



University
of Stavanger

IDRIS ABISOYE LAMINA

SUPERVISOR: PROFESSOR KRISTOFFER W. ERIKSEN

Diversification and Risks Management: A comparative Analysis of Norway's Government Pension Fund and China Investment Corporation

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Abstract

This research conducts a comparative analysis of the risk management practices of the two largest Sovereign Wealth Funds: Government Pension Fund Global (GPF) and China Investment Corporation (CIC), examining how these practices influence their diversification strategies in order to achieve investment objectives.

Data relating to risks management and diversification were obtained from the annual reports of both organizations, while economic and political risks, inflation rates, and exchange rates data were obtained from World Bank publications. Descriptive statistics and the Augmented Dickey-Fuller (ADF) unit root test were employed to analyse the data.

The research findings indicate no strong relationship between the independent and the dependent variables, suggesting that for large funds like GPF and CIC, investment decisions are driven by a broader set of factors, including market-specific indicators (stock market volatility, market liquidity, and credit spreads) and financial indicators (corporate earnings growth, dividend yields, and price-to-earnings ratio).

Keywords:

Diversification, China Investment Corporation (CIC), Government Pension Fund Global (GPF), Risks Management, Sovereign Wealth Fund (SWF).

Foreword

This thesis is written as part of the requirements to obtain a Master of Science Degree in Business Administration - Applied Finance at the University of Stavanger (UiS), Norway.

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1.0 Introduction

1.1 An Overview and Background of the Study

For several years, the Sovereign Wealth Funds (SWF) has been an important tool that facilitates the diversification of a state's income and investment which leads to a better management of risk (Megginson & Gao, 2020). Hence, the significance of this device cannot be overstated. This is because the capability of the SWF to influence and contribute to the global financial market and system as well as to the stability of the economy of a country financially (Di Bonaventura Altuve, 2024). The SWF typically serves as a financing mechanism for counter-cyclical used to cope with budget fluctuations and a source of savings for future purposes while providing finances for social and economic investments as well as industrial ones that are not covered by the private sector (Aggarwal & Goodell, 2018).

Bahoo et al, (2020) in their works on Sovereign Wealth Funds (SWFs) cited a definition that summed SWFs as government-owned and controlled funds earlier coined by Rozanov in his work "Who Holds the Wealth of Nations?". They also provided a background on the new role of the state as a capitalist had been redesigned as an advanced, directorial, strategic actor that can intercede in investment in the form of the full ownership and control of state-owned institutional investors. Corroborating the above, Megginson et al (2021) referred to sovereign wealth funds and public pension funds as State-owned investors (SOIs) with an estimated value of \$27 trillion in assets under management as at 2020 to produce the third largest group of asset owners globally with interests in other alternative asset investments such as real estate, infrastructure, and hedge funds.

The SWFs were characteristically described by Megginson et al (2021) as Institutional investors with huge assets under management, providing financing flexibility and liquidity, sovereign background, and lacking in transparency even as players in the international capital markets. They further clarified the SWFs as giant government investment vehicles with rapid asset growth but lacking short-term liability and liquidity needs and prefer to make long-term investments in the financial and real estate sectors of developed countries. Whereas, Affuso et al (2022) indicated that a sovereign wealth fund (SWF) is a state-owned investment fund usually derived from a country's surplus reserves and acts as a stabilizer through investing a country's surplus money in other countries.

Diversification and risk management represent fundamental facets of portfolio management for sovereign wealth funds (SWFs), crucial entities tasked with prudent investment of government reserves (Quadrio Curzio & Miceli, 2010) (Sun & Hesse, 2009). The focus of this project is to conduct a comparative analysis of the approaches employed by Norway's Government Pension Fund (GPFG) and China Investment Corporation (CIC) in diversification and risk management. Sovereign wealth funds, such as the GPFG and CIC, operate within a dynamic global financial landscape, requiring adept strategies to optimize returns while mitigating uncertainties (Balding, 2012). The GPFG, initiated in 1990, is globally recognized for its transparent and ethically driven investment policies, emphasizing long-term value creation and sustainability (Bank, 2021). In contrast, the CIC, established in 2007, pursues optimal risk-adjusted returns, navigating intricate global financial markets to fulfill its objectives.

Given the evolving global economic scenario, the significance of effective diversification and risk management in sovereign wealth fund portfolios cannot be overemphasized. These funds, entrusted with substantial financial resources, face challenges ranging from geopolitical uncertainties to market volatilities and economic downturns. Consequently, a nuanced understanding of the specific diversification and risk management strategies employed by SWFs, exemplified by the GPFG and CIC, becomes imperative for stakeholders such as policymakers, investors, and financial analysts (Das, 2009). Despite an extensive body of literature on sovereign wealth funds, diversification, and risk management, a notable gap exists concerning a detailed comparative analysis of specific funds like the GPFG and CIC. This study aims to fill this void by examining the historical investment decisions, asset allocation strategies, and risk management practices of these funds. Through this comprehensive comparative analysis, the research endeavours to provide nuanced insights into how SWFs navigate the intricate challenges associated with diversification and risk management within their unique institutional contexts. In essence, the study seeks to contribute valuable knowledge to the academic discourse on sovereign wealth fund management, offering lessons, best practices, and potentially guiding principles applicable to other funds grappling with similar challenges in the contemporary financial landscape. By delving into the intricacies of the GPFG and CIC, this research aspires to enhance our understanding of the delicate balance between diversification and risk management within sovereign wealth funds, shedding light on strategies conducive to building sustainable and resilient financial portfolios.

The changing international economic environment requiring efficient diversification and risk management in the sovereign wealth portfolio highlights the importance of this trend. The hardships of these institutions may be as diverse as from the geopolitical instability to the changing markets and declines of the economic growth. Therefore, a complex appreciation of diversification and risk management approaches that are commonly utilized among SWFs including GPF and CIC is definitely essential for the policymakers, investors, and financial analysts (Das, 2009). Despite the considerable literature that addresses a wide variety of fiscal policy topics such as sovereign wealth funds, diversification, and risk management, yet the lack of a concrete detailed and comprehensive comparison between funds like the GPF and CIC is very apparent. The present study aims to do a fill of the specific void by studying the historical investment decisions, asset allocation strategies, and risk management practices of these funds. With this extensive comparative study, the research seeks to present the subtleties about how various SWFs, against their distinctive context of operation, handle such afflictions as diversification and risk management. The aim is to bring practical knowledge to the academic discourse in SWF management and packaging it in the form of lessons, guidelines, and principles that can be used by other funds in the current global financial environment. This research endeavours to shed light on the delicate balance between the diversification and risk management facets of sovereign wealth funds through the investigation of the GPF and CIC setups. It aspires to deepen our understanding of the ways in which various strategies can aid in the development of stable and resilient pools.

1.2 Principles of Diversification and Risk Management

Koumou (2020) identified the increasing difficulties associated with the diversification of sophisticated portfolios compared to the past when asset class and geographic dispersion ensured a properly diversified portfolio hence an emerging need to deploy multi-asset strategy to expand the free launch of diversification back to its full potential. Koumou (2020) placed diversification as one of the major components of investment decision-making under risk or uncertainty.

Uzsoki (2020) on the other hand, viewed diversification and risk management from the angle of sustainable investing strategies and its applications within the domains of Environment, Sustainability and Governance (ESG) but provided important lessons on the subject. Ciorciari

& Haacke (2022) reported the existence of a global consensus that hedging is a form of risk management although distinguishable from risk management that it captures the notion that hedging, as in finance, has largely to do with managing the risks inherent in particular investments or relationships. Ciorciari & Haacke (2022) also provided a comprehensive view of diversification by the investors in the financial markets, as emanating from the primary purpose of investing is to grow wealth, preserve capital, and achieve financial security. In order to build a diversified portfolio that can potentially outpace inflation, provide income, and meet long-term financial objectives such as retirement planning, funding education, or achieving specific lifestyle goals.

A key importance of diversification is the reduction of risk by combining investments that reduce the ratio of assets and is made attractive to anyone who does not like risk and prefers a certain future rather than an uncertain one.

1.3 Overview of Norway's Government Pension Fund (GPF)

Moses (2021) referred to the Norway's Government Pension Fund, Global (GPG) as the world's largest sovereign wealth fund, further described as a highly autonomous, expert-driven, apolitical investment engine; according to (Chambers et al., 2021), serves as an example of a coherent investment model with a compelling approach to managing long-term pools of assets, where as a model for financial investors desiring transparency, clarity of governance, low management costs, high liquidity, and high standards of ethical behaviour.

Two distinct sovereign wealth funds, the Government Pension Fund Global (GPG) and the Government Pension Fund Norway (GPFN), make up the Government Pension Fund of Norway. Since its establishment in 1990, the GPG has managed excess income from the Norwegian petroleum sector and is currently the largest sovereign wealth fund in the world. As of February 2024, its assets exceeded US\$1.548 trillion. It makes investments throughout the globe in debt, real estate, infrastructure for renewable energy, and stocks. In addition to encouraging sustainable growth and ethical investing methods, the goal of the GPG, which is overseen by Norges Bank investment Management on behalf of the Ministry of Finance, is to guarantee long-term wealth management for present and future generations. Both the GPG and the GPFN are managed by Norges Bank and Folketrygdfondet, respectively, under the supervision of the Ministry of Finance. Assuring efficient and lawful financial markets while

striving for strong financial returns over time, the investment strategy is centred on sustainable development in terms of the economy, environment, and society (Luvsansharav, 2023). With the creation of the GPF in 1990, the problems brought about by unexpected access to money from natural resources, such as oil, were also intended to be addressed. Norway aimed to eschew previous missteps of allocating oil wealth domestically by investing in foreign markets and moving the money straight to the fund. By optimising financial returns at a modest level of risk, the fund supports intergenerational equity and acts as a long-term savings tool (Addison & Lebdoui, 2022). It also provides protection from economic turbulence.

1.4 Overview of China Investment Corporation (CIC)

Founded in 2007, China's sovereign wealth fund is called the China Investment Corporation (CIC). When all assets under administration reach \$1.24 trillion by the end of 2022, it ranks among the largest sovereign wealth funds in the world. A diverse range of asset types, including as public stocks, fixed income, alternative assets, cash products, and real estate, are represented in CIC's well-balanced and resilient investment portfolio (CIC, 2023). With an eye on long-term financial gains and the maintenance of lawful and effective financial markets, the investment strategy prioritises sustainable growth on all fronts—economic, environmental, and social. CIC prioritises sustainable investing and aims to facilitate global green development. It is prepared to collaborate with all partners to change the economic complementarity between China and the Middle East.

