Paper Type: Original Article

Does the choice of different accounting policies for forward foreign exchange contract hedging affect audit risk? --Take Greenworks Jiangsu as an example

Ziyu Wang

Abstract

Should an enterprise account for a foreign exchange forward contract as a financial asset or a hedging instrument? How might different accounting policies impact the firm's key financial metrics, and could these metrics imply surplus management motives? Furthermore, does this introduce heightened audit risk for auditors when reviewing derivative financial assets? These questions commonly arise in annual audits of listed companies. This paper addresses these concerns by examining the relevant provisions of CAS22 and CAS24, using Greenworks (Jiangsu) Company Limited as a case study. Through a blend of theoretical analysis and practical insights, the paper identifies specific audit risks that certified public accountants should consider when auditing financial derivatives for listed companies. Practical recommendations are also provided to help mitigate audit risks. By offering strategies for the reasonable use of financial derivatives, this paper aims to reduce the audit risks associated with hedging activities, contribute to research in the field, and support the ongoing advancement of the auditing profession.

Keywords: hedging operations; accounting treatment; audit risk

I. Introduction

As financial markets continue to develop and enterprises face increasing risk management needs, forward foreign exchange contracts for hedging have become widely used across industries. International exchange rate fluctuations create significant uncertainty for enterprises, especially those engaged in import and export, affecting transaction values, product pricing, and accounting treatments. Managing and mitigating these exchange rate risks has become essential for enterprises, as they cannot avoid or overlook these challenges. Hedging tools serve a vital role in risk management by providing price discovery and protecting against price fluctuations. Typically, enterprises designate one or more appropriate hedging instruments, aiming for changes in their fair value or cash flow to offset corresponding changes in the fair value or cash flow of the hedged item.

However, in actual cash flow hedges, if material uncertainty surrounds the transaction or event associated with the hedged item—such that reliable measurement of changes in its fair value or cash flows is not possible—the enterprise may delay accounting recognition. This delay can impact key indicators in the enterprise's balance sheet and income statement, such as other comprehensive income and current profit or loss in shareholders' equity. These impacts may provide conditions that facilitate earnings management, thereby creating potential audit risks when auditors examine the hedging program.

Given these challenges, auditors must determine how to effectively respond to hedging audits to reduce their own audit risks and improve audit quality—an increasingly critical area of focus. This paper will examine this issue from a new perspective, using Greenworks (Jiangsu) Co., Ltd. as a case study to analyze the company's cash flow hedging practices and the auditor's responses. This analysis aims to provide a practical foundation for handling such audits in the future.

II. Literature review

Firms use derivative financial instruments for better risk management and the type of derivative financial instrument a firm chooses matches the risk it faces (Nam, 1998) [1] and the immediate goal is to reduce the cost of corporate financial distress and maximize profits (Smith and Stulz, 1985; Mackay and Moeller, 2007) [2-3]. Bartram (2003) [4] Based on this also empirical studies have concluded that the financial risk faced by firms is positively related to the willingness to hedge. It can be known from the review of Barry Lin (2010) [5] that scholars in the international academic community generally believe that when the company's future cash flow is uncertain and fluctuating, and the cost of external financing is high, hedging can reduce the possibility of the company's low cash flow. This has been further confirmed in China in manufacturing enterprises, especially for higher growth enterprises. Fu Zong Yao (2011) [6] 's study shows that the use of hedging business can both help to improve the performance of the company's finances and can also increase the company's share price to a certain extent for greater profits, but the positive, negative and extent of the impact depends on the disclosure and purpose of hedging. (Wang Xiaoqin, 2007; Huang Li, 2009; Jin Aman, 2022; Li Zhengqiang, 2024) [7-10]

Accounting policies are the specific principles that an enterprise follows in accounting and the specific accounting treatments that it adopts. The choice of accounting policies directly affects the preparation of an enterprise's financial statements. Different accounting policies may result in differences in the measurement and disclosure of assets, liabilities, income, expenses and other items in the financial statements. The choice of accounting policy may increase the risk of material misstatement and thus audit risk. On the one hand, an enterprise may select inappropriate accounting policies for purposes such as surplus management, resulting in material misstatement of the financial statements. For example, an enterprise may inflate revenue by choosing an aggressive revenue recognition policy or conceal asset losses by choosing a conservative asset impairment policy. On the other hand, complex accounting policy choices may increase the auditor's inspection difficulty and raise the inspection risk. For some new accounting standards or special industry accounting policies, auditors may need more time and expertise to understand and assess their reasonableness, thus increasing audit risk. (H. Oh, 2015) [11]

As far as the auditor is concerned, due to the complexity, flexibility and diversity of the derivative financial instruments themselves, it requires the auditor to have professional knowledge reserves, professional judgment and audit plan in the audit process. (Li Liying 2008) [12] Ranasinghe et al. (2020) [13] found in an audit study of the derivatives hedging business of O&G-E&P in the United States that although the marginalization of derivatives by companies significantly reduces auditors' business risk exposure, auditors need to put in more effort due to the relative complexity of derivative financial instruments and their financial reporting requirements. Cheng, Zhe (2015) [14] In this regard, listed the key concerns in auditing corporate hedging business, including hedging business effectiveness and timeliness, definition of rights and obligations, determination of fair value, presentation and disclosure, and business integrity. Yu, Gaoqi, Wu, Sha and Koo, Shiwei et al. (2019) [15] argued that due to the inherent characteristics of eye financial instruments, they must be strongly controlled, otherwise the consequences triggered are very serious. Therefore, there is a need to establish sound laws, regulations and accounting standards, incorporate appropriate audit models and audit procedures, as well as strengthen the training and enhancement of auditors' professionalism.

