still has a future. AG's mineral industry is a resource industry which needs green transformation [18]. UPS will likely focus in the future on expanding its global network, enhancing its customer experience, diversifying its service portfolio, and improving its operational efficiency and sustainability. FDX is likely to focus on strengthening its core delivery business in the future, investing in digital transformation and developing new solutions for e-commerce and healthcare. First, Majestic Silver Corp. is likely to focus on increasing silver production and reserves, optimizing mining operations and costs, exploring new projects and acquisitions, and addressing its ESG challenges and opportunities.

5. Conclusion

From the perspective of the current risks faced by the logistics industry, the logistics industry is faced with risks such as vulnerability and disruption of the supply chain. In view of such risks, this paper proposes that logistics companies can enhance their resilience and optimize their performance by utilizing cutting-edge technologies, adopting forward-looking risk management methods, ensuring the security of goods and information, and promoting cooperation with stakeholders. Improve the strength and agility of its supply chain through the establishment of effective governance mechanisms and regular reviews, effectively manage risks, and constantly adapt and evolve in the face of challenges and opportunities. From the perspective of the value of the logistics industry, logistics companies UPS and FDX have strong profitability. Although the company has a high debt ratio, it can effectively control the debt interest rate, so that the return on total assets is higher than the debt interest rate. AG company's financial position is good, has a high debt repayment ability, from the company's valuation, investors believe that AG company has higher growth prospects than UPS. The logistics industry may be more competitive in the future, but there is still a future for the industry. The logistics industry also needs to enhance its customer experience, diversify its service portfolio, and improve its operational efficiency and sustainability

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