1.5 Research Questions

The study is set to answer the following questions:

- i. What is the difference between the impact of economic environment such as inflation rate and exchange rate on the investment decision and risk tolerance in Norway and in China?
- ii. What is the difference between the influence of political status on investment decision and risk assessments in the Norway and the China economy?
- iii. What recommendations can be made on the potential investment decisions based on the economic realities of Norway and China?

1.6 Research Objectives

The main aim of this study is to analyse the relationship between Diversification and risk management with specific focus on comparing the Norway Government Pension Fund Global and the China investment corporation. The specific objectives of the study are, thus, as follows:

- i. To examine and compare the impact of economic environment such as inflation and exchange rate on investment decision and risk tolerance between Norway and China.
- ii. To evaluate and compare the influence of political status on investment decision and risk assessments in the Norway and the China economy.
- iii. To provide the relevant recommendations on the potential investment decisions based on the Norway and the China economic realities.

1.7 Significance of the study

This study aims to provide useful insights for developing robust and sustainable financial portfolios in the context of SWFs. In order to help sovereign wealth funds navigate the difficult political, financial, and economic environments while striking a careful balance between risk management and diversification, the research will analyse the methods of the GPF and CIC. To put it simply, this study is important because it has the potential to improve our understanding of sovereign wealth funds from an academic perspective as well as from a practical one. It also helps to create new financial knowledge and practices by providing stakeholders with insightful information, lessons learned, and best practices.

1.8 Scope and Delimitation of the Study

The scope of this study is restricted to the detailed and comprehensive comparative analysis of the diversification and risk management strategies deployed by the Norway's Government Pension Fund and the China Investment Corporation while focusing on their financial performance, the policy implications, and the institutional or governing factors influencing such sovereign wealth funds and their management practices.

This study will acknowledge some inevitable limitations that may be due to the inherent complexity and confidentiality (of information and data) surrounding the subject of sovereign

wealth funds' operations including the possible restrictions in accessing relevant or detailed data and information which may be restricted as the this comparative analysis will particularly focus on publicly available secondary data as information but may not provide all the required angles to all aspects of GPFG and CIC's investment strategies and their risk management practices.

1.9 Outline of the study

The project has five parts and are presented in the following order by chapters. The first chapter which introduces the study involves the background of the study, the statement of the research problem along with the research questions and objectives, the scope of the study, its significance, and its organisation. The second chapter is on the literature review, and it is subdivided as follows: conceptual review (to show the basic concepts utilised in the study), theoretical review (to show relevant theories which are utilised in the study), the empirical review (here, past studies from existing literature on the phenomenon under study are reviewed) Chapter three presents the methodology for the study which demonstrates the techniques of collecting empirical data on diversification and risk management along with the description of the variables, illustration of data and the source of information. The fourth chapter focuses on analysing and interpreting the results from analysing data, conclusion and summary. The last part is chapter five, and it presents the discussion.

1.9 Operational Definition of Terms

According to Fransiska et al (2023), the principle of portfolio *diversification* involves the combination of various financial instruments into a single portfolio to achieve benefits in reducing overall risk, as the main goal behind every investment decision is to achieve optimal growth value and obtain maximum financial profits in the future. Migliavacca et al (2023) studied the *diversification* of a portfolio and its associated strategies like optimization has becoming necessary since the advent of new asset classes (differing from the traditional asset classes) and changing dynamics regarding financial market integration. Specifically, Migliavacca et al (2023) approached the subject of portfolio diversification in its international perspectives as it tackles the problem of the case of high risk but low return of one single investment through the combination of any two or even more investments.

On the *risk* and its management, the Economic Times (2024) defined risk as the future uncertainty about deviation from expected earnings or expected outcome which also measure the uncertainty that an investor is willing to take to realize a gain from an investment. While, **Risk Management**, as described by APM (2024) is a process that allows individual risk events and overall risk to be understood and managed proactively, **optimizing success** by **minimizing threats** and **maximizing opportunities** and outcomes. Other key terms definitions are:

1. **Sovereign Wealth Funds (SWFs):** For this study, sovereign wealth funds refer to state-owned investment pools that manage a country's reserves, aiming to achieve long-term financial objectives through diversified investments.
2. **Norway's Government Pension Fund (GPF):** GPF specifically pertains to Norway's sovereign wealth fund established in 1990, managed by Norges Bank Investment Management, and recognized for transparent, ethically-driven investment policies.
3. **China Investment Corporation (CIC):** CIC refers to China's sovereign wealth fund, established in 2007, tasked with pursuing optimal risk-adjusted returns through investments in global financial markets.
4. **Asset Allocation Strategies:** Asset allocation strategies involve the systematic distribution of investments among various asset classes such as equities, fixed income, real estate, and alternative investments within the portfolios of sovereign wealth funds.
5. **Economic Environment:** The economic environment encompasses factors such as GDP growth, inflation rates, interest rates, and global economic conditions that may influence investment decisions and risk tolerance of sovereign wealth funds.
6. **Political Stability:** Political stability refers to the sustained absence of political turmoil, conflicts, or significant changes in government structures, and its impact on the investment decisions and risk assessments of sovereign wealth funds.
7. **Geopolitical Uncertainties:** Geopolitical uncertainties involve unpredictable events and conditions related to international relations, politics, and global events that may pose risks to sovereign wealth fund portfolios.

8. **Market Volatilities:** Market volatilities represent fluctuations in financial markets, including stock and commodity markets, which may impact the value of investments held by sovereign wealth funds.
9. **Evolving Global Economic Scenario:** The evolving global economic scenario encompasses ongoing changes and developments in the worldwide economic landscape, influencing the strategies and decision-making processes of sovereign wealth funds.

2.0 Literature Review

2.1 Overview

This section provides a comprehensive examination of the relevant literature to ensure that my comments are placed in the appropriate context. The first section of this chapter consists of the conceptual review, which will define crucial terms. Following this, the theoretical foundation analyses the relevant theories for this study. The empirical evidence section critically examines previous research, journals, and other sources that explore the correlation risk management and Diversification. It focuses on the techniques of analysis, observations, and conclusions presented in existing literature. The concluding section of this chapter presents the gaps found in literature based the findings of the research works and publications.

2.2 Conceptual Review

2.2.1 Diversification

Hung & Hager (2019) defined diversification as a technique towards the mitigation of risk which incorporates the distribution of resources as well as capital into a range of diverse investments. These investments are examined to incorporate a wide variety of assets, covering the commodities, stocks, real estate, bonds, as well as other financial instruments. Diversification, therefore, refers to the practice of distributing assets among several asset industries, classes, including geographic regions. This is directed towards minimising the overall risk involved with a portfolio investment (Kim et al., 2020). According to Page & Panariello (2018), diversification aims to moderate the overall risk of a portfolio by assigning the investments amidst several assets that have low association. Essentially, the principle of diversification can be summarised as the idea of not concentrating all of your resources or investments in a single entity or venture. As stated by Duque-Grisales & Aguilera-Caracuel, (2021) diversification commences with asset allocation, which is determining the distribution of investments among various asset classes, taking into account criteria such as investment objectives, risk tolerance, time frame, and market circumstances, where the typical asset categories consist of stocks, bonds, liquid assets, and non-traditional investments. The efficacy of diversification is contingent upon the correlation among the assets within a portfolio (Jouida, 2018). Correlation quantifies the extent to which the prices of two assets vary in relation to each other. Investors ideally look for assets that have a low or negative correlation in order to get more effective risk reduction advantages (Mehmood et al., 2019).

2.2.2 Risk Management

Risk management in finance involves the systematic identification, evaluation, and ranking of risks, followed by the efficient allocation of resources to reduce, control, and monitor the likelihood and/or consequences of unexpected events, or to maximise the exploitation of favourable circumstances (de Araújo Lima et al., 2020). Risk management strategies and processes are essential in the fields of investing, banking, and financial planning where the primary objective is to safeguard capital and guarantee sustained growth and financial stability (Leo et al., 2019).

Risk management, thus, is an ongoing procedure that involves identifying, analysing, evaluating, and addressing potential risks and monitoring measures to minimise the negative consequences of loss (Sari & Putra, 2022). It as well incorporates managing the possible risk on business such as risk on interest rate from loans, risk from credit from financial and non-financial institutions, risks on currencies on regional basis (Pournader et al., 2020). Strategies directed towards the management of risk are employed by organisations so that they can detect and work towards reducing the possible and predicted risks that can be encountered in the running of their business, transactions with money, their reputation, and so on (Wu & Olson, 2010). The handling of the different types of risk involved in investment can be achieved through the utilisation of various strategies including diversification, allocation of assets, cautiousness, and so on (Rampini et al., 2020). Effective risk management is essential in investment to create a portfolio that achieves a suitable balance between risk and return, taking into account an investor's risk tolerance, time horizon, and financial objectives (Gurtu & Johnny, 2021). The management of risk is therefore directed towards ensuring that the earnings of the company and the shareholders values are preserved and protected.

2.2.3 Economic Environment

The economic environment constitutes all the external factors in an economy which influences the habits associated with the purchasing power and buying of the businesses and the consumers and in turn impacts on the overall performances of businesses and organisations. This implies that it incorporates the components and elements in an economy that have the capacity to influence the operability of such economy inclusive of the agents that operate in such economy like the investors, the businesses, and final users of products and services.

Meseguer-Sánchez et al., (2020) mentioned that the component of this environment is often beyond the control of the company and could either be at a small-scale known as micro, or at a large-scale referred to the macro level. Also, as stated by Meseguer-Sanchez et al., (2020), there is the need to understand the economic environment to enable well-informed decision-making towards the proper planning of investment, the strategising of a business, as well as the formulation of policies.

The economic environment system continually changes which shows the dynamic nature of the environment as it is influenced by various factors and in turns affects the operations of businesses and the behaviours of the consumers (Khan et al., 2021). Businesses (small, medium, or large scale), persons (consumers/end users), as well as the governments are expected to have adequate knowledge of the economic environment to appropriately plan towards risk mitigation (Hysa et al., 2020).