From the above literature, it can be seen that the current research mainly focuses on the following aspects: firstly, it mainly analyzes the hedging instruments of

Motivation purpose, accounting treatment, accounting policies adopted by enterprises, accounting policy differences and similarities and the use of such issues, less consideration of the impact of accounting policy selection on the audit risk of foreign exchange hedging business; second, most of the research on hedging activities in practice and theory focuses on the stage of effectiveness, measurement of benefits and disadvantages, and accounting treatment, and is almost not directly and explicitly related to the identification of and response to the audit risk; third, the The existing literature mainly uses empirical research methods to analyze, but there are fewer analyses based on the case level. Therefore, this paper takes Greenworks as an example to identify and analyze the audit risk of the company's publicly disclosed hedging business information, and put forward a more targeted audit response to provide a new perspective for the audit of hedging business of similar enterprises.

III. Theoretical Analysis of Foreign Exchange Hedge

Accounting Based on CAS 22 and CAS 24

For the accounting treatment of hedging business, Chinese enterprises can choose CAS22 (CAS 22 - Recognition and Measurement of Financial Instruments) and CAS24 (CAS 24 - Accounting for Hedging) as their accounting policies. CAS22 regulates the recognition and measurement of financial instruments, including the classification, measurement and impairment of financial assets, financial liabilities and equity instruments. At the same time, CAS22 provides a methodology based on fair value measurement that reflects changes in the market value of financial instruments. In foreign exchange hedging, enterprises can recognize the forward settlement and sale of foreign exchange business as a separate financial asset for accounting according to CAS22, while CAS24 specifically regulates the hedging business. It divides hedges into fair value hedges, cash flow hedges and hedges of net investment in foreign operations, and specifies the definition, scope of application and accounting treatment of various hedges.

3.1 Different purposes achieved by the adoption of CAS 22 and CAS 24 for foreign exchange hedge accounting measurement

3.1.1 Separate recognition of foreign exchange hedging operations as financial assets (CAS 22)

When an enterprise enters into a forward settlement and sale of foreign exchange business mainly for investment purposes, or when the business is less relevant to the enterprise's daily operating activities, it may be recognized separately as a financial asset for accounting purposes. When the enterprise expects the future exchange rate trend is favorable for foreign exchange investment, it chooses to enter into a forward settlement contract. In this case, the enterprise is concerned with the change in the fair value of the financial asset, which can be accurately reflected in the change in its market value through CAS22.

3.1.2 Use of foreign exchange hedging operations as hedging instruments (CAS24)

When an enterprise enters into a forward sale or settlement of foreign exchange in order to avoid foreign exchange risk and meets the conditions for hedge accounting, it can be treated as a hedging instrument. When an enterprise has a future foreign currency income or expenditure and enters into a forward settlement contract in order to lock in the exchange rate, the enterprise's purpose is to reduce the impact of exchange rate fluctuations on the enterprise's operating results and cash flows. At this time, the effect of hedging can be better reflected by CAS24.

3.2 Differences in accounting treatment for foreign exchange hedges under CAS 22 and CAS 24

3.2.1 Recognition and measurement of hedging instruments

In terms of the recognition criteria, CAS22 requires that a financial instrument be recognized as a hedging instrument based on its risk characteristics and contractual terms, i.e., its risk characteristics are highly correlated with those of the hedged item, while CAS24 is more stringent in recognizing a hedging instrument, requiring not only the existence of an economic relationship between the hedging instrument and the hedged item, but also that the economic relationship causes the value of both the hedging instrument and the hedged item to change in opposite directions as a result of being exposed to the same hedged risk. the value of the hedged item changes in opposite directions as a result of exposure to the same hedged risk. In terms of measurement methodology, CAS22 generally uses financial instruments that are measured at fair value, with changes in fair value reflected directly in the income statement.CAS24 Changes in the fair value of a hedging instrument are required to be separated into two components: the effective portion and the ineffective portion. The effective portion is recognized in other comprehensive income and the ineffective portion is recognized in current profit or loss. This treatment can avoid excessive fluctuation of the fair value change of the hedging instrument on the enterprise's profit for the current period.