2.2.4 Investment Decision

Raut (2020) described investment decisions as the processes towards the allocation of financial resources where the investors usually go for the investment opportunities as well as the assets which are considered and proven to be the most suitable. This conclusion is usually arrived at by running the analysis on the profile of risk, the objectives of the investment, the expectations on returns, and the likes. According to Weixiang et al., (2022), these decisions are made to garner the potentially highest returns and gains that are possible through the right allocation of the correct resource financially at the right time to the right opportunity whilst considering two most important parameters to the management of finances and investments, risks and returns. According to TA et al., (2020), the decision to invest in an opportunity is often influenced by the objectives of the investment by the investor or the managers, the returns frequency, potential related risks with investment, the periods of maturity, the benefits from tax on such investments, the rate of inflation at such period and region.

Abideen et al., (2023) illustrated a five-step process towards making the decisions on investment to incorporate the analysis on the financial position of the company or individual to be invested, defining the objective of investment (whether short or long term) alongside the awareness of desired risk level, the allocation of asset based on the defined objectives of investment, selection of the products for investment to determine the class of assets or security,

and lastly the monitoring and due diligence after execution to monitor the investment performance and track the returns on investment. Siziba & Hall, (2021) and Sureka et al., (2022) analysed the types of investment decisions to include the strategic investment, the inventory investment, replacement investment, capital investment, expansion investment, modernisation investment, new venture investment, and so on. The decisions on investment are explained to be germane to the growth as well as the profitability of the business and therefore must be carefully made and considered as the decisions are often times irreversible (Cooper & Sommer, 2020).

2.2.5 Risk Tolerance

According to Bapat, (2020), investments have certain degrees of risk while various organisational and individual investors have diverse level of tolerance for these risks which also determines how they invest. The concept of risk tolerance is, thus, defined by the ISO Guide on risk management as the readiness of an organisation or a stakeholder to bear the risk after such risk has been treated towards achieving its objectives (Boubaker et al., 2024). According to Mubaraq et al., (2021), risk tolerance is described to show the level of variation in outcomes that are associated with the measures on performance are linked to the objectives sought to be achieved by the organisations or individuals, which are acceptable. Song et al., (2023) stated that risk tolerance referred to the amount of risk in quantification that a business or organisation can take with respect to the individual risk and is correlated with accepting the outcome which a risk portrays if it should occur. This is expected to occur alongside the presence of adequate resources and the control in place to tolerate such risk. Risk tolerance is also expressed to involve the level of loss which an investor is capacitated to take in the process of making the investment decisions (Shou et al., 2022). This is usually determined by various factors inclusive of the timeline of the investment (more time equates to more risks to take), the goals which differs across individuals, the size of the portfolio, as well as the level of investor comfort (Hirawati et al., 2021).

According to Grable & Rabbani, (2023), the tolerance towards risk can be aggressive, moderate, or conversative. Risk investors who are aggressive are usually well knowledgeable about the market and therefore take high risks which leads to wider risk portfolio. This implies that while high benefits can be gains, high losses can also be inferred. Risk investors who

operate at the moderate carder have lesser risk tolerance in comparison to those operating under the aggressive carder as they usually take fewer risk and often times set a certain percentage of loss that they can manage. Therefore, the level of gains and losses are often moderated. The conservative risk investors tend to run from taking market risk as the avoid all possible risk and only invest in the safest options. This thus reflects the case of high, medium, and very low tolerance for risk (Rai et al., 2021).

2.2.6 Risk Assessment

Ahn et al., (2020) describe risk assessment as a tool for the primary management of investment or project to ensure the business and financial health and safety which can be influenced by such investments or projects. The assessment of risk broadly encompasses the discovery, analysis before the assessment of the risks involved in investment. According to Nyman et al., (2021), risk assessment is defined as the systematic process where the hazards and risks associated with an endeavour (in this case investment), are identified and the reasonable measures for controlling (whether to alleviate or eradicate) such risks. Risk assessment is often used as a general term across industries to determine the likelihood of occurrence of losses on assets, loans, as well as investments and is essential to determine the worth of an investment and the best possible ways for reducing the risks involved. Risk assessment involves the evaluation of the possibility of negative occurrence influencing an investment, project, business, or economy adversely which is often carried out by the investors, businesses or the governments. The assessment of risk also referred to the analysis of risk allows the investors to choose amidst a pool of techniques to examine and evaluate the risk associable with a potential investment where the method could involve either the qualitative or quantitative techniques.

The processes involved in the performance of risk assessment/analysis involves the identification of risk by making a list of the possible risks that can be encountered which should include internal and external risks as well, the identification of uncertainties involving the preparation for unplanned occurrences, the estimation of the possible impacts on the company or investor, building of the analysis models, analysis of the results and the implementation of the solutions from analysis. Risk assessment is, therefore, an essential part of risk management

and a proactive measure to protect an organization's interests, ensure the safety of individuals, and achieve strategic objectives by comprehending potential difficulties and risks.

2.2.7 Political status

Political status pertains to the legal and administrative position of a geographic area or entity in the international community Schraub, (2020). It includes several characteristics like as sovereignty, governance structure, legal system, territorial limits, and international recognition. The political status of a region or entity dictates its entitlements, obligations, and interactions with other states and international organisations (De Dreu et al., 2021).

More specifically, according to Bol et al., (2021); Porteny et al., (2022); Moehlecke and Wellhausen (2022), it incorporates components such as:

- i. Sovereignty: which refers to the supreme authority and power that a state or governing body possesses over its own territory and people. Sovereignty explains that the country has full control over the happenings within its territorial borders, thus cannot be influenced by an external force or entity and cannot influence the happenings outside those borders.
- ii. Territorial integrity: a major principle under the international law that nations cannot attempt to participate or inaugurate rebellious movements or uphold changes in the border of another nation or even force other nations into doing such.
- iii. Independence: this shows a situation of external sovereignty such that an external entity or force outside the borders of a region cannot influence the activities in such region. It often refers to self-ruling and total control over a territory or region internally such that other forces cannot have authority.
- iv. International Status: this pertains to the placement or the status of a nation when compared to other countries or when compared on a global platform. The international status incorporates components such as the might of the military, the prowess of the economy, the political sway as well as the ties in diplomacy.

The political status of a country can be categorised into three which are internationally recognised, these includes the nations that are independent, states which are autonomous

(involving the protection of a country by another country in relation to the defence and the foreign affairs), countries who are dependent political units often referred to as colonies.

2.2.8 Economic Realities

The concept of economic realities lies in the set of economic conditions which are often impacted by the factors under the microeconomic and macroeconomic sphere. These factors encompass the economic states, the level of unemployment, exchange rates, level of productivity, imports and exports, rate of inflations, and so on. The economic realities unavoidably influence the economic activities in an economy and therefore affect the activities of individuals, investors, and businesses (Klitgaard, 2021). It is, therefore, imperative for these economic agents to have versatile knowledge of the economic realities. The economic realities of a nation have common characteristics such as:

- i. **Scarcity:** this is an inherent economic condition that results from the finite availability of resources in comparison to the infinite desires and requirements of individuals (de Bruijn and Antonides 2022). It requires making decisions on how to distribute limited resources effectively in order to meet the most urgent needs and wants.
- ii. **Demand and Supply:** The relationship between supply and demand influences the pricing and quantities of goods and services in markets (Harichandan and Kar, 2023). Modifications in supply and demand circumstances have an impact on the levels of output, pricing, and market equilibrium, which in turn reflect the fundamental economic realities.
- iii. **Opportunity cost:** this is the benefit that could have been gotten from the utilisation of an option asides the option that was chosen by the economic agent (Vanness, Lomas, and Ahn, 2021). To properly assess the opportunity cost, there is the need to consider and evaluate the benefits derivable and costs associated to every possible option and weigh them against each other.
- iv. **Competition:** this refers to the process in which the sellers of products and services as well as the different economic agents contend for goods, services, customers, and so on which are usually very limited (Asqarova et al., 2021). Competition is expected to lead to higher productivity, efficiency, and creativity in an economy.

- v. Factors of production: this incorporates components such as labour, land, capital, and entrepreneurship which are used for activities in the economy. The level of availability of these factors of production reflects economic reality.

2.3 Theoretical Foundation

2.3.1 Modern Portfolio Theory (MPT)

Modern Portfolio Theory (MPT) was postulated by Harry Markowitz in the 1950s as a theory of investment which shows the assembling of asset portfolio that can maximise the expected return for a certain amount of risk which is allowed for the investors (Dimmock, Wang and Yang, 2024). According to this theory, every investor has the right to compensation given that a high level of risk would result in a higher level of expected benefits (Brandi and dos Santos, 2020). The main tenet of MPT is built around diversification and thus states that diversification of investment can be channelled towards the optimisation of the portfolio which in turn allows the risk on investment to be minimised.

Assumptions of the theory

- i. Under the MPT, it is assumed that all investors are rational and because of their rationality, they would only make choices which affects them positively or that has higher beneficial returns. In this case, their rationality would make them make investment decisions that can maximise utility.
- ii. The MPT assumes that all investors would have access to the same type of information upon which they would act while making the decisions to invest. This assumption implies that the information on the type of investment, industry or areas to be invested in, the expected return, and the possible risks associated would be available for all investors (Sewando, 2020).
- iii. The MPT assumes that the market for there is efficiency in the market, therefore the investors cannot overperform or perform higher than what the market can offer even if the investor engages in more-than required trading.
- iv. The MPT assumes that there is no tax or cost of transactions when making investments, therefore the investors cannot be constrained by potential or existing tax or cost of transaction and can thus make as much investment as are possible for the investors.

- v. MPT assumes that the investors usually take investment decisions solely because of the expected returns and the diverse variations in the returns. This implies that the investors would not invest only if the analysis expected returns on such investment is low and vice versa.

Criticisms of the theory

- i. The assumption of all investors to think alike in estimating risk and returns is criticised to have ignored the subjective nature of thinking aided by personal knowledge and values and shown in investment decisions (Surtee and Alagidede, 2023).
- ii. The MPT is criticised for heavily relying on statistical measures, such as standard deviation and variance, to calculate the risk and the returns. This is because these statistical measures often do not adequately capture the dynamic nature of the investment market.
- iii. The assumption of normal distribution of returns is also criticised to not properly reflect reality as in reality, there is often events considered as extreme which occurs and break away from the normal occurrence, thereby cancelling the normality in distribution of the expected returns.
- iv. The assumption of market efficiency is also criticised on the premise that market do not often times, follow the expectations or behave rationally, therefore the returns of the market are not usually efficient.
- v. The assumption of risk-aversion behaviour by the investors is criticised for not depicting reality as some investors are categorised as risk lovers who would always take risk while some as risk neutral who take risk on a moderate scale.