3.2.2 Recognition and measurement of hedged items

In terms of the scope of recognition, the scope of hedged items in CAS22 is relatively narrow, mainly including recognized assets, liabilities, firm commitments, etc. For anticipated transactions, they can only be treated as hedged items when certain conditions are met. Comparatively speaking, the scope of CAS24 is broader, including not only recognized assets, liabilities and firm commitments, but also highly probable prospective transactions and net investment in foreign operations. In terms of measurement methodology, the hedged items of CAS22 need to be measured according to the category of assets or liabilities to which they belong. However, the measurement of hedged items under CAS24 needs to correspond to the hedging instrument, adjusted for the type and purpose of the hedging relationship. Under cash flow hedges, the portion of changes in the expected cash flows of the hedged item that relates to changes in the fair value of the hedging instrument is recognized in other comprehensive income; under fair value hedges, changes in the fair value of the hedged item are offset against changes in the fair value of the hedging instrument and recognized in profit or loss for the period.

3.2.3 Evaluation of hedging effectiveness

In terms of evaluation methods and evaluation criteria, CAS22 does not specify either a specialized hedging effectiveness evaluation method or evaluation criteria for hedging effectiveness. However, it requires enterprises to fully consider the risk characteristics of the selected financial instruments and contractual terms and conditions and other factors, combined with their own risk management objectives in order to determine whether they can effectively hedge risks.CAS24 specifies the evaluation methods and minimum standards for hedge effectiveness. The evaluation methods include qualitative analysis, i.e. economic relationship between the hedging instrument and the hedged item, hedging ratio and other factors to determine whether the hedging relationship is effective; and quantitative calculation of indicators such as the value change ratio between the hedging instrument and the hedged item to determine the degree of effectiveness of the hedge. The hedge relationship shall meet the value change ratio between 80% and 125%. If the hedge relationship does not meet the effectiveness criteria, the enterprise shall terminate the hedge accounting and deal with it in accordance with the recognition and measurement methods for financial instruments in general.

3.2.4 Accounting treatment

For cash flow hedges, CAS22 generally recognizes changes in the fair value of the hedging instrument in other comprehensive income first and then transfers it from other comprehensive income to current profit or loss when the hedged item affects profit or loss. CAS24, on the other hand, transfers the portion of changes in expected cash flows from the hedged item related to changes in the fair value of the hedging instrument that is recognized in other comprehensive income to current profit or loss only when the hedged item actually occurs. In foreign exchange hedges, the portion of exchange differences arising from changes in foreign exchange rates or other reasons on the hedged item that is related to changes in the fair value of the hedging instrument is also recognized in other comprehensive income. When a foreign operation is disposed of, the cumulative amount recognized in other comprehensive income is transferred to current profit or loss.

Table 1 Accounting treatment of derivative financial instruments

<table>
<tr><th>Name of the guideline</th><th>Treatment</th><th>Whether it affects profits</th></tr>
<tr><td>CAS22</td><td>Fair value through profit or loss</td><td>Yes</td></tr>
<tr><td rowspan="3">CAS24</td><td>Fair value through profit or loss</td><td rowspan="3">No</td></tr>
<tr><td>Cash flow hedges, changes in which are recognized in other comprehensive income</td></tr>
<tr><td>Hedges of investments in foreign operations, changes in which are recognized in other comprehensive income</td></tr>
</table>

IV. Case presentations

4.1 Purpose of hedging

According to the annual report published by Greenworks in 2023, it can be seen that the company's operating income is basically from overseas markets (accounting for 98% of total operating income), most of the main business orders are denominated in U.S. dollars, and fluctuations in the exchange rate of the RMB against the U.S. dollar will directly affect the price competitiveness of the products, which will have an impact on the company's operating results. In this regard, Greenworks company chose to use hedging business, strengthen the overseas layout and foreign exchange regulation, hedge and reduce the impact of exchange rate fluctuations on the company's performance, so that the overall profit maximization.

Table 2 Revenue share chart for 2023

Breakdown of income by region	sum of money	percentage
outside (a country's) borders	4,527,667,853.73	98.07%
internal (a country, province, city etc)	89,216,671.34	1.93%

Data from 2023 report

4.2 Introduction to hedging operations

As can be seen from the annual report published by the company in 2023, Greenworks's financial derivatives operations are: foreign exchange contracts, foreign exchange options and interest rate swaps, and designates foreign exchange forward contracts as hedging instruments for future sales settled in USD/EUR. In other words, Greenworks has designated the hedged and hedged items to form a hedging relationship designed to protect against expected foreign exchange transactions. From the report, it can be seen that the management, governance and independent directors of the company present a favorable attitude towards the use of hedging business to hedge the business risks. The hedging operations selected by Greenworks are all focused on Level 2, i.e. the valuation techniques used for fair value and qualitative and quantitative information on important parameters.