It can be deduced that while the Modern Portfolio theory has some criticisms, it is often used in the field of finance and investment to assess the market phenomena which is dynamic. With the focus on the optimisation of risk and return through diversification which helps the investors to properly evaluate investment opportunities before investing, the theory remains valid and useful in the fields. This, thus, allows the utilisation of the theory in this study.

2.3.2 Capital Asset Pricing Model (CAPM)

The Capital Asset Pricing Model (CAPM) was developed by John Lintner, William Sharpe, Jan Mossin, and Jack Treynor in the early 1960s. The model captures the association between the risks related to investment (systematic risk) and the returns which are anticipated from the investment or assets. The model, thus, expresses the relationship between the beta of an asset, the rate at which risk is free, as well as the premium on equity risk (Zerbib, 2022). The CAPM is majorly focused on the analysis of systematic risks showing a linear and direct relationship between returns and risk of an investment (Chen and Zimmermann, 2020).

Presuppositions of the theory

- i. The CAPM assumes that all investors portray the behaviour of risk aversion by nature implying that they would always tend to run from risk or chase investment with sure returns (Pesaran and Yamagata, 2024).
- ii. There is a linear and direct relationship between the risk associated with an investment and the returns expected from such investment.
- iii. The market for the investment is assumed to be perfect, thus, portraying efficiency such that investors are expected to possess access to the same information and also have the same timeframe to examine the available information before making the investment decisions (Plyakha, Uppal, and Vilkov, 2021).
- iv. The potential investments can be divided and shared into pieces and sizes as much as possible incorporating diversification on portfolios. These portfolios are then managed to mitigate unsystematic risk.
- v. The model assumes that there are no taxes, transaction cost, interest rate fluctuations, or inflation rate that can influence the risk and expected returns on an investment over time (Giglio, Kelly, and Xiu, 2022).

Criticism of the theory

The criticisms of the Capital Asset Pricing Model (CAPM) emanates from the assumptions of the theory including the assumption of risk averseness of investors where risk attracted and moderate risk investor is zeroed out, presence of unlimited capital which can be borrowed at a risk-free return rate without considering the possible fluctuations in the interest rate, the

assumption of market efficiency which can be influenced by the inconsistencies and biases in the market and in the behaviour of the investors (Lettau and Pelger, 2020). The model is also criticised for focusing on the unsystematic risk without much focus on the systematic risk which are likely to be encountered during investment (Zerbib, 2022). The model is further criticised for assuming that the opinions and the preferences of the investors cannot vary or be different (Chen and Zimmermann, 2021). Overall, the assumptions of the CAPM are tagged by critics as unrealistic and a false depiction of reality.

The model, despite criticism, however, remains relevant in the field of finance as it is characterised as simple and effective for analysing the risk and returns associated with an investment opportunity (Plyakha et al., 2021). This model is, therefore, often merged with other frameworks to cover up its shortcomings. In this study, the Modern Portfolio theory (MPT) and the Capital Assets Pricing Model (CAPM) are merged to create the theoretical foundation for this study.

2.4 Empirical Evidence

Gomes and Lorisova (2023) conducts a comparative analysis of two of the largest Sovereign Wealth Funds (SWFs), the Government Pension Fund Global (GPF) of Norway and the China Investment Corporation (CIC), focusing on their investment strategies and the impact of Environmental, Social, and Governance (ESG) factors on their performance and asset size. They hypothesize that SWFs with better performance and larger asset sizes are more likely to adhere to ESG considerations. Their findings highlight the critical role of ESG factors in enhancing SWF performance and the importance of transparency and good governance. They conclude that SWFs with better performance and larger assets are more likely to adhere to ESG principles. They also conclude that while ESG integration aligns SWFs with sustainability and improves risk management, it does not always increase profitability.

Bernstein, Lerner, and Schoar (2013) in their research study “The investment strategies of sovereign Wealth Funds” complements Gomes and Lorisova's (2023), they examined how political involvement shapes Sovereign Wealth Fund (SWF) investment strategies. They proposed that SWFs with greater political influence prioritize short-term economic benefits for their home countries, potentially impacting how they allocate assets and affecting long-term returns. Their research highlights the relationship between political influence and SWF

investment decisions, suggesting another factor alongside ESG considerations that can influence SWF behaviour.

Heidi Rapp Nilsen, Beate Sjaafjell, and Benjamin J. Richardson (2019) examines the balance Norwegian Government Pension Fund Global (GPF) maintains between financial risk management and ethical investment practices in their paper "The Norwegian Government Pension Fund Global: Risk Based versus Ethical Investments". The authors argue that despite the GPF's reputation for ethical investment practices, financial risk considerations often outweigh ethical guidelines in making investment decisions. They also argue that the Fund's ethical guidelines are mostly reactive, influenced by public opinion and media pressure, rather than being rooted in proactive due diligence. They also argue that more companies are excluded from the Fund based on financial risk rather than ethical reasons, and most of the the Fund's investments continue along a traditional business-as-usual path.

Pana Stitsart (2015) in their paper "Political Economy of Sovereign Wealth Fund: The Case of China" explores the evolution and strategies of China's Sovereign Wealth Funds (SWFs), particularly the China Investment Corporation (CIC) and the State Administration of Foreign Exchange Investment Company (SIC). The study argues that due to their distinct institutional backgrounds and competitive strategies, these funds prioritized commercial returns over political objectives. In addition, it shows how China's political and economic policies enabled the funds to support government-owned enterprises and government-owned commercial banks, fostering rapid economic growth and integration of Chinese businesses around the globe. These findings highlight the complex interaction between economic and political policies in the management of China's SWFs.

Bauer, Christiansen, and Døskeland (2022) in their paper "A Review of the Active Management of Norway's Government Pension Fund Global", examined the active management strategies employed by Norway's Government Pension Fund Global (GPF), assessing their efficiencies in generating returns and aligning with ethical investment principles. Their primary focus was to determine whether active management, despite its higher costs, has resulted in superior performance compared to a passive investment approach. While acknowledging the modest returns achieved by the GPF through active management, the analysis highlights the challenges associated with scalability, consistency of superior performance, and separating skill from luck. In addition, the review highlights the importance of considering both quantitative and qualitative factors, such as adherence to ethical standards, in assessing the

overall effectiveness of active management. The findings suggest that while active management has added value in certain instances, particularly in identifying profitable investment opportunities and integrating ethical considerations, the benefits must be carefully weighed against the higher costs and risks involved. Their work also provides valuable guidance for policymakers and fund managers seeking to optimize the performance and sustainability of large-scale investment portfolios in an increasingly complex global financial environment.

2.5 Gaps in Literature

From the analysis of the existing literature, it can be deduced that While the existing literature provides valuable insights into the investment strategies of the Government Pension Fund Global (GPF) of Norway and the China Investment Corporation (CIC), and the impact of Environmental, Social, and Governance (ESG) factors and political influence on their performance, there seems to be a lack of research focusing on the comparative analysis of risk management practices between these two funds.

Specifically, these studies have separately examined the GPF and CIC's investment strategies, the role of ESG factors, the influence of political involvement, and the balance between financial risk management and ethical investment practices. However, they do not appear to directly compare the risk management practices of the GPF and CIC, particularly in the context of their diversification strategies.

This study, therefore, bridges this gap by conducting a comparative analysis of the risk management practices of the GPF and CIC. This research also examines how each fund's diversification strategies influence their risk management, and how these strategies are shaped by factors such as inflation, exchange rates and political influences. This work would also provide new insights into the strategies employed by these two of the world's largest Sovereign Wealth Funds to manage risk and achieve their investment objectives.

3.0 Data and Methodology

3.1 Introduction

In this section of the study, the methodology, research design, and approaches employed in performing data analysis is described in detail, as well as the justification for the utilization of these methods, techniques, and approaches. The research process with consideration to the purpose of the study is also outlined. The models to be estimated towards analyzing the phenomenon under study are specified, then the variables as well as the measurement of the variables are described. This chapter is also inclusive of the data sources and the limitation of the methods of analysis.

3.2 Research Design

A research design is the whole design or the structure that will be followed in the process of studying a phenomenon (Asenahabi, 2019). It covers general or conceptual background information for research together with the specific techniques for collecting and analyzing data. The extent to which findings of the study will be reliable and accurate mainly rests on the research design, which determines how the study will be performed and how data will be collected, processed, and analyzed. The design of study is based on the hypothesis and queries which are their subject plus the type of data which needs to be collected and what resources are available and what kind of limitations are there.

This study is aimed at examining the effect of the relationship between the dependent variables and the independent variables in the study. The Quasi-experimental research design is, therefore, employed to explain the cause and effect of the relationship within the phenomenon under study. By utilizing the quasi-experimental design, the researcher would have no influence over the results from analysis as the design does not permit the alteration of the secondary data obtained for analysis (Maciejewski, 2020). This is based on the belief that the data is obtained from a reliable source. The research design aids the formulation of sound hypothesis as well as the yielding of accurate results that portray the reality of the variables employed in the study (Miller, Smith, and Pugatch, 2020).

3.3 Population and Sample Size of the Study

The population for this study involves the Top 10 SWF countries in the world as prominent contributors to the global financial system and market as well as the financial stability of the country's economy on the global scale. The study thus employs the purposive sampling method to select the sample size of the study. The purposive sampling technique involves selecting the sample size using certain common characteristics. The study, therefore, purposively selected the top 2 SWF countries with the highest total assets to analyze the state of diversification and risk management then compare between the 2 top countries. Based on the data available, the study employs a sample size of 30 observations covering the period of 1992 to 2021.

3.4 Model Specification

The theoretical basis of this study combines Modern Portfolio Theory (MPT) and Capital Asset Pricing Model (CAPM) which explain the association between risk management and diversification. Dimock et al. (2022) stated that the diversity of investment is driven by the current risk of an area.

Mathematically, this expression is written as:

$$\text{Investment diversification} = f(\text{Risks}) \quad (1)$$

Equation (1) explains that the decision on investment, through diversification, is susceptible to the risks in the environment.

The risks in the environment are further expressed mainly into risks from the economic environment and the political status of the country under study.

$$\text{Investment diversification} = f(\text{economic environment, political status}) \quad (2)$$

The objectives of the study involve the comparison of the relationship between diversification and risk management in Norway to the relationship between the phenomenon in China. The diversification of investment is further measured by the level of investment decision, risk tolerance and risk assessment. Therefore, for Norway, the model is specified as:

$$\text{Model 1: } \text{INVD}_N = f(\text{INFL}_N, \text{EXCR}_N, \text{INTR}_N, \text{POLSN}) \quad (3a)$$

$$\text{INVD}_N = \beta_0 + \beta_1 \text{INFL}_N + \beta_2 \text{EXCR}_N + \beta_3 \text{INTR}_N + \beta_4 \text{POLSN} + \mu \quad (3b)$$

$$\text{Model 2: } \text{RSKT}_N = f(\text{INFL}_N, \text{EXCR}_N, \text{INTR}_N, \text{POLSN}) \quad (4a)$$

$$RSKT_N = \alpha_0 + \alpha_1 INFL_N + \alpha_2 EXCR_N + \alpha_3 INTR_N + \alpha_4 POLS_N + \mu \quad (4b)$$

$$\text{Model 3: } RSKA_N = f(INFL_N, EXCR_N, INTR_N, POLS_N) \quad (5a)$$

$$RSKA_N = \gamma_0 + \gamma_1 INFL_N + \gamma_2 EXCR_N + \gamma_3 INTR_N + \gamma_4 POLS_N + \mu \quad (5b)$$

Where INVD is Investment Decision, RSKT is Risk Tolerance, RSKA is Risk Assessment, INFL is Inflation rate, EXCR is Exchange rate, and POLS is Political stability all for Norway.

Also, inflation rate, exchange rate, and interest rate are measures of the economic environment that affect investment while political stability is a proxy for political status.

The model 1, 2, and 3 is replicated for China as well. Therefore, for China, the model is specified as:

$$\text{Model 1: } INVD_C = f(INFL_C, EXCR_C, INTR_C, POLS_C) \quad (6a)$$

$$INVD_C = \theta_0 + \theta_1 INFL_C + \theta_2 EXCR_C + \theta_3 INTR_C + \theta_4 POLS_C + e \quad (6b)$$

$$\text{Model 2: } RSKT_C = f(INFL_C, EXCR_C, INTR_C, POLS_C) \quad (7a)$$

$$INVD_C = \varphi_0 + \varphi_1 INFL_C + \varphi_2 EXCR_C + \varphi_3 INTR_C + \varphi_4 POLS_C + e \quad (7b)$$

$$\text{Model 3: } RSKA_C = f(INFL_C, EXCR_C, INTR_C, POLS_C) \quad (8a)$$

$$INVD_C = \delta_0 + \delta_1 INFL_C + \delta_2 EXCR_C + \delta_3 INTR_C + \delta_4 POLS_C + e \quad (8b)$$

Where subscript C implies that the variables are for China.

3.5 Source of Data Collection

The variables used in the study such as Investment Decisions, Risk Appetite and Risk Assessment are sourced from annual reports of China and Norway under the concept of SWF, which implies that the data is only obtained or depended on from the financial reports of China Investment Corporation (CIC) and Norway Government Pension Fund Global (Norway GPFG). The economic environment data and political status data of the respective nations originated from the World Bank and other reliable data sources. The total observation for the employed variables spans over 30 years (1992-2021) are covered in the data. This period is selected to capture the times that there were fluctuations in the economic and political environment.

3.6 Method of Data Analysis

The analysis of the data collected from the data sources is crucial to explaining the relationship between the phenomenon under study as well as for achieving the objectives of the study. The method employed for the analysis of data is, therefore, dependent on the design of study, the type and nature of the data collected, and the research questions to be answered. To analyze the nature of the data collected, the study employs the unit root test to examine the level of stationarity of the data on each variable individually. For this purpose, the Augmented Dickey Fuller (ADF) unit root test is employed and is backed up by the Phillip Perron test. The ARDL Bounds test is then employed to test for the presence of long run relationship between the dependent and independent variables employed in the study, after the Autoregressive Distributed Lag (ARDL) long and short run analysis is carried out to analyze the magnitude of the relationship under study in the long and short for both countries. However, it is important to note that the use of the ARDL is dependent on the nature of the variables given there is a mix of stationarity at levels, $I(0)$ and first difference $I(1)$, and that the dependent variables are stationary after first differencing, that is, $I(1)$. Otherwise, another technique of estimation is adopted. The Granger causality test is also employed to test the causality effect between diversification and risk management in Norway and in China. To run these tests, the Python Software is employed as the tool for analysis.

3.7 Description of Variables

3.7.1 Dependent Variables

The dependent variables for this study are Investment Decision (INVD), Risk Tolerance (RSKT), and Risk Assessment (RSKA) which are different dimensions of Diversification under the Norway Government Pension Fund Global (Norway GPFG) and the China Investment Corporation (CIC).

3.7.2 Independent Variables

The independent variables for the study are variants of economic environment and political status. Explicitly, these include Inflation rate, Exchange rate, Unemployment rate, Gross Domestic Product (GDP) and Interest rate which specifically measure the economic environment and Political Stability which measures the political status of Norway and China.

3.8 Measurement of Variables

S/N	Variable	Variable Description	Acronym	Measurement
1	Investment Decision	Dependent	INVD	Process of allocating financial resources to investment measured by net present value plus Internal rate of return.
2	Risk Tolerance	Dependent	RSKT	Total amount of risk a business takes, measured in Aggressive, Moderate, or Conservative.
3	Risk Assessment	Dependent	RSKA	Assessment of the level of risk, measured by High risk, low risk, moderate risk.
4	Inflation Rate	Independent	INFL	Increase in general price of goods measured in rate of consumer price
5	Exchange Rate	Independent	EXCR	Level of Bilateral exchange rate measured in rate.
6	Interest Rate	Independent	INTR	Ratio of principal amount of investment to the amount of interest on investment
7	Political Stability	Independent	POLS	Measured in index per country

8.	Unemployment Rate	Independent		Percentage of the labor force that is unemployed and actively seeking employment, measured in percentage.
9.	Gross Domestic Product	Independent	GDP	Total monetary value of all goods and services produced in a country

3.9 Ethical Considerations

Most frequently ethical concerns in data reuse emphasize the possible harm that might be brought upon the individual data subject, and these depend upon the nature of the data being used (Jol and Stommel, 2016). It is anticipated that re-using any data which is for personal or special category (sensitive personal data) will require a thoughtful and profound consideration (Laryeafio and Ogbewe, 2023). In contrast, the study utilizes public data composed of benchmark quantitative data, and, therefore, the risk of data damage is minimized or even eliminated. The data handling guidelines as stipulated in the Data Protection law are also applied to this study. The study makes use of robust data, which is secured and not manipulated. The organizations from which data is collected do not get any harm during the re-utilization of the data. Data is also only shared based on who should know as well. Sources of data are referenced properly and verified to be up-to-date.

4.0 Results

4.1 Introduction

This chapter provides the findings from analysing the relationship between diversification and risk management of Norway’s Government Pension Fund Global (GPFG) and China’s Investment Corporation (CIC) for the period of 2009 to 2022. The results and findings presented in the chapter are based on applying statistical and numerical methods to the data collected based on models developed in the preceding chapter (Research Methods) of this research project. Table 4.1 is a summary of the data extracted for the study from the annual reports of GPFG and CIC from 2009 to 2022. The table is also based on data collected on the key variables from the World Bank’s 2023 worldwide governance indicators (Daniel Kaufman & Aart Kraay, 2023).

Table 4.1: Summary of key metrics from GPFG and CIC from 2009 to 2022

Year	Fund	INVD (Annual Return in %)	RSKT	RSKA	INFL (%)	EXCR (rate)	INTR (%)	GDP (%)	UMPY (%)	POLS (index)
2009	Norway GPFG	25.6	Conservative	High risk	2.2	6.29	2.9	-1.9	3.1	1.28
2009	China CIC	11.7	Moderate	Mediu m risk	-0.7	6.83	5.5	9.4	4.7	-0.45
2010	Norway GPFG	9.6	Moderate	High risk	2.4	6.04	3.1	0.8	3.5	1.33
2010	China CIC	11.7	Moderate	Mediu m risk	3.2	6.77	-1	10.6	4.5	-0.66
2011	Norway GPFG	-2.5	Moderate	High risk	1.3	5.6	3.5	1.1	3.2	1.34

2011	China CIC	-4.3	Moderate	Medium risk	5.6	6.46	-1.4	9.6	4.5	-0.60
2012	Norway GPFG	13	Moderate	Medium risk	0.7	5.82	2.9	2.7	3.1	1.33
2012	China CIC	10.60	Moderate	Medium risk	2.6	6.31	3.6	7.9	4.6	-0.54
2013	Norway GPFG	15.9	Moderate	Medium risk	2.1	5.88	1.8	1	3.4	1.35
2013	China CIC	9.33	Moderate	Medium risk	2.6	6.2	3.8	7.8	4.6	-0.54
2014	Norway GPFG	7.6	Moderate	Medium risk	2.0	6.3	3.9	2	3.5	1.12
2014	China CIC	5.47	Moderate	High risk	1.9	6.14	4.5	7.4	4.6	-0.52
2015	Norway GPFG	2.7	Conservative	Medium risk	2.2	8.06	6.5	1.9	4.3	1.15
2015	China CIC	-2.96	Moderate	High risk	1.4	6.23	4.4	7	4.7	-0.55
2016	Norway GPFG	6.9	Aggressive	Medium risk	3.5	8.4	4.7	1.2	4.7	1.18
2016	China CIC	6.22	Moderate	High risk	2.0	6.64	2.9	6.8	4.6	-0.50
2017	Norway GPFG	13.7	Moderate	Medium risk	1.9	8.27	-1	2.5	4.2	1.15
2017	China CIC	17.59	Moderate	High risk	1.6	6.76	0.1	6.9	4.5	-0.23
2018	Norway GPFG	6.1	Aggressive	High risk	2.8	8.13	3.6	0.8	3.8	1.12

2018	China CIC	5.18	Moderate	High risk	2.1	6.62	0.8	6.7	4.3	0.30
2019	Norway GPFG	19.9	Conservative	High risk	2.2	8.8	3.8	1.1	3.7	1.14
2019	China CIC	6.13	Moderate	High risk	2.9	6.91	3	6	4.6	0.26
2020	Norway GPFG	10.9	Aggressive	High risk	1.3	9.42	5.3	-1.3	4.4	1.22
2020	China CIC	6.71	Conservative	High risk	2.4	6.9	3.8	2.2	5	-0.47
2021	Norway GPFG	14.5	Aggressive	High	3.5	8.59	-14.9	3.9	4.4	1.09
2021	China CIC	7.22	Moderate	High risk	1.0	6.45	-0.2	8.4	4.5	-0.52
2022	Norway GPFG	-14.1	Aggressive	High risk	5.8	9.61	-19.4	3	3.2	0.86
2022	China CIC	5.94	Conservative	High risk	2.0	6.74	2.1	3	5	-0.44

4.2 Descriptive Statistics

This section summarises the descriptive statistics for the key variables used in the analysis. As shown in table 4.2 and 4.3 below, the descriptive values that were derived included the count (frequency which had to be the same for all variables since the period was 14 years), the mean, standard deviation, minimum, 25th percentile, median (50th percentile), 75th percentile, and maximum values. The descriptive statistics helped in understanding the data and also provided background statistical information for further analysis of the key-dependent and independent variables. The descriptive analysis was carried out using Python Software for specified variables with integers.