1） 报告期内以套期保值为目的的衍生品投资

☑适用 □不适用

单位：万元

衍生品投资类型	初始投资金额	期初金额	本期公允价值变动损益	计入权益的累计公允价值变动	报告期内购入金额	报告期内售出金额	期末金额	期末投资金额占公司报告期末净资产比例
外汇合约、外汇期权及利率互换合约	5,099.93	5,099.93	-7.7	-3,210.41	309,830.71	274,014.2	-547.58	-0.12%
合计	5,099.93	5,099.93	-7.7	-3,210.41	309,830.71	274,014.2	-547.58	-0.12%

Figure 1 Hedging operations in 2023

Data from 2023 report

4.3 Key audit matters

As can be seen from the 2023 Annual Report, the carrying value of derivative financial instruments in the consolidated financial statements and the Company's financial statements as at December 31, 2023 was RMB220,000,000 due to Greenworks's derivative financial instruments; the carrying value of derivative financial liabilities in the consolidated financial statements and the

Company's financial statements was RMB5.7 million, which is a large number of instruments and a large amount of money, and also the assessment of their fair value involves management's judgment and estimation, which may have a material impact on the overall misstatement of the financial statements. Therefore, the undersigned auditor classified derivative financial instruments as a key audit matter.

As can be seen from the annual report, the auditors performed the following audit responses: firstly, they understood and tested the key internal controls over derivative financial instruments; secondly, they performed correspondence procedures on derivative financial instruments; thirdly, they reviewed the valuation results of the derivative financial instruments, and with the assistance of an internal valuation expert, they assessed the reasonableness of the valuation methodology used by the Group's management for the valuation of the derivative financial instruments as well as the significant parameters, including the discount rate and the volatility of the underlying exchange rate; fourthly, they also reviewed the adequacy of the relevant disclosures in the notes to the financial statements. Third, we reviewed the valuation results of derivative financial instruments, and with the assistance of an internal valuation expert, assessed the reasonableness of the valuation methodology and important parameters used by the Group's management for the valuation of derivative financial instruments, including discount rate and volatility of underlying exchange rate, etc.; and fourth, reviewed the adequacy of relevant disclosures in the notes to the financial statements.

V. Audit risks

5.1 Risk of material misstatement

5.1.1 Financial statements

First, from the perspective of the balance sheet. In the accounting treatment of hedging operations, enterprises need to recognize the hedging instrument and the hedged item, in which the hedging instrument is usually recognized as a financial asset or a financial liability, which will directly affect the asset and liability items in the balance sheet. Hedged items may be recognized assets or liabilities, highly probable expected transactions, etc. For expected transactions, under certain conditions, enterprises will treat them as hedged items, which may affect the recognition and measurement of future assets or liabilities in the balance sheet. Meanwhile, exchange rate fluctuations in the foreign exchange market are frequent and difficult to predict accurately, and one of the purposes of enterprises' foreign exchange hedging business is to reduce the risks arising from exchange rate fluctuations. If the enterprise may incorrectly estimate the magnitude and direction of exchange rate changes, and choose an inappropriate hedging tool or hedging ratio, it will make the hedging effect is not good. In this case, the value of foreign exchange hedging operations reflected in the financial statements may be subject to the risk of material misstatement.

1、合并资产负债表

编制单位：格力博（江苏）股份有限公司

2023 年 12 月 31 日

单位：元

项目	2023 年 12 月 31 日	2023 年 1 月 1 日
流动资产：		
货币资金	2,715,944,483.06	456,658,691.14
结算备付金		
拆出资金		
交易性金融资产	113,466,480.90	19,033,403.10
衍生金融资产	222,137.01	51,857,801.79

拆入资金		
交易性金融负债		
衍生金融负债	5,697,913.83	858,466.43
应付票据	186,213,257.68	524,631,569.17
应付账款	1,112,016,627.10	1,069,689,753.49
预收款项		
合同负债	65,696,112.04	61,047,473.12

2023 年

	套期工具的名义金额	套期工具的账面价值		包含套期工具的资产负债表列示项目	本年用作确认套期无效部分基础的套期工具公允价值变动
		资产	负债		
汇率风险—很可能发生的预期交易	52,500,000.00	222,137.01	5,606,709.34	衍生金融资产/衍生金融负债	(27,772,049.71)

Figure 2 2023 balance sheet disclosure

Data from 2023 report

Secondly, from the perspective of the income statement, the biggest feature of CAS22 is that the hedging business will be immediately recognized in the current profit and loss through the fair value change, at this time, the income statement of the enterprise will fluctuate with the hedging business due to the exchange rate fluctuation of the gains and losses. This reduces the stability of the enterprise's profit and brings investment uncertainty to the users of financial statements, which in turn affects the enterprise's own interests. On the contrary, CAS 24 reduces the volatility of the income statement due to unclear or ineffective hedging relationships by establishing the reliability of the hedging relationship due to the strict requirements for assessing the effectiveness of the hedging relationship. For the effective hedging portion, since the changes are recognized in other comprehensive income, they do not directly affect the income statement, thus avoiding significant fluctuations in the income statement due to fluctuations in the foreign exchange market. Only when the hedged item affects profit or loss is the cumulative amount recognized in other comprehensive income transferred to current profit or loss, especially in the case of future hedged items, only when it actually occurs and affects the income statement will the corresponding other comprehensive income be transferred to current profit or loss.