4.2.1 Descriptive Statistics for Norway GPF

The descriptive statistics of the Norway Government Pension Fund Global (GPF) provides a comprehensive overview of the various economic indicators and their implications for investment decisions, economic environment, and political stability. The average annual return (mean) of 9.27% indicates a generally positive performance of investments over the observed period. This high mean suggests that, on average, the investment strategies employed by the GPF have been successful in generating significant returns. Meanwhile, the median return of 10.25% being slightly higher than the mean implies that the distribution of returns is skewed towards the higher end. This indicates that most years experienced returns close to or above the average, with a few years of significantly lower returns.

Table 4.2: Descriptive statistics for Norway GPF

	INVD (Annual Return in %)	INFL (%)	EXCR (rate)	INTR (%)	GDP (%)	UMPY (%)	POLS (index)
count	14	14	14	14	14	14	14
mean	9.27	2.42	7.52	0.48	1.34	3.75	1.19
Standard Deviation	9.74	1.24	1.45	7.71	1.56	0.55	0.13
min	-14.1	0.7	5.6	-19.4	-1.9	3.1	0.86
25%	6.3	1.92	6.1	2.08	0.85	3.25	1.12
50%	10.25	2.2	8.1	3.3	1.15	3.6	1.16
75%	14.3	2.7	8.54	3.88	2.38	4.28	1.32
max	25.6	5.8	9.61	6.5	3.9	4.7	1.35

Meanwhile, the average inflation rate of 2.42% suggests a moderate level of inflation in Norway during the period, which is generally considered stable and conducive to economic growth. Also, the median inflation rate of 2.2% closely aligns with the mean, indicating a

symmetric distribution of inflation rates around the average. As shown in fig.1 below, there is a higher risk associated with investments when inflation rate is high in Norway. According to Hamilton et al. (2015), the purchasing power of future returns is usually reduced due to high inflation such that even if investments yield nominal gains, their real value may decrease when adjusted for inflation. This can lead to higher perceived risk because the real returns are less predictable and often lower.

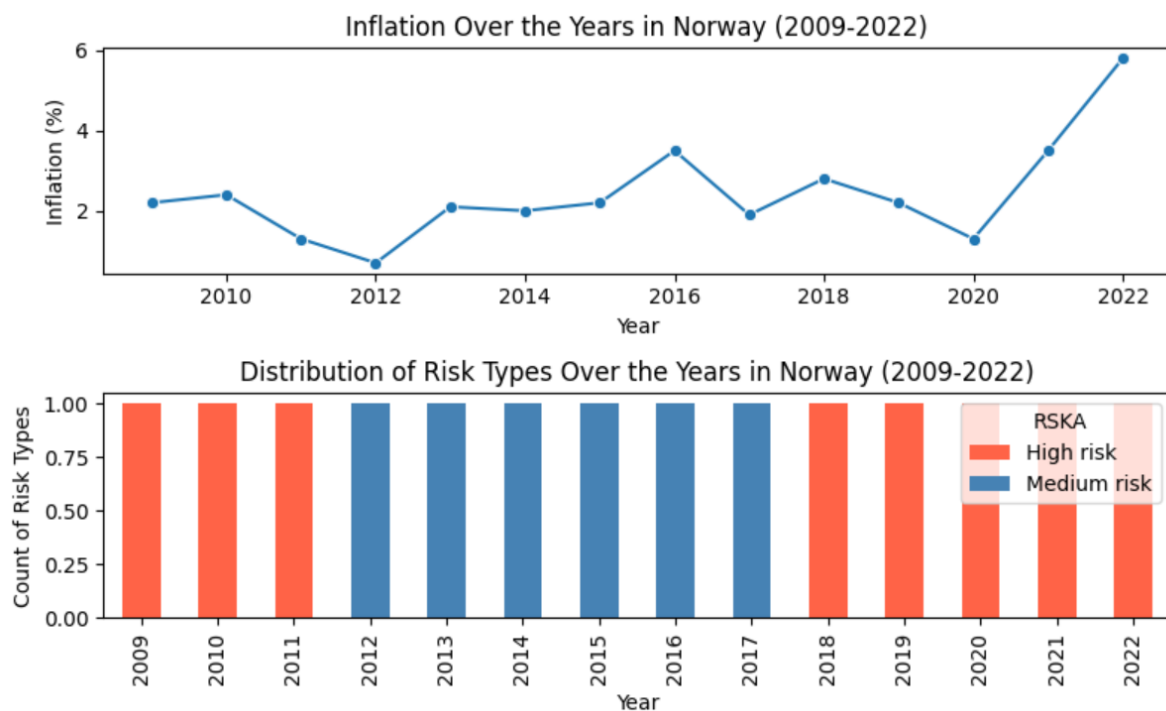


Fig. 1: A comparison of Inflation over the years in Norway with Risk Types of the Norway GPFG

Meanwhile, the low average interest rate of 0.48% reflects a period of monetary policy aimed at stimulating economic growth through low borrowing costs. However, the high standard deviation of 7.71% indicates significant fluctuations in interest rates, which could be due to economic policy changes in response to varying economic conditions. The median interest rate of 3.3% also suggests that while the average rate is low, there have been periods with substantially higher rates, affecting borrowing and investment behaviour. This can be seen in

the graph in fig.2 below which indicates that there has been a significant fluctuation in interest rate in Norway in the 14 years under study.

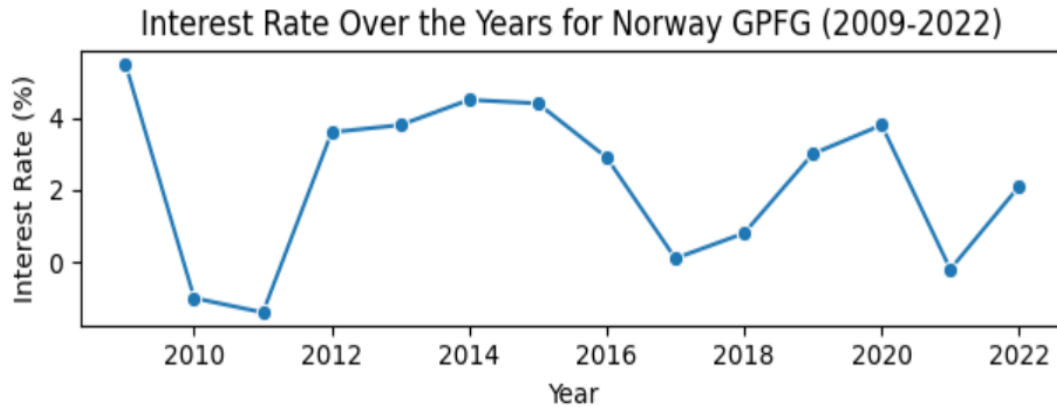


Fig. 2: Interest Rate for Norway from the Year 2009-2022

Meanwhile, the average GDP growth rate of 1.34% indicates modest economic growth, reflecting the overall health and expansion of Norway's economy during the period while the median GDP growth rate of 1.15% being close to the mean indicates a relatively balanced distribution of growth rates. An average unemployment rate of 3.75% also indicates a relatively healthy labour market with a low level of unemployment, contributing to economic stability and consumer confidence. This is particularly emphasised by the median unemployment rate of 3.6% which is slightly lower than the mean suggesting that the unemployment rate was more often below the average, indicating periods of strong employment. The average political stability index of 1.19 also reflects a high degree of political stability in Norway, contributing to a favourable environment for investment.

4.2.2 Descriptive Statistics for China CIC

The average annual return of 6.89% indicates a moderate performance of investments over the observed period, suggesting that the investment strategies employed by the CIC have yielded positive, and modest returns on average. The interest rate however represented an area of

concern because although an average interest rate of 2.28% indicates a moderate cost of borrowing, which can impact investment and economic growth, the standard deviation of 2.23% shows significant fluctuations in interest rates, reflecting varying economic policies and conditions over the period. The median interest rate of 2.95% being higher than the mean also suggests that the interest rate was often above the average, affecting borrowing cost.

Table 4.3: Descriptive statistics for China CIC

	INVD (Annual Return in %)	INFL (%)	EXCR (rate)	INTR (%)	GDP (%)	UMPY (%)	POLS (index)
count	14	14	14	14	14	14	14
mean	6.89	2.19	6.57	2.28	7.12	4.62	-0.39
Standard Deviation	5.61	1.37	0.27	2.23	2.3	0.19	0.3
min	-4.3	-0.7	6.14	-1.4	2.2	4.3	-0.66
25%	5.59	1.68	6.34	0.28	6.72	4.5	-0.54
50%	6.46	2.05	6.63	2.95	7.2	4.6	-0.51
75%	10.28	2.6	6.77	3.8	8.28	4.68	-0.44
max	17.59	5.6	6.91	5.5	10.6	5	0.3

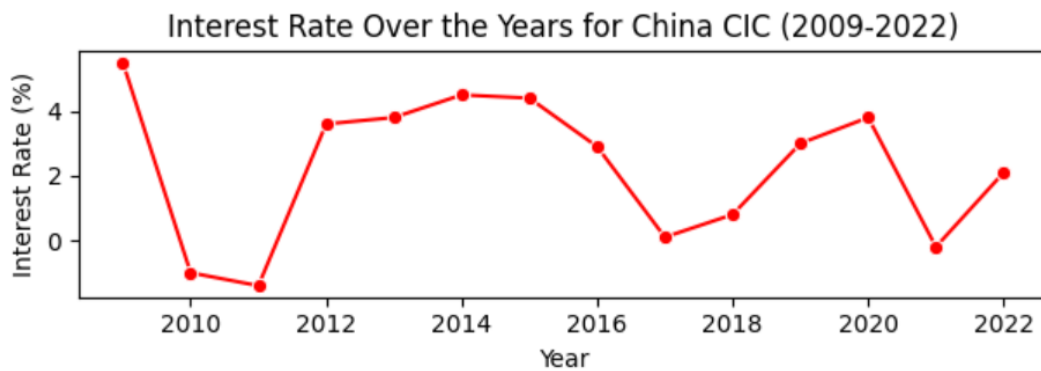


Fig. 3: Interest rate was significantly high over the years in China

However, the average GDP growth rate of 7.12% indicates strong economic growth, reflecting the rapid expansion and development of China's economy. The average unemployment rate of 4.62% suggests a relatively stable labour market, contributing to economic stability and consumer confidence. The average inflation rate of 2.19% also indicates a stable inflationary environment in China, conducive to economic planning and growth. However, the average political stability index of -0.39 indicates some political instability, which could impact investment decisions and economic policies.

4.3 Comparative analysis

The data in table 4.1 is also adopted for a comparative analysis of important criteria such as investment objectives, asset allocation, risk management, governance structure, performance metrics and regulatory framework. The data from the table shows the Investment Decision (INVD) as an annual return in percentage. It also shows the Risk Tolerance level (RSKT), Risk Assessment (RSKA), Inflation rate (INFL), Exchange rates (EXCR), Interest rate (INTR) and Political Stability (POLS) indexes of Norway GPFG and China CIC from 2009 to 2022.

4.3.1 Asset Allocation

From the findings of the data in Table 4.1, Norway GPFG has a high-risk asset allocation strategy as it invested in equities and real estate over the years, while China CIC had a medium-risk asset allocation strategy balancing equity, fixed income and alternative investments.

4.3.2 Investment Objectives

Norway's GPFG's primary objective was to achieve high returns and the fund aimed to maximise the return within a moderate risk tolerance. However, China CIC diversified China's foreign exchange holdings to get higher returns, focusing on medium-risk investment. This suggests a potential trade-off between diversification and returns for China CIC (Sun et al., 2014).

4.3.3 Risk Management

Norway had a conservative risk tolerance but high-risk assessment showing that they approached risk with caution but were willing to take on high-risk investments. China CIC approached risk in a balanced manner and spread its investments across various risk levels (Table 4.1). Norway's approach might be explained by the country's strong risk management framework that allows for calculated high-risk investments

4.3.4 Governance Structure

The Norway GPFG is managed by the Norges Bank Investment Management which operates under a clear government structure with transparency and accountability, while China's fund is managed by the China Investment Corporation, supervised by the state council and is less transparent. This difference in transparency could impact investor confidence in each fund as investors may prefer funds that are more transparent with more accountable stakeholders (Gelb *et al.*, 2014).

4.3.5 Performance Metrics

Norway had high returns in some years and moderate returns in others suggesting that INVD carried significantly across the years. However, China had a more stable return across the years with consistency around 2009 and 2010.

4.3.6 Regulatory Framework

Norway's fund was operated under a strict regulatory framework that was set by the Norwegian government which focuses on ethical and sustainable investments, while China's fund operated under a framework that prioritised strategic investment. The regulatory focus may influence the types of investments each fund prioritises.

4.4 Unit Root Tests

Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were conducted using Python to check for the stationarity of each time series variable to ensure that the results from the regression test would be reliable. Stationarity is a crucial assumption for regression analysis,

as predominantly non-stationary data may lead to unreliable correlations or unreliable estimates (Zakai, 2014). Therefore, by employing unit root tests, the data can be evaluated to determine its suitability for further analysis and to avoid misleading conclusions.

For Norway’s Government Pension Fund Global (GPF), the ADF test results indicated stationarity for the variable representing Annual Return (INVD), while the variables INFL, EXCR, INTR, and POLS showed non-stationarity ($p > 0.05$). This suggests that the trends or patterns observed in INFL, EXCR, INTR, and POLS may not be reliable for predicting or explaining changes in other variables within the dataset. Conversely, in China’s China Investment Corporation (CIC), the ADF test suggested non-stationarity for INVD and INTR, whereas the Phillips-Perron (PP) test indicated stationarity for INVD. These contrasting results highlight potential challenges in modelling the relationships between variables in the CIC fund. For both funds, the ADF and PP tests aligned in showing stationarity for INFL and non-stationarity for POLS, underscoring the need for cautious interpretation of results involving these variables.

4.5 Regression Test (Analysis)

The regression analysis for Norway's GPF and China's CIC reveals insights into the relationship between various independent variables and the dependent variables of investment decision (INVD), risk tolerance (RSKT), and risk assessment (RSKA). However, although the coefficients of certain independent variables like inflation rate (INFL -3.573099), interest rate (INTR -0.945592), GDP growth (GDP -3.125717), exchange rate (EXCR 11.832686), unemployment rate (UMPY -22.672710), and political stability (POLS -12.150505) exhibit significant magnitudes, indicating potential impact on the dependent variables, the statistical significance of these relationships is not confirmed due to p-values above 0.05.

	Metric	coefficients	R-squared	Adj. R-squared	F-statistic	Prob (F-statistic)	AIC	BIC	Durbin-Watson
0	INVD (Annual Return in %)	const -13.650406 INFL (%) -3.5...	0.535039	-0.208898	0.719199	0.677393	109.709803	115.461319	2.348031
1	RSKT_num	const 1.776357e-15 INFL (%) -7...	1.0	1.0	6011845948541513827222552576.0	0.0	-852.682951	-846.931435	1.063075
2	RSKA_num	const 0.000000e+00 INFL (%) -8...	1.0	1.0	5822534167531554343481245696.0	0.0	-863.588026	-857.83651	0.088954

Fig 4: Regression Test Output for Norway GPGF

For Norway GPGF, the negative coefficients of INFL, INTR, and GDP (-3.573099, -0.945592, -3.125717) suggest that higher inflation, interest rates, or GDP growth may lead to decreased annual returns, whereas lower unemployment rates and higher political stability (UMPY 8.150306, POLS 21.026913) could contribute positively to returns. However, these directional relationships lack statistical significance, indicating that the selected independent variables do not sufficiently explain variations in investment decisions or risk profiles. This suggests a need for a more comprehensive model or inclusion of additional variables to improve explanatory power.

Similarly, for China's CIC, the positive coefficient of EXCR (11.832686) suggests a potential positive impact on annual returns, while lower unemployment rates (UMPY -22.672710) also show a positive association. Again, the statistical significance of these relationships is not established, questioning their reliability as predictors of investment performance or risk tolerance. The perfect multicollinearity observed in RSKT and RSKA underscores the complexity of modelling risk assessment and tolerance, highlighting the limitations of the current models in capturing the full range of factors influencing investment decisions.

	Metric	coefficients	R-squared	Adj. R-squared	F-statistic	Prob (F-statistic)	AIC	BIC	Durbin-Watson
0	INVD (Annual Return in %)	const 65.042465 INFL (%) -3.5...	0.61675	0.003551	1.00579	0.522445	91.57346	97.324976	2.930723
1	RSKT_num	const 1.421085e-14 INFL (%) 2...	1.0	1.0	6178889151768453344349126656.0	0.0	-874.123728	-868.372212	0.126528
2	RSKA_num	const 1.065814e-14 INFL (%) 2...	1.0	1.0	15372915355666127869532176384.0	0.0	-878.083768	-872.332252	0.340219

Fig 5: Regression Test Output for China CIC

Therefore, while the regression analysis provides some directional insights into the impact of independent variables on investment decisions and risk profiles, the lack of statistical significance in these relationships calls for caution in interpreting these findings. Meanwhile, the different coefficient for GPGF and CIC shows the different impact of various factors on the

annual returns for each country, and these differences mean unique investment strategies and risk profiles for the two funds. Importantly, since there is no strong relationship between the independent variable and the dependent variable, it can be deduced that for large and complicated funds such as the GPFG and CIC, investment decisions should not be made solely on inflation rates, GDP growth, unemployment rates, exchange rates, interest rates and political stability but on a broader set of indicators (Andreou *et al.*, 2020)

4.6 Conclusion and Summary of Results

4.6.1 Norway GPFG

Norway's Sovereign Wealth Fund takes a long-term perspective, aiming for high returns while managing risk cautiously. This means that the GPFG prioritised long-term sustainability and growth, even if it involves accepting some short-term risk. Their strategy is reflected in their asset allocation, with a significant portion invested in stocks (equities) and real estate - assets known for potential for high growth but also for market volatility. This approach exposes the fund to potential fluctuations but also positions it for significant long-term gains. However, this risk-taking is balanced by careful risk management strategies. The GPFG operates under a transparent and well-governed framework. This fosters ethical and sustainable investments, which not only align with global best practices but also help build investor confidence.

4.6.2 China CIC

The CIC aimed to diversify China's foreign exchange holdings to achieve higher returns within a moderate risk tolerance framework. Compared to the GPFG, this translates to a more conservative approach focused on consistent, stable returns. The diversification helps CIC avoid relying too heavily on any single market or asset type, thus minimising risk. CIC prioritizes investments that offer a good balance between potential gain and potential loss (favourable risk-return ratio). However, CIC operates with less transparency than the GPFG and under a looser regulatory framework. This can raise concerns about accountability and strategic decision-making but also allows for greater flexibility.

4.6.3 Limitations

There is no strong relationship between the independent variables and the dependent variables in the models used for analysis. This might indicate that for large and complicated funds such as the GPF and CIC, investment decisions are not made solely on inflation rates, exchange rates, interest rates and political stability but on a broader set of indicators. Market-specific indicators such as stock market volatility, market liquidity, and credit spreads, and financial indicators such as corporate earnings growth, dividend yields and price-to-earnings ratio may provide more valuable insight into the investment performance of sovereign wealth funds (Dewachter *et al.*, 2015; Andreou *et al.*, 2020).