In this case, Greenworks has designated its hedging business, where the hedging instrument is a foreign exchange contract and the hedged item is a probable forecast transaction; the amount of the change in fair value and the amount recognized in profit or loss are shown separately. From the above perspective, it can be seen that the accounting policy selected by Greenworks for its hedging business should be hedge accounting No. 24. However, according to Greenworks's response letter to SZSE's concerns, it claimed to use No. 22 standard for the part of not applying hedge loss ah remember. Therefore, facing the complexity of the hedging business will correspondingly increase the auditor's audit risk at the level of material misstatement.

e

2023 年

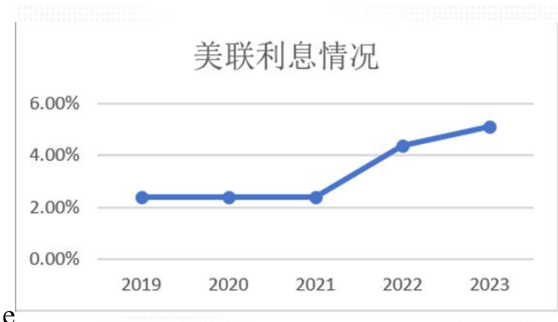
	计入其他综合收益的套期工具的公允价值变动	计入当期损益的套期无效部分	包含已确认的套期无效部分的利润表列示项目	从现金流量套期储备重分类至当期损益的金额	包含重分类调整的利润表列示项目
汇率风险 — 很可能发生的预期交易	(7,684,652.22)	(27,772,049.71)	投资收益	4,970,481.05	主营业务收入

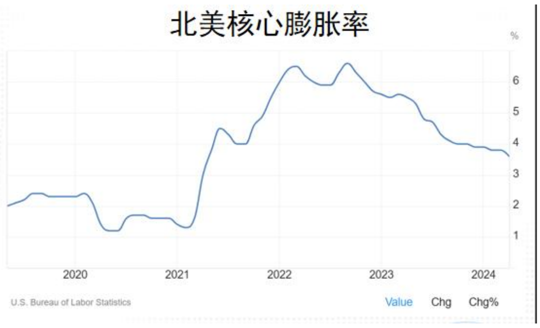
	金额	占利润总额比例	形成原因说明	是否具有可持续性
投资收益	-58,738,222.63	9.60%	主要系外汇衍生金融工具公允价值变动所致	否
公允价值变动损益	506,055.58	-0.08%	主要系利率衍生金融工具公允价值变动所致	否

Figure 3 Disclosure of Investment Income and Gains and Losses from Changes in Fair Value in 2023

Data from 2023 report

According to the changes disclosed in the 2023 annual report batch and the reasons for them, it can be seen that the investment income due to changes in the fair value of foreign exchange derivative financial instruments for the current year accounted for 9.6% of the total profit, but both of them were negative. This means that the investment in derivative financial instruments not only failed to bring profits, but also increased the degree of corporate losses, which will have a greater negative impact on the overall profitability of the enterprise. It is worth noting that the negative investment returns indicate that enterprises may have problems in investment decisions, timing of transactions, and portfolio construction of derivative financial assets, and have not fully taken into account the fluctuations in exchange rates and interest rates. This is because starting in 2020, the Federal Reserve implemented several rounds of interest rate cut operations, lowering the federal funds rate to a historic low. Over time, dollar inflation has continued to rise and the Fed's interest policy has continued to change.





e

Chart 4 (left) Fed Interest Chart **5 (right) North American Core Inflation**

Data from TRADING ECONOMICS: https://tradingeconomics.com/

5.1.2 Non-financial statements

(1) Industry situation

From the perspective of the industry as a whole, the auditor needs to take into full consideration the attitude and trend of the special equipment manufacturing industry as a whole towards the selection of derivative financial instruments. According to the CSMAR database data, in 2023, only 26 companies in the special equipment manufacturing industry used derivative financial instruments, and in the past three years, the industry as a whole selection of derivative financial instruments showed a decline year by year. This indicates that the value-preserving function of derivative financial instruments for the special equipment manufacturing industry has the possibility of decline, so the reasonableness of the enterprises' choice of foreign exchange hedging business needs to be fully considered by the auditor.

Table 3 Industry Derivatives Business in 2023

Number of enterprises	Number of firms using financial derivatives
424	26

Data from CSMAR database

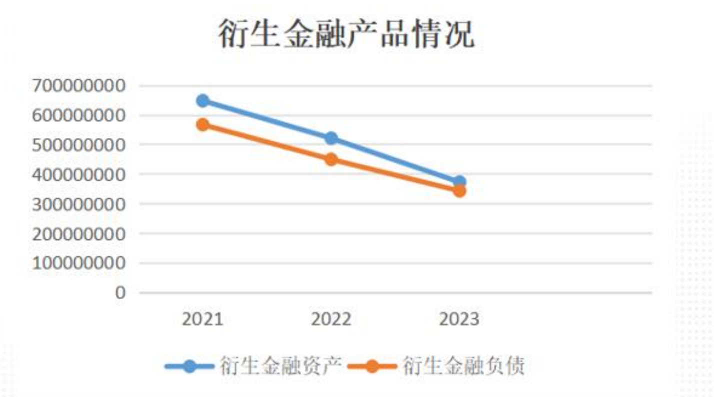


Figure 4 Financial derivatives in the industry in the last three years

Data from CSMAR database

On this basis, based on the size of the company's assets and the three-level classification of the stock software - garden tools manufacturing industry selected four comparative companies: Shuhua Gas, Leo Corporation, Zhongjian Technology, and Dah Ye Corporation, whose 23 years of hedging business are as follows:

Table 4 Derivative Finance Business of Comparator Companies in 2023

company identification	Whether or not to use	Product Type	Application of accounting policies
SINO PRIMA GAS	No	-	-
Leo Group	Yes	Forward exchange contract	CAS22
Top sun power	No	-	-
Daye Power	Yes	Foreign Exchange Options	CAS22

Data from the 2023 annual report of each company

For the annual audit reports of LEO and Daye in 2023, we were informed that the main reason why derivative financial assets were not classified as a key audit matter and also not questioned was that the volume of the hedging business was small, and the losses incurred during the accounting period were minor and did not pose a wording risk of material misstatement to the financial statements as a whole.

(2) Internal control

According to the Internal Control System publicly disclosed by the enterprise, "Greenworks: Announcement on the Company and its Controlling Subsidiaries to Carry out Foreign Exchange Derivatives Hedging Business", "Greenworks: Announcement on the Response to the Inquiry Letter of the Shenzhen Stock Exchange on the Annual Report of 2023" and "Greenworks: Feasibility Analysis Report on the Carrying out of Foreign Exchange Derivatives Hedging Business", it can be seen that the company has already established a corresponding derivative financial instruments internal control system for investment. At the same time, its financial staff and executives have certain financial background.

5.2 Inspection risks

According to auditing standards, inspection risk is the possibility that the auditor, due to his or her limited experience, may undertake inappropriate audit procedures or improper segregation of duties, which may result in the possibility of not detecting a misstatement of a derivative financial instrument after the procedures have been performed in order to reduce the audit risk to an acceptably low level.

According to the 2023 annual report, it can be seen that the auditor listed the derivatives business as a key audit matter and took a series of audit procedures to respond to it. However, according to the signature project experience of the signature auditor in the past 10 years provided by CSMAR database, it can be seen that the signature auditor Xiaogang Bao was involved in the audit of the derivatives business for only five times, and two of them were from the annual audit project of Greenworks in 2022 and 2023, and the remaining three projects were not belong to the special equipment manufacturing industry. The signed auditor, Beiyao Tang , had not done the audit of derivative business before auditing the derivative business of Greenworks. And in all the public information, the valuation model adopted was not pointed out, although in the audit response, they pointed out that they chose to utilize the work of experts, but the quality of utilizing the work of experts is difficult to reflect.

Therefore, our concluded that signature auditors have limited audit experience in auditing derivative financial instruments.

1）我们了解并测试了衍生金融工具的关键内部控制；
2）我们对衍生金融工具执行了函证程序；
3）我们复核了衍生金融工具的估值结果，在内部估值专家的协助下评估了集团管理层对衍生金融工具估值所使用的评估方法及重要参数的合理性，包括折现率和标的汇率波动率等；
4）我们也复核了财务报表附注中相关披露的充分性。

Figure 7. Auditors' audits should be

Data from 2023 Annual Report

根据CAMAR数据库推测签字审计师经验不足的证据：

从2013年-2023年，签字审计师鲍小刚和唐蓓瑶的衍生品业务审计经验如下：

审计师	鲍小刚	唐蓓瑶
2013-2023签字项目	30	8
设计衍生品业务的项目	5	2

Figure 8 Auditors' audit experience over the last 10 years

Data from CSMAR database

Through the CSMAR database, we obtained that the signatory auditor, Xiaogang Bao, has audited the enterprises with derivative financial products in the past 10 years: 2013 China Eastern Airlines, 2014 China Eastern Airlines and 2020 Golden Dragon Fish; none of the above enterprises are in the professional equipment manufacturing industry.

Among them, the hedging loss of goldfish in 2020 is worth paying attention to.In 2020, goldfish realized operating income of 194.922 billion yuan, an increase of 14.16% year on year; net profit was 6.001 billion yuan, an increase of 10.96% year on year. However, net profit in the fourth quarter showed a sharp decline, mainly due to hedging losses. According to the disclosure, the hedging loss for the year amounted to 3.5 billion yuan, accounting for nearly 40% of the total profit. Due to the net profit is less than expected, Jinlongyu shares fell sharply after the release of the annual report, market value evaporated 56.6 billion yuan in a single day. Hedging loss mainly stems from the company's normal business activities used to manage commodity prices and foreign exchange risk derivatives, because they do not fully meet the requirements of hedge accounting and are included in investment income and fair value changes in profit and loss accounts. In the unilateral price increase market, spot trading reflected positive gains, while hedging reflected losses and was recognized in investment income and fair value changes in profit and loss accounts.

Meanwhile also to the signature auditor of Ernst & Young Hua Ming Firm, nearly 10 years of audit has 258 projects audit involving derivative financial products, including 67 projects in the manufacturing industry, special equipment manufacturing enterprises 3, respectively: Greenworks, Sany Heavy Industry and Liyuanheng. In other words, Ernst & Young has certain audit experience in derivative financial products and has certain audit response capability.

VI. Audit response

6.1 Financial statement hierarchy

1. Understand the business process of an enterprise's foreign exchange hedging business, including the selection of hedging instruments, the determination of hedged items, and the identification of hedging relationships. At the same time, understand the risk management

strategy, review the enterprise's risk management strategy, and understand the enterprise's purpose and intention of foreign exchange hedging.

2. Assessing the effectiveness of hedging relationships

Based on the information obtained for the audit, qualitative assessment of foreign exchange hedging operations is conducted, i.e. reviewing the qualitative assessment of the hedging relationship by the enterprise, including the economic relationship between the hedged item and the hedging instrument, and the reasonableness of the hedging ratio, etc.; and quantitative assessment: quantitative assessment of the effectiveness of the hedge is conducted by calculating the ratio of the change in the value of the hedging instrument and the hedged item, and judging whether the hedging relationship is highly effective or not. If the hedging relationship is not highly effective, it is necessary to further review whether the enterprise's accounting treatment of the ineffective part of the hedge is correct.

3. Review the recognition and measurement of hedging instruments and hedged items

The review of a hedging instrument requires attention to whether the fair value of the hedging instrument can be reliably measured and whether the accounting treatment of the hedging instrument complies with CAS 22 and CAS 24. For example, for derivative financial instruments used as hedging instruments, it is necessary to review whether the accounting treatment of initial recognition, subsequent measurement and derecognition is correct. For hedged items, it is necessary to verify whether the recognition of the hedged item meets the requirements of accounting standards and whether the changes in fair value or cash flows of the hedged item can be measured reliably. In the case of expected transactions as hedged items, it is necessary to review whether the enterprise's assessment of the likelihood of the expected transactions occurring is reasonable.

6.2 Levels of Recognition

1. Authenticity

Confirmation of whether the cash flow hedging operations of a business have actually occurred and have not been fictitious or exaggerated. In this case, the hedged item is not expected to be transacted. Due to the uncertainty of the expected transactions, there may be some expected transactions that are not reflected in the financial statements, which may become one of the incentives for the enterprise to engage in surplus management.

2. Compliance

Review whether the enterprise's cash flow hedging operations comply with CAS22 and CAS24, including the identification of the hedging relationship, the recognition and measurement of the hedging instrument and the hedged item.

3. Accuracy

Auditors need to confirm that the hedging relationship for hedges of net investments in foreign operations meets the definition and conditions. This includes a review of the economic relationship between the hedged item (net investment in foreign operations) and the hedging instrument, as well as the reasonableness of the hedge ratio. For hedges of net investments in foreign operations, auditors need to assess the appropriateness of the firm's approach to measuring foreign exchange risk. This may involve reviewing the reasonableness of exchange rate forecasts, risk assessment models, etc. Auditors need to check whether an enterprise's accounting treatment of net investment hedges for foreign operations complies with the requirements of accounting standards. Under a hedge of a net investment in a foreign operation, the effective portion of the change in the fair value of the hedging instrument is recognized in other comprehensive income, and the ineffective portion is recognized in profit or loss for the period.

4. Adequacy of disclosure

Auditors need to review the adequacy, accuracy and completeness of the disclosures in the notes to the financial statements of the enterprise regarding foreign exchange hedging operations. This includes disclosure of the types of hedging instruments, fair value measurement methods, hedge effectiveness testing methods and results, and accounting treatment of hedging operations. Auditors should review the notes to the financial statements of the enterprise to check whether adequate disclosure of foreign exchange hedging operations has been made. At the same time, the auditor may also communicate with the management and financial personnel of the enterprise to understand the enterprise's disclosure policy and method of foreign exchange hedging business and make suggestions for improvement.

Auditors need to focus on whether an enterprise's disclosures comply with accounting standards and regulatory requirements. This includes understanding whether an enterprise's disclosures comply with CAS22 and CAS24, and whether they comply with relevant regulatory requirements, such as disclosure requirements of securities regulators.

VII. Summary

To further optimize the audit response to changes in fair value and disclosure of foreign exchange hedges, auditors can start with the following:

(i) Enhancement of the professional training of auditors

Enhancement of foreign exchange and financial derivatives knowledge: Foreign exchange hedging operations involve complex knowledge of financial derivatives and the foreign exchange market. Auditors should enhance their learning and training in these areas to improve their professional level. For example, they can attend relevant training courses and seminars to understand the latest financial derivatives market dynamics and auditing techniques.

Mastering the audit methodology of fair value measurement and disclosure: Fair value measurement and disclosure is the focus and difficulty of the audit of foreign exchange hedging business. Auditors should study relevant accounting standards and auditing standards in depth and master the auditing methods of fair value measurement and disclosure. For example, they can improve their auditing practice through case analysis and simulated auditing.