5.0 Discussions

5.1 Investment Performance

The results from the descriptive statistics provided significant insights about the investment performance and trends for the Norway's Government Pension Fund Global (GPF) and China's Investment Corporation (CIC). From the findings, GPF had an average annual return of 9.72% which means the investment strategies for the period were generally successful. However, the fund had a median return of 10.25% with a high standard deviation as high as 9.74%, showing that while investment outcomes were mostly good, it had some years where returns were significantly low. For instance, the return for the year 2022 was as low as -14.1% indicating significant fluctuation in the average annual return of GPF.

Meanwhile, for CIC, the average return was lower compared to GPF at 6.89% which meant the fund had a modest and stable investment performance. The median return at 6.46% indicated consistency and stability in the investment outcomes of the CIC over the years. Also, at 5.61% standard deviation, China had less variability in their investment, compared to GPF. These values highlight the differences in the investment strategies of both countries and the approach each country decided to adopt (Gelb *et al.*, 2014).

GPF generally followed an aggressive strategy and focused mainly on equities and real estate which provided good returns and allowed the fund achieve successes. However, there was considerable variability in the annual returns, showing high gains and significant losses due to its exposure to market volatility and posing a risk to financial stability (Moreira & Muir, 2017). Meanwhile, CIC's lower average annual return on the other hand indicates an investment strategy that is conservative and balanced compared to GPF. This benefits China because even if returns are lower compared to GPF, they are still positive and contribute to the fund's growth at a slow pace, supporting the economic goals of China and providing a stable source of income (Xie *et al.*, 2015). Therefore, in contrast to the GPF, the CIC's lower standard deviation shows a medium-risk strategy in general as the fund balances between equity, fixed income and alternative investments (Bortlotti & Massi, 2018). This is why the fund had consistent outcomes across the analysed years, reducing the need for large reserves and supporting a more predictable financial environment (Siegel, 2021).

The importance of diversification as explained by Koumou (2020) is exemplified in the modest and stable return of the CIC as the fund prioritised striking a balance between equities, fixed income, and alternative investments in order to make effective investment decisions. This well-diversified approach reduces risk and helps CIC achieve consistency in returns. This is because spreading investment portfolios across different asset classes helped the fund reduce the risk of significant losses and put it on the path of steady growth (Castelli, & Scacciavillani, 2015). However, diversification does not necessarily translate to stability in returns because despite also adopting diversification, the GPFG did not have the same stable returns across all years like CIC. Kraus et al. (2022) explains that as in the case of GPFG, large high-risk investment assets can skew returns on the entire investment portfolios to either positive or negative outcomes and this can introduce high variability on returns. Therefore, the GPFG funds can benefit from employing the concept of hedging described by Haacke & Ciorciari (2022) as a form of risk management that will aid in maintaining stability to the variabilities in returns. Hedging involves using financial instruments like options contracts to offset potential losses in other investments. By strategically using hedges, GPFG can mitigate the negative impact of market downturns and achieve more consistent returns similar to CIC's performance. This can improve investor confidence while reducing the need for excessively large reserves (Fabozzi, 2015).

5.2 Risk Management and Governance

Identifying and continuously monitoring risk in investment is a necessary step that GPFG requires if it wants to achieve long-term financial stability especially due to its exposure to high-risks caused by adopting an aggressive investment strategy. Similarly, despite being more stable, CIC must also ensure consistency in its returns by continuously identifying and addressing potential risk in their investment. This is because both portfolios face risk involving interest rate, credit and exchange rate, which are types of risk associated with all large portfolios and sovereign funds.

Meanwhile, considering the more precarious situation of Norway's GPFG, two key robust risk management frameworks that may prove valuable for its risk management are the Value at Risk (VaR) and Stress Testing Framework and the Dynamic Asset Allocation Framework (Papaioannou & Rentsendorj, 2015). The VaR framework is used to estimate the potential loss

in value of a portfolio over a given period, providing a clear metric that can be communicated to stakeholders (Kauhanen, 2021). This risk management framework can help GPFPG quantify how much loss is expected under normal market conditions.

Meanwhile, stress testing helps evaluate how resilient a portfolio is under extreme but plausible adverse market conditions like the one GPFPG faced over the years in order to identify vulnerabilities and potential systemic risks that may not be captured by the standard VaR analysis (Taskinsoy, 2022). The fund can apply stress tests based on market shocks that have occurred in the past, and develop hypothetical extreme scenarios such as sudden interest rate spikes, recessions or exchange rate issues in to understand how they may affect the portfolio (Papaioannou & Rentsendorj, 2015).

However, Beatspon and Ball (2024) explains that the dynamic asset allocation framework is also a more effective risk management framework because it will allow a portfolio like GPFPG to adjust its asset allocation to changing market conditions, economic forecasts and evolving risk profiles in order to optimise the risk-return balance. These adjustments are also flexible as they may be short-term (Tactical Asset Allocation) through temporary shifts between asset classes following market signals or economic indicators (Rudolph & Sabat, 2016). They may also be long-term (Strategic Asset Allocation), aligning with the portfolio's risk tolerance and investment horizon (Beatson & Ball, 2024).

5.3 Impact of Economic Environment on Investment Decisions and Risk Tolerance

The two sovereign funds operated under a similar inflation environment, which was moderate on average, with GPFPG having an inflation rate of 2.42% on average and CIC having an inflation rate of 2.19% on average. This similarity means that while inflation is a concern for both funds, it has been relatively stable and manageable for the two funds across the analysed period. However, while this rate was moderate, the real impact of inflation on investment return is significant and should be addressed cautiously, as high inflation can erode real returns which can increase the perceived risk of the investment.

Such erosion in real return may reduce the gains of the returns considerably, reducing the purchasing power of money (Bossone, 2019). Furthermore, perceived risk will increase as there will be increased uncertainty in the economy, which will make it difficult for important financial predictions to be made and investors to demand higher risk premiums for investments

(Slovic *et al.*, 2016). The GPFG may therefore have to invest in assets that are positively correlated with inflation such as real estate, commodities or inflation-linked bonds, or diversify across various asset classes and geographies (Bortolotti & Massi, 2018). Meanwhile, the CIC will benefit from investing in sectors that may typically outpace inflation such as technology or infrastructure, or diversify internationally to spread the inflation risk (Fabozzi, 2015).

Furthermore, the GPFG and the CIC operated under different interest rates, which were averagely low and moderate interest rates respectively. However, GPFG operated under higher fluctuations of interest rate compared to CIC. This volatility on GPFG funds may be due to the different economic policy changes in global oil prices, as Norway is a major oil exporter (Bjornland & Thorsrud, 2014). Norway's economy depends heavily on oil exports and when the price of oil rises globally, the country benefits and when it falls, the country's revenues decline causing economic instability.

Since this oil revenue is used by the Norwegian government to fund public spending and contribute to the GPFG, volatility in oil prices affects how stable these contributions are, affecting the financial health of the fund. Dixon *et al.* (2022) therefore explains that in an effort to mitigate this risk of oil dependency that the nation faces, the GPFG may have adopted an aggressive investment strategy with high-risk tolerance that allows the fund to spread assets across other classes such as real estate.

Meanwhile, China's economic environment that has a more stable interest rate may be due to controlled economic policies, managed economic growth and less exposure to volatile markets, compared to Norway (Xie *et al.*, 2015). This stability supports the inference of a conservative investment approach and their lower risk tolerance. This indicates why the fund is less volatile and has more predictable investments which aligns with the fund's goal to maintain steady growth (Castelli, & Scacciavillani, 2015). However, it will be very important for both funds to optimise their performance and their investment objectives with effective risk management and strategic adjustment (Fabozzi, 2015).

5.4 Influence of Political Status on Investment Decisions and Risk Assessments

The political stability of Norway of a positive index of 1.19 is a sharp contrast with China's negative political index of -0.39, clearly showing that GPFG operated in a highly stable political environment across the analysed period, which reduces political risk and supports

higher-risk investments. This is in a stark contrast to that of the CIC which requires a more cautious and diversified investment strategy. The political stability in Norway allows the GPF to invest confidently in high-risk high-return assets like equities and real estate, as uncertainties associated with political upheavals, policy changes or regulatory shifts are reduced significantly (Botlotti & Massi, 2018).

Moreover, the fact that the political environment is predictable and reliable in Norway, allows GPF to follow their aggressive investment strategy aiming for high returns, while also putting risk management frameworks for mitigating risks. Conversely, the CIC investment decisions can be influenced by the issue of political uncertainties, making CIC take a more conservative approach, prioritising investments that are more protected against political and regulatory changes. Furthermore, the decision to diversify its investment may be guided by this instability, forcing the fund to spread its investments across different asset classes and regions (Botlotti & Massi, 2018).

According to Mahasi and Wanjiru (2015), instability in governance and politics can significantly influence market forces in the long-run and jeopardise any existing effective risk management strategies. This is because its effects are uncertain and unpredictable as serious civil unrests can disrupt market dynamics and make previous market forecast redundant. However, Waszkiewicz (2017) argues that for managing investment portfolios, uncertainties such as unrests, wars, and natural disasters can hardly be controlled for by financial analysts and it is advisable that priority remains on controlling microeconomic and macroeconomic factors which have measurable impacts on the market and economy.

5.5 Regression Analysis and Statistical Insights

The regression analysis conducted on GPF and CIC reveals how macroeconomic variables such as inflation rate, exchange rate, interest rate, GDP growth rate, unemployment rate and political stability affect investment decisions and risk management of each fund. The analysis identified key economic drivers and assessed the statistical significance of the relationship between the variables. From the regression analysis, only inflation, interest rates and GDP growth had some influence on investments but lacked a strong statistical significance. The inflation rate had an impact on the returns, but not in a consistent pattern while the interest rate

showed some influence on investment return as well but with high variability and lack of significant predictive power.

The GDP growth rate had different effects on both funds with higher GDP growth in China fostering a favourable investment environment, meanwhile, the returns of GPFG were less influenced by Norway's modest GDP. Although these factors affect returns, their effects from the regression tests are not enough to reliably predict returns. However, understanding these factors is important to creating effective strategies in response to economic changes. Moreover, CIC's conservative, diversified approach poses a strategy that allows the fund to mitigate the unpredictable impact of these economic variables (Xie *et al.*, 2015).

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