(ii) Utilization of external expertise

Engaging financial derivatives experts: For complex foreign exchange hedging engagements, auditors can engage financial derivatives experts to provide specialized advice. These experts can help auditors understand the structure and risk characteristics of the hedging instruments, assess the reasonableness of the fair value measurement methodology, and review the firm's risk management strategy.

Reference to industry research reports and opinions of regulatory bodies: Auditors can refer to industry research reports and opinions of regulatory bodies to understand industry best practices and regulatory requirements for foreign exchange hedging business. Such information can provide reference for auditors and help them develop more effective audit plans and audit procedures.

(iii) Enhanced communication with corporate internal audit and risk management departments

Understanding the enterprise's risk management strategy and internal control system: Auditors should maintain close communication with the enterprise's internal audit and risk management departments to understand the enterprise's risk management strategy and internal control system. This helps auditors better understand the foreign exchange hedging business of an enterprise and assess its risks and effectiveness.

Joint review of fair value measurements and disclosures: Internal audit and risk management departments typically have some oversight and review responsibility for an organization's fair value measurements and disclosures. Auditors can work with these departments to jointly review the accuracy and reasonableness of fair value measurements and disclosures to improve the efficiency and effectiveness of the audit.

(iv) Introduction of advanced auditing techniques and tools

Data analysis and auditing software: The use of data analysis and auditing software can improve the efficiency and accuracy of audits. Auditors can analyze and mine the data of enterprises' foreign exchange hedging business through data analysis technology to discover potential risks and problems. At the same time, audit software can help auditors automate some audit procedures and improve the efficiency of auditing.

Continuous auditing and real-time monitoring: For higher-risk businesses such as foreign exchange hedging operations, auditors can adopt continuous auditing and real-time monitoring methods to detect and deal with problems in a timely manner. For example, it is possible to establish an audit early warning system to conduct real-time monitoring of an enterprise's foreign exchange hedging business, and to conduct timely audit investigations once anomalies are found.

In summary, when auditing fair value changes and disclosure of foreign exchange hedging operations, auditors should pay attention to the specifics of the hedging instrument and hedged item, the reasonableness of the fair value measurement method, the accuracy of the accounting treatment, and the completeness, accuracy and timeliness of the disclosure. The audit response to foreign exchange hedging operations can be further optimized and the quality and effectiveness of audits can be improved through measures such as strengthening professional training, making use of the advice of external experts, enhancing communication with the internal audit and risk management departments of enterprises, and adopting advanced auditing techniques and tools.

References

[1]. Gay, G.D. and J. Nam, The Underinvestment Problem and Corporate Derivatives Use. Financial Management, 1998. 27(4): p. 53-69.

[2]. Smith, C.W. and R.M. Stulz, The Determinants of Firms' Hedging Policies. The Journal of Financial and Quantitative Analysis, 1985. 20(4): p. 391- 405.

[3]. Mackay, P. and S.B. Moeller, The Value of Corporate Risk Management. Journal of Finance, 2007. 62(3): p. 1379-1419.

[4]. Gordon, et al., The Impact of Institutional Differences on Derivatives Usage: a Comparative Study of US and Dutch Firms. European Financial Management, 2003.

[5]. Goyal, V.K., et al. Investor Characteristics, Relationships, and IPO Allocations. 2010.

[6]. Fu Zongyao, Empirical Study on the Motivation of Derivative Instrument Usage and the Impact on Firm Value, 2011, Guangdong Business School.

[7]. Wang Xiaoqin & Mi Hong, An empirical study of CSI 300 stock index futures hedging. Academic Forum, 2007(7): p. 4.

[8]. Huang Li, Accounting Disclosures for Derivatives, 2009, Southwest University of Finance and Economics.

[9]. Aman Kim, Does Derivatives Trading Profit and Loss Disclosure Affect Instantaneous Stock Prices? --an analysis based on A-share listed companies in 2020. Journal of Nanjing Audit University, 2022. 19(04): pp. 81-91.

[10]. Zhengqiang Li, Weifeng Ma & Ziwei Zhang, Hedging increases firm value. China Finance, 2024(10): pp. 62-63.

[11].Oh, H.T. (2015). KIFRS Adoption and Audit Risk. indian journal of science and technology, 8, 547-553.

[12]. Li Liying, Reflections on the Characteristics of Derivative Financial Instruments and Their Risk Management in China. Friends of Accounting, 2008(21): pp. 83-84.

[13]. Ranasinghe, T., L. Yi and L. Zhou, Do Auditors Charge a Risk Premium? Evidence from the Association between Derivative Hedging and Audit Fees. Social Science Electronic Publishing, 2020.

[14]. Cheng Zhe, Research on Auditing Issues Related to Corporate Hedging. Finance and Accounting, 2015(7): pp. 59-61.

[15]. Yu Gaoqi et al, Research on audit risk and effective control of derivative financial instruments. Business News, 2019(24): p. 